VIRGINIA MEDICAL SEMI-MONTHLY,

[RICHMOND.]

VOLUME X.

APRIL, 1905—MARCH, 1906, INCLUSIVE,

THOROUGHLY INDEXED.

LANDON B. EDWARDS, M. D.,

Editor and Proprietor.

CHARLES M. EDWARDS, M. D.,

Associate Editor.

Subscription, $2.00 a Year. Single Number, 10 Cents.

THE WILLIAMS PRINTING CO., RICHMOND, VA.,
1906.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 1. Whole No. 217. RICHMOND, VA., APRIL 7, 1905. $2.00 a Year. 10 Cents a Copy.

Original Communications.

A CONTRIBUTION TO THE STUDY OF DISLOCATIONS OF THE FIRST CARPO-METACARPAL JOINT.*

By D. PERCY HICKLING, M. D., Washington, D. C.,
Professor of Clinical Surgery, University of Georgetown, Etc.

Frank Hamilton (*Fractures and Dislocations*, 1884) says Malgaigne has seen two complete dislocations of this bone backwards upon the trapezium, and he mentions two other cases seen by Michon and Bourguet, respectively. In two of the examples reported, although the reduction was accomplished very easily, the dislocation was reproduced when the extension ceased and it became necessary to apply splints. Malgaigne did not observe in the case seen by him any such tendency to displacement. In Bourguet's case the reduction was never accomplished, although the attempt was made on the second day by a surgeon and repeated after about two months by Borguet himself.

Ferguson, who has met with several of these dislocations, says that he has seen even a splint and roller fail of keeping these bones in place. The following is the only example seen by myself: Charles Flanigan, aged 27, caused an incomplete backward dislocation of this bone by striking a man with his clenched fist. It was never treated by a surgeon, and although it always projected a little, and the joint was so loose he could easily push it into place, it caused him no inconvenience, and after a time the motion became as free as in the other thumb. About four weeks before he called upon me, and twenty-five years after the first accident he wrenched it again. He was then employed as a stage-driver, and was 53 years old. The dislocation was now complete, and the over-riding was about one-quarter of an inch, the thumb was nearly straight, the line of its axis being nearly parallel with the bones of the fore-arm, or only slightly flexed. I reduced it easily by extension, and applied a gutta-percha splint, but I have never seen him since, and do not know the result. The signs of this accident are sometimes obscure, owing to the presence of considerable swelling, and they have been often left unreduced.

In order to accomplish the reduction it will be necessary to employ extension, while at the same moment pressure is made directly upon the displaced extremity, and to maintain it in place a splint and bandage will be required. It is doubtful, however, whether in any case the bone can

NO. 1 AND NO. 2—HAND AFTER DISLOCATION AND BEFORE OPERATION.

* Read at a meeting of the Medical and Surgical Society of the District of Columbia, January 5th, 1905.

be made to retain so completely its original position as not to leave a perceptible deformity.

Peter Golden, aged 16, caused a partial dislocation of this bone backward by a blow upon the back of the distal end. Two medical men, whom he consulted on the first and seventh days after the accident, failed to recognize the displacement. On the thirteenth day he consulted me. The projection of the metacarpal bone was now quite manifested, the swelling having in a great measure disappeared. He was placed under the influence of ether and the reduction easily accomplished, and with a carefully-padded splint of gutta-percha, which included a portion of the arm, it was retained in place. At the end of six or eight months, he was again examined by me. The motions of the joint were nearly as free as before, but there remained a slight prominence of the metacarpal bone.

Holmes (*System of Surgery,* 1881) writes: Dislocations of the bones which compose this member (thumb) are by no means unfrequent, as it is much exposed to injury in falls upon the hand. They may take place at either of its three articulations, and may be either backward or forward, the former being far the most common. (1) Dislocations of the first bone of the thumb (metacarpal) from the os trapezium; this is less common than that of either of the other bones. It has been met with in both directions, and has generally been reduced without much difficulty by simple extension, though splints are sometimes required to maintain the bone in position.

Ashhurst (*International Encyclopaedia of Surgery,* 1883), with reference to dislocations of the metacarpal bones, notes that the metacarpal bones are not often dislocated, that of the thumb being the only luxation at all frequent, and this only relatively so, as all forms are rare. The metacarpal bone of the thumb may be displaced either forward or backward from its articulating surface on the trapezium. After speaking of the methods of reduction, he states that recourse may be had to the tenotome in making section of the lateral ligaments, but no division of the tendons is advisable or beneficial.

Erichsen (*Science and Art in Surgery,* 1860): The only metacarpal bone that admits of dislocation is that of the thumb, and though the articulation between this bone and the trapezium appears at first not to be of a character to resist much external violence, yet displacement of it seldom takes place. This is probably owing in a great measure to the powerful muscles by which the bone is supported in all cases in which the force is applied upon its palmar aspect, as it most frequently is, as well as to the little leverage offered by so short a bone. These luxations, however, have been observed in two directions—backward and forward. The dislocations backward, which are the most common, are often compound, arising from explosions in the palm of the hand. The reduction is in general easy, extension being made from the thumb by means of a piece of tape applied around the first phalanx.

The above is practically repeated in the 8th edition, issued in 1884.

Chelius (*System of Surgery,* 1847): The metacarpal bone of the thumb is alone subject to dislocation with the trapezial bone, in consequence of violent bending. The projection which the displaced end of the bone forms above is very slight. The thumb is bent toward the palmar surface, and cannot be straightened in reducing it. The extension and counter-extension are made at the thumb carpus, and the displaced joint end is to be pressed into its place. To retain it there, the thumb should be enveloped in compresses and a circular bandage, and a thin splint fastened on its hinder surface. If the dislocation be mistaken, which easily happens when swelling exists, the movements of the thumb are permanently prevented.

Dorsey's (*Elements of Surgery,* 1813): Notwithstanding the mobility of the articulation of the trapezium with the first bone of the metacarpus, the latter is luxated but very rarely. Efforts made in the thumb, which is supported by this bone, would produce rather a luxation of the first phalanx than that of the metacarpal bone.

Ashhurst (*Principles and Practice of Surgery,* 1882): The metacarpal bones, especially those of the thumb, index and middle finger, may be dislocated upon the carpus, the two latter bones backward and the metacarpal of the thumb either backward or forward. Reduction is effected by extension and pressure, the hand being afterwards secured to a straight splint with compresses.

Wyeth (*Text-Book on Surgery,* 1898): Dislocation of the metacarpal bones at their carpal extremities is rare. Luxation of the metacarpal bone of the thumb is most frequently met with. The carpal end of this bone may be displaced partially or completely in a backward or forward direction. Extension and counter extension,

with direct pressure, is usually sufficient to accomplish reposition. A clove hitch or snare may be thrown around the thumb to insure extension. Reduction is at times difficult, and the history of this accident is not without a record of failure both as to replacement and retention when replaced.

Senn's (*Practical Surgery,* 1891) does not mention the condition.

(*American Text-Book of Surgery,* 1897): The metacarpal bone of the thumb is the one most frequently dislocated, the displacement being usually backward and more often incom-

NO. 3—DISLOCATION.

plete than complete. The cause in backward dislocation is either forcible flexion of the member or direct violence. The base of the metacarpal bone can be seen and felt as a prominence between the tendons of the extensor primi and extensor secundi internodii. Reduction is usually easy by direct pressure, but there is often a marked tendency to recurrence, which must be opposed by a splint or by maintaining the member in adduction and extension for one or two weeks. Dislocation forward and outward of the same bone have been observed.

DaCosta (*Modern Surgery,* 1898): Dislocations of metacarpal bones are rare. The first metacarpal bone is most liable to dislocation. Dislocations of the metacarpal bone are obvious because of projection. The dislocations are reduced by extension and manipulation. A straight splint and large pad for the palm are applied (as in fracture of the metacarpus), and the splint is to be worn for three weeks.

Warren, Gould, (*International Text-Book of* Surgery, 1900): The joint between the metacarpal bone of the thumb and the trapezium differs from the others not only in its greater mobility as to flexion and extension, but also in possessing free lateral movement. Displacement may be dorsal or palmar, and usually results from falls on the palm of the hand leading to hyperextension; but it may be caused by forcible flexion with adduction. In dorsal dislocation, the wrist and the phalanges of the thumb are slightly flexed, a prominence is seen on the dorsum of the carpus slightly internal to the normal position of the base of the bone, and the tabatiere anatomique is deepened. The thumb is shortened. On palpitation, the base of the metacarpal bone is approximated to the styloid process of the radius. The displacement may be incomplete, when those signs will be less thoroughly marked. The dislocation is readily reduced by traction in the axis of the displaced bone, combined with direct pressure on the base in a downward direction, and either forward or backward, as the case may be. If this fails, hyperextension may be tried; also hyperextension combined with direct pressure. The thumb should be then fixed in a position of full extension, with a pad over the base of the metacarpal bone.

Macdonald (*Surgical Diagnosis and Treatment,* 1898): The most frequent and most important of the dislocations of the carpo-metacarpal joints is found at the base of the metacarpal bone of the thumb. The direction is backward, and the luxation is frequently incomplete. The head of the bone can be felt between the tendons of the extensor primi and secundi internodii pollicis. Reduction is readily effected by extension, counter extension and direct pressure. Immobilization should be maintained for one or two weeks, as the displacement is liable to return.

Rose and Careless (*Manual of Surgery,* 1902): Dislocations of the metacarpal bones and phalanges are not infrequent, but need no special mention, except in the case of dislocation backward of the first phalanx of the thumb. The chief interest in this case lies in the difficulty experienced in reduction, which was erroneously attributed to the head slipping between the two portions of the flexor brevis pollicis and being

grasped by them, as a button in a buttonhole. It has now been shown that there are now two much more important factors, viz., the tensions of the long flexor tendon, which hitches round the neck and the arrangement of the glenoid ligament. This structure passes between the two heads of insertion of the short flexor, and is thus incorporated between the two sesamoid bones; it consists of fibro-cartilage, and whilst firmly attached to the base of the phalanx, is but loosely connected with the head of the metacarpal bone, so that it accompanies the phalanx in its dislocation. It thus comes to be situated immediately behind the head of the metacarpal, and opposes any attempts at reduction. Traction and manipulation are always attempted in the first instance. The thumb is grasped by a suitable apparatus and hyper-extended to a right angle, thus making the head of the metacarpal project still further through the muscular interspace, and, as it were, enlarging the buttonhole. Still maintaining the traction, the thumb is rapidly flexed into the palm, the metacarpal bone being at the same time pressed inward. Should this fail, as it often will, a purified tenetome should be inserted in the middle line of the thumb behind, immediately above the base of the phalanx, and should be pushed on till it reaches and divides the glenoid fibro-cartilage between the sesamoid bones. This little manœuvre will at once render replacement simple.

A. D., a colored male 50 years of age, by occupation a laborer, entered the Washington Asylum Hospital July 15, 1904, with epilepsy, and on November 17th, while carrying a pail with a heavy iron wire handle, fell down a flight of three steps. Owing to the poor mentality of the patient, it is hard to ascertain whether his thumb caught on the wire handle or whether he struck his thumb on the steps. Upon examination, immediately after the accident, he was found to have an upward and outward dislocation of the first metacarpal bone of the right hand. Extension and manipulation were immediately tried, but without success, although considerable force was used. The next day the patient was put under ether, and strenuous efforts were again made to reduce the dislocation, but without success. On November 19th a skiagraph was taken by Dr. Groover at the Emergency Hospital, which beautifully shows the position of the bones. Owing to the kindness of Mr. Numaz, of the Asylum staff, I am able to show you a photograph of the hand. On November 20th the patient was again anæsthetized and an incision was made about two inches in length upon the dorsal surface over the head of the displaced bone. After incising a portion of the torn capsular glenoid ligament and the internal lateral ligament, which appeared to be holding the bone in its false position, I again made efforts of reduction, my assistant using the clove hitch and making the extension and counter extension, while I used manipulation and pressure directly over the joint, but without success. I then incised the tendon of the extensor ossis metacarpo pollicis and extensor brevis pollicis, as it appeared that extension would so rotate the

NO. 4—NORMAL CARPO-METACARPAL ARTICULATION.

trapezium that it was impossible to reduce the dislocation, and even after the section of the tendons I was forced to fix the trapezium by introducing the handle of the scalpel between the carpal and metacarpal bone before reduction could be accomplished. The tendons, ligaments and fascia were then carefully sutured with chromicised catgut and a plaster dressing applied. Unfortunately, the patient had an infection of the wound, followed by the usual history. At the present time (January 5, 1905) there is no deformity, although there is some slight edema over the back of the hand. The drainage wound is about healed, and the patient, by means of passive motion, is gradually regaining the use of the joint.

There are two interesting points in this case which I desire to emphasize, both of which, as far as I know, have not been reported by any one:

First. The upward dislocation, or, more properly, the upward and outward dislocation of the first metacarpal bone. All of the authorities that I have been able to consult describe or speak of a forward and a backward dislocation, while my case is clearly an upward and outward luxation.

Second. The action of the trapezius is interesting and worthy of study. When we observe the angular appearance of its articulating surfaces with the scaphoid, trapezoid and the first and second metacarpal, it does not seem as though this bone could be dislocated without terrific force, which would lacerate the surrounding tissues.

It would seem from my experience with this case that when the support of the first metacarpal and its ligaments have been withdrawn, that the bone is so freely moveable in its articulation with the scaphoid, trapezoid and second metacarpal that it offers a decided and often insurmountable obstacle to reduction unless operative work is done. The projecting edge in this case acted as a prominence, above which was the head of the first metacarpal bone, and when extension was made this projection would move downward with the head of the metacarpal so that it was impossible by any amount of force or manipulation to bring the bone into its proper position, and it was only by fixing the trapezium with the handle of the scalpel that reduction was possible, even after the cutting of the ligaments of the long abductor of the thumb and the extensor of the first phalanx of the thumb.

The trapezium in this case was not fractured, and I do not believe that it was dislocated, but it certainly was so freely moveable that it rendered reduction by manipulation impossible. I do believe, however, from my experience in this case that after the incision had been made that the fixing of the trapezium would have rendered reduction by extension and counter extension possible without cutting the tendons, and possibly without cutting the ligaments.

1304 *R. I. Avenue.*

This issue begins a new volume. We shall strive for the ideal.

PAIN AS SYMPTOM IN URINARY DISEASES.*

By CHAS. GREEN CUMSTON, A. B., B. S., M. D., Boston, Mass.

Upon receipt of the kind invitation of your President to address you this evening, I looked about for a subject that I thought might be of general interest. I was under the impression that you were all satiated with brilliant accounts of exploits in abdominal surgery, and that perhaps it would be well to choose some commonplace topic, and I therefore seized upon the question of pain as a symptom in diseases of the urinary apparatus. The importance of a correct diagnosis is at once evident to you all, because upon this rests the proper treatment of a given case.

Pain in urinary diseases will probably suggest to most of you renal colic as a symptom of renal calculus, and pain at the tip of the penis as pathognomonic of vesical calculus. However, you will have encountered cases of diseases of the urinary apparatus in which pain was present in parts of that system which you had reason to believe were normal and absent, in those parts which you were fully aware were the seat of some lesion. You will consequently have come to look upon pain as perhaps the least important symptom of urinary disease, and if I can in any way help to restore your confidence in this symptom and assist you to employ it in your diagnosis of a urinary case I shall feel that I have not misspent your valuable time this evening.

You have all learned in your practice to make an appropriate discount from the pain described by some of your patients, and you have come to realize that pain, like other sensations, such as sight and hearing, may become specialized in certain individuals. Then again, experience has led you to place a certain pain value on each affection to which human flesh is heir, and enables you to receive the greatly-magnified complaints of a hypochondriac with a calmness resulting from this knowledge. I need not, therefore, insist further on the individual variation of pain, other than to say that in my opinion the value of this symptom is rather more frequently under than overestimated in practice.

Pain in diseases of the urinary system has two very distinct and important uses. It is the chief and sometimes the only localizing symptom, and herein resides its most important value, but it may also be a diagnostic sign of no little

*Address delivered before the Brockton Medical Society, March 16, 1905.

importance. This evening I shall consider pain under the first of these two headings; but before doing so permit me to say a word in regard to the types of pain you will meet with.

Renal colic is familiar to you all; it is the most agonizing pain that you will have to treat in urinary diseases, but fortunately it is transient and to some extent under the control of drugs. It is the sensation of unstriped muscular spasm, and usually represents the struggle of the ureteral muscle against resistance. In many cases, to this is added the contact of a rough, spiculated calculus against the mucous membrane of the renal pelvis or ureter. Strangury or tenesmus represents a similar condition of the bladder, but here the spasm in most cases results from stimulation of the tactile sensation of the vesical mucosa, and seldom from obstruction. A sharp, quickening sensation suggests the contact of a calculus with the mucosa lining the renal pelvis or the bladder; it is rarely spontaneous, but is awakened by movement or by contraction of the urinary reservoir. It may occasionally be elicited in renal calculus by sharply percussing the anterior aspect of the abdomen over the kidney. Dull, aching, persistent pain represents the sensation of tension, either from inflammation, as in nephritis or from urinary pressure, as in obstruction of some part of the urinary passages. It is an important symptom, and one that you should never neglect. In addition, there are also referred pains, mostly of an aching character, and with which I shall have more to say later on.

In order to appreciate the symptomatic value of pain, you must be familiar with the distribution of pain in diseases of the different parts of the urinary system. I do not intend to convey the idea that it is necessary for you to study the distribution of the cutaneous nerves and trace their connection by visceral branches with the various organs; that would be a scientific exercise, for which I am fully aware that most of you would not have the time; but what I wish you to realize is the fact that the pain in disease of the various parts of the urinary system affects certain well-defined areas, and that the presence of pain in these areas has a certain localizing value.

In outlining these areas it is not my intention to discuss or even refer to every other cause of pain which may affect each point, although incidentally I may mention a point of importance here and there. As a matter of fact, you will rarely have much difficulty in diagnosing, from the presence of other symptoms, that the pain originates in the urinary system; nor do I wish to convey to you the impression that pain is of necessity present in all cases of urinary disease, for you are aware that quiescent disease, of the kidney more particularly, is not of infrequent occurrence. But what I would ask you to do is to seize upon pain when it is present and use it to its full value as a localizing or diagnostic symptom.

If you map out the twelfth rib and the outer border of the erector spinal mass of muscle, you will see that they meet at an acute angle, and this angle represents the area in which true renal pain is found. A patient suffering from renal disease will frequently tell you that he has backache, and if you request him to place his thumb on it, he tucks the digit directly into this angle. You will note that this area of pain corresponds to the lower pole of the kidney, and not to the body of the organ itself. The pain of renal colic frequently commences in this region, but then again just as frequently the patient has no pain here during the attack, because renal colic is not truly renal, but ureteral, in its origin.

You will most frequently find dull, aching pain in this region in cases of renal calculus or tuberculosis, as well as in some forms of nephritis, and the unilateral distribution will give you valuable data relative to the side affected. Bilateral pain is also encountered here in various forms of nephritis, whether medical or surgical. There are, however, certain fallacies to which I must draw your attention. You have all heard of transference of pain from one kidney to another, and this I shall refer to later. You will find renal pain present in a number of diseases of the lower urinary organs; but with a little discretion you will avoid the mistake of believing that the kidney is the seat of the principal trouble. In stricture and in prostatic hypertrophy, both of which are obstructive affections, the patients frequently complain of lumbar pain, and if you carefully question them you will discover that bilateral pain is present. The pain is due to back pressure, but in these cases it is, however, of a dull, aching character, and the symptoms of stricture or hypertrophied prostate are so obvious that you would hardly be likely to be misled. Do not, however, underestimate the importance of this pain, because it means a kidney undergoing dilatation, and calls for immediate relief of the urinary obstruction.

Occasionally you will find this back pressure renal pain on one side only, because, as you are well aware, one ureter always gives way before back pressure at an earlier date than its fellow.

Those cases where renal pain may be more likely to lead you into error are those in which a papilloma, or occasionally a malignant neoplasm of the bladder, is situated at the ureteral orifice, giving rise to pain on that side. When you question such a patient, he usually complains of pain and hematuria without any other symptom, and if you rely upon the pain for localizing the source of blood, you will be led astray.

Posterior renal pain is certainly the most common in diseases of the kidney, but a patient will sometimes tell you that the pain extends to the front, and he will point to a localized spot on the anterior abdominal wall, which may very properly be termed the area of anterior renal pain.

If you ask a patient with some intelligence to indicate as accurately as possible the area of this pain he will point to a spot just a little above the level of the umbilicus, and rather nearer the margin of the ribs than the middle line. The pain in this area is perhaps rather more intimately related to disease of the renal pelvis than to pathologic changes in the renal parenchyma. The two are, however, so closely associated that for all practical use you may look upon this as anterior renal pain. Renal colic frequently commences at this point. You will note that on the right side the gall bladder is in close proximity, but you will seldom have any difficulty in distinguishing, from the presence of other symptoms, between biliary and renal colic. In this region also you may encounter dull, aching or sharp, pricking pain on movement in cases of calculus of the renal pelvis, and here you will elicit the pricking sensation produced on percussion when calculus is present. This is also a very common site of pain in movable kidney, in all probability due to dragging on the renal pedicle. Pain and tenderness over this point is found in some cases of pyelitis.

You are all familiar with the phenomenon of renal colic—the most excruciating agony that you will meet with in diseases of the urinary system. If you ask these patients to trace the course of the pain after their attack has subsided they will commence either at the posterior renal area, or on the anterior aspect of the abdomen at the anterior renal area, and they will draw their finger along a line passing downward and inward to the external inguinal ring, and occasionally along the spermatic cord to the testicle. After the attack is over, or during the quiescent period between several attacks, a dull, aching pain along this line is not at all infrequent. The lowest point of pain will be found at the root of the penis, and is unconnected with the ureter. The next above this is a point corresponding to the external inguinal orifice, and represents the lowest part of the ureter. This line indicates roughly on the abdominal wall the course of the ureter, and if you press deeply along this line soon after the attack you will elicit tenderness. The lowest part of the line is frequently closer to Poupart's ligament, and might very properly be termed groin pain. Therefore you will come to realize that renal colic is more properly a ureteral colic, and in its severest form results from a spasmodic contraction of the ureteral muscle.

Renal colic, as you are aware, indicates the passage, or attempted passage, of a foreign body down the ureter. It is met with in all degrees of severity and duration, according to the extent and acuteness of the obstruction, as well as the character of the foreign body. Many small calculi pass down from the renal pelvis into the bladder without giving rise to sufficient pain to attract the attention of the patient, while in other instances the stone becomes arrested at some part of the ureter, usually low down, and causes so little irritation and obstruction that the first indication of its presence arises when it increases in size and produces a swelling in the loin from renal dilatation. In other cases small calculi are repeatedly passed down the ureter, causing a moderate attack of renal colic, and then are voided from the bladder.

There is another class of case that is still more important in connection with pain as a localizing symptom, and to which I am desirous of drawing your attention. A calculus may be minute enough to enter the ureter, but may meet with difficulty in passing through the narrow points of this tube. As you are probably well aware, these narrow points are to be found just below the renal pelvis, at the brim of the true pelvis and at the entrance of the ureter into the vesical wall. In addition to the difficulty in passing these points, a descending calculus may be of such a shape, or have so irregular a surface, that it is forced on only a little way at each effort of the ureter, or it becomes fixed until some

movement of the patient shifts it into a more convenient position for continuing its journey. You may thus have a calculus travelling slowly down the ureter with successive halts of varying duration at different points of its descent. The pain in these cases varies in character; there may be only dull, persistent aching; but more frequently there are recurrent attacks of moderate renal colic, followed by fixed pain over the part of the ureter at which the calculus has become arrested.

At one spot the right ureteral pain line lies in close proximity to McBurney's point. This part of the ureteral pain line corresponds to the ureter at the pelvic brim, and you know that at this point calculi frequently become lodged. McBurney's point—the point of maximum pain in appendicitis—is without any doubt the most widely known pain area at the present time, and it is, therefore, not at all surprising that the two affections—namely, recurring appendicitis and ureteral calculus at the pelvic brim are not infrequently confused; nor is it at all surprising that the very common affection, appendicitis, is the one diagnosticated, while the rarer condition, ureteral calculus, is invariably overlooked.

Ureteral pain is, of course, not confined to calculus, and apart from the renal colic, due to the passage of bloodclot or tuberculous material, you will encounter dull pain along the line of the ureter after the passage of gravel. You will meet with pain at the lower end of the ureteral pain line—that is to say, at the external inguinal ring, in many cases of urinary obstruction. This pain is occasionally due to inguinal hernia, arising from straining during micturition; but you are often able to exclude hernia, and you know from the location of pain in ureteral calculus and from the pain at these spots when you over-distend the urinary reservoir with fluid that this pain corresponds to the lower end of the ureter, and in urinary obstruction it means commencing dilatation of the lower end of the tube. The pain is usually bilateral, but sometimes it is present on one side only. As a diagnostic point it informs you that the ureteral sphincter is commencing to give way before back pressure.

Generally speaking, the symptoms of stricture or prostatic hypertrophy are sufficiently manifest to render this pain superfluous in the diagnosis of the presence of urinary obstruction. In some cases of ascending or descending tuberculosis of the ureter the patients will complain of a persistent pain, or the sensation of an open sore at some point along the ureteral line. This is without any doubt produced by the passage of urine over a tuberculous ulcer, and appears to be more frequent at the region of the pelvic brim.

When you come to study bladder pain you will find that the analysis is rendered much more difficult by the relation of the pain to micturition. This complex act not only involves the bladder itself, but the entire part of the lower urinary apparatus, especially the prostatic urethra. You will, therefore, find it difficult to distinguish what part of the pain originates in the bladder itself and what part results from some lesion of the prostatic urethra itself. I think that we will best study the subject by considering separately bladder pain occurring apart from micturition, and then taking up pain arising in relation to micturition under the special heading of vesico-urethral pain. Although not very precise, this division is at least practical; let us, therefore, consider firstly bladder pain arising apart from micturition.

The non-inflamed bladder is comparatively insensitive to touch, and one may pass a sound and search its surface with the beak of the instrument without causing any complaint of pain from the patient so far as the bladder is concerned. The sensitiveness of the bladder to touch may be estimated as about that of the normal rectum, and it appears to be less sensitive than the anterior urethra, and, naturally, much less so than the posterior urethra. The bladder is, however, very sensitive to tension, and this we must expect from our knowledge that the act of micturition is initiated in response to the increase in vesical tension. When the bladder is overdistended with urine a heavy, aching pain is felt just above the pubes. Severe pain may also be felt here when the bladder contracts against obstruction and in spasmodic contraction of an inflamed bladder. In this case the pain is part of the more extensive vesico-urethral pain. A heavy, dull ache is also felt in the perineum, but perineal pain is so closely connected with the prostate that in all probability this results from pressure upon that organ.

The part of the urethra involved in vesico-urethral pain is the prostatic portion, which, as you are probably aware, is the most sensitive part of the urinary tract. The pains which we will consider under this heading are, in most cases, related to micturition, but you will also find them remaining after the act, and less frequently occurring apart from micturition.

These pains are ordinarily associated with increased frequency of micturition, and in most cases represent inflammation of the mucous membrane or the contact of a foreign body, as for example a calculus.

Spasm of the bladder muscle may become added and increase the intensity and radiation of the pain, and the patients are frequently unable to indicate any surface spot or area of pain. They have a better knowledge of the anatomical position of the bladder than any of their other organs, and, upon questioning, they will almost invariably reply that the seat of the pain is in the bladder itself. Of course, they sometimes feel deeply-seated, pricking pain in the bladder when a calculus is present in the organ.

In inflammation of the base of the bladder from calculus, tubercle or other lesions, the patient frequently refers to a spot at the root of the penis, on one side or another, or around the base of the organ, and he will tell you that the pain is felt deep down at this level. This represents the angle of the public arch, and is at about the level of the upper part of the prostatic urethra and the vesico-urethral opening. This represents the most direct vesico-urethral pain; all others are referred to a distance. You will meet with perineal pain in connection with vesico-urethral disease; but almost invariably it will occur in connection with micturition. It is closely allied to prostatic disease, and I will refer to it again in that relation. It may sometimes be an earlier symptom of vesical calculus than the more widely-known pain at the end of the penis. The latter pain is a symptom that you will associate with stone in the bladder; it is a very common symptom, and you will probably expect me to consider it somewhat at length. The pain often shoots along the urethra, and is only more pronounced at the end of the penis.

You must disassociate this from the painful burning and scalding that accompanies and succeeds the passage of highly-irritating urine. If you take the trouble to closely question these patients in regard to the location of pain at the end of the penis, you will find that it may be present in any one of three positions; some patients point to a spot on the dorsum at the base of the glands, some to the orifice of the meatus, while others again to a spot on the underside at the base of the frenum, directly opposite that on the dorsum. The latter pain is the least significant although not the least frequent, and I have only rarely found it in connection with organic disease.

The greater proportion of these patients are neurotic, and this is one of their pain spots. Do not, however, neglect the pain merely on account of its position. Meatal pain is the least infrequent of the three; this pain and the pain on the under surface are generally significant of vesico-urethral disease. Occasionally you will find these pains as a result of a localized patch of chronic urethritis, but in this case they are of less severity, while the accompanying symptoms readily distinguish such cases. The pain on the under surface of the penis is the most frequent and important of the three met with at the end of the organ. Pain here is not so extensively associated with vesical calculus as your reading would probably lead you to suppose, and if you analyze this pain you will in all probability find that it is caused by some irritative process at the vesical base or in the the prostatic urethra. It has also been described in disease affecting the ureter or renal pelvis, but for practical use you may look upon this as a vesico-urethral pain.

You will find this pain very frequently, but not invariably, in vesical calculus; but you will also meet with it in tubercular disease of the vesical base and even in simple cystitis. You will also meet with it in cases where a calculus has become lodged in the prostatic urethra or in a pedunculated papilloma of the bladder, the pedicle of which is of sufficient length to allow it to engage in the bladder neck during micturition. Where spasm of the bladder is superadded you will find that the pain extends further away and most frequently it spreads down the inner side of the thighs, and it has been said to extend as far as the heel.

What I have said applies to the male bladder, but in the female you will seldom be able to get any accuracy on the part of the patient in localizing bladder pain. Suprapubic, urethral and mental pain appear to represent the areas of vesical pain in women.

In studying prostatic pain you must carefully separate the vesico-urethral pains resulting from an accompanying disease of these structures, but having done so, you will find that the most characteristic pain areas of prostatic disease are at lower part of the back, the perineum and in the rectum.

In any form of prostatic disease, whether it be acute or chronic, prostatitis, hypertrophy or

a malignant neoplasm of the prostate, the patients will tell you that they have a dull, aching pain at the lower part of the back. A broad band drawn across the base of the sacrum covers this area. In some cases the pain is very marked, or may even be limited to the region of one or the other sacro-iliac synchondrosis. If a patient complains of this pain, at once examine the prostate, and I can assure you that you will seldom be disappointed in finding some pathologic change in the organ.

Perineal pain is also very common in prostatic disease; in chronic inflammation of the organ it is a dull ache, but in acute prostatitis it is severe and heavy. I have already referred to perineal pain in connection with vesico-urethral disease; in these cases it is more intimately connected with the act of micturition, and in prostatic disease it is more prone to be of a persistent nature. Rectal pain is severe and throbbing in character in acute inflammation of the prostate, but in chronic prostatic disease it usually occurs in the form of a dull aching, a sensation of fulness, or merely some little discomfort. These pains are increased or set up by defecation. I cannot lay two much stress upon the fact that an examination of the prostate should be carefully carried out in every male patient who complains of hemorrhoids. The rectal discomfort of prostatic disease has been the means of leading to many mistakes in this relation

Pain along the urethra and at the end of the penis may be present in prostatic affections, and many patients with hypertrophied prostate complain of pain along the urethra, but by a careful analysis you will find that this is due to scalding of the mucous membrane from an acrid urine. Pain at the end of the penis in prostatic disease means, I take it, an involvement of the prostatic urethra or base of the bladder.

There seems to be no very evident explanation as to why the urinary organs should provide such a rich field for referred pain. I have already alluded to the radiation of pain in renal colic along the spermatic cord to the testicle, and of pains occurring in strangury along the inner side of the thigh, but referred pain is not necessarily severe and need not accompany pain in the organ from which it receives its stimulus. Without doubt you are all familiar with heel pain of renal calculus, and in this disease pain may also be present in the thigh, knee and leg.

These referred pains in kidney disease occur much less frequently than your reading would probably lead you to suppose. I believe that they are more or less rare and are interesting more as possible sources of error than valuable as diagnostic signs. Referred pain from a diseased kidney to its normal fellow, without the former giving rise to any pain indicative of its condition, would completely destroy the value of renal pain as a localizing symptom. Some prominent authorities, however, have been convinced that this transference of pain really did occur, and the possibility of this referred pain has become widely known if not accepted.

You must remember, however, that if you have had any experience in pathological work, how frequently the kidney may be diseased, and extensively so, without giving any evidence of its pathologic condition on palpation before its removal. Personally, I have never met with a case in which there was any suspicion of transferred pain, and is it my impression that you will find that the highest authorities of the present day place no reliance on the possibility of its occurrence.

It is a difficult matter when pain is present in a diseased kidney and radiates to its neighbor, but this you may accept as receiving the support of most surgeons experienced in genito-urinary surgery.

Testicular neuralgia, apart from renal colic, has been described in stone of the kidney, but I may say that the prostate is even richer in referred pains than the kidney, and you will certainly meet with some very puzzling cases in which soon after, or some years after a gonorrhœa, a patient complains of pain in various parts of his body. These cases should not be confused with the peripheral neuritis for which gonorrhœa is sometimes responsible, nor should you consider them as instances of gonorrhœal rheumatism, because the pains are unaccompanied by any other evidence of neuritis, and where they are referred to a joint no objective changes arise in or around the articulation. You will find in some of these cases that there are manifest evidences of chronic prostatic inflammation, such as shreds in the urine, irritation of the prostatic urethra and tenderness in the prostate itself. The organ is seldom enlarged, but you will not infrequently find a thickening of the gland substance at the upper and outer margins per rectum. These thickenings are sensitive to pressure. The seminal vesicles may also be the seat of a chronic inflammatory process. The referred pains affect many parts of the body, and

have a tendency to shift from one spot to another, a frequent seat of pain being in the back of the thigh, so that sciatica may be simulated.

Joints are fairly frequently the site of these aching pains, but there is no swelling or thickening around the articulation and no interference with its movements. The muscles of the calves, the back of the neck and of the arms may be the seat of pain, but here again there is no interference with the nutrition or functions. The pains are generally worse in cold, damp weather, and they may persist for many years. Such cases as these must be separated from the well-known forms of the urethral neuroses in which disturbances of the genital functions are present. In some cases of persistent referred pain in inflammatory processes of the prostate, the pains are situated entirely below the level of the focus of disease, and you may find these patients complaining of pain or numbness in the legs, and, under these circumstances, involvement of branches of the nerve plexuses by extension of the chronic inflammatory process to the pelvic cellular tissue, appears to me a probable explanation, because you are probably aware that chronic pelvic cellulitis may occur in the male from the spread of prostatic or seminal vesical inflammation, although this process is far less frequent than in the female. These cases do not, however, come under the same category as the referred pains I have described above.

871 *Beacon Street.*

COCAINE IN SURGERY; WITH SPECIAL REFERENCE TO ITS USE IN OPERATIONS FOR THE CURE OF HERNIA.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

Professor of Principles of Surgery, Medical College of Virginia; Surgeon to Memorial Hospital.

There are so many different uses to which cocaine can be put in surgery that it will not be possible to more than mention a great number of them. The general principles underlying its application in most cases are the same, and it is with these principles that we will seek to deal. In general, the use of cocaine in surgery may be divided into three classes—(1) Local Anesthesia, in which the cocaine is intended to affect only the part to which it is applied; (2) Regional Anesthesia, in which cocaine is injected into a peripheral nerve with the idea of destroying sensation over the normal distribution of that nerve; (3) Spinal Anesthesia, where cocaine is injected into the spinal canal.

Frequently local anesthesia and reginal anesthesia are combined, but for the majority of minor operations in surgery, local anesthesia is all that is necessary. Too much stress cannot be laid upon measuring the dose of cocaine. It is frequently given in unnecessarily strong solutions, without reference to the amount that is injected, and it is not surprising to see disastrous results after its use in this manner. Cocaine is a dangerous drug if used indiscriminately, but it is safe if employed with the ordinary caution exhibited in the case of any of the common alkaloids, as strychnine or morphine. It is necessary to employ the weakest solution compatible with obtaining anesthesia. If an operation can be painlessly done with a 1 per cent. solution, a 4 per cent. solution should never be substituted. The total amount injected should always be estimated, whatever the strength of the solution, and never more than a grain—usually not more than half a grain—should be injected. It can be readily seen, then, that by weakening the solution down to the minimum a much larger surface can be anesthetized with safety than in the case of a stronger solution.

In local anesthesia the skin is the most sensitive area; but frequently the mistake is made of injecting the cocaine beneath the skin, as though one were giving a hypodermic of morphine, instead of injecting it into the skin itself. The point of the needle should be barely covered by the epidermis; then about half a minim of a 1 per cent. solution injected and the needle shoved on; another half minim injected; the needle taken out and reintroduced into the edge of the anesthetized area and the same process continued until a sufficient area of skin is anesthetized to enable an incision to be made painlessly. In this manner every shot tells, and no cocaine is used except to deaden pain where the incision is made. In injecting beneath the skin, many of the nerve fibres in the skin itself are never touched and the subcuticular fat and areolar tissue, so rich in lymphatics, rapidly take up the solution, giving the constitutional effect in-

*Read at the meeting of the Southside (Va.,) Medical Society, Emporia, March 7, 1905.

stead of local anesthesia. Not only that, but when cocaine is employed in the manner recommended, a great deal of it is liberated when an incision is made, whereas beneath the skin the tissues are so loose and it is so rapidly diffused that it extends over a much larger area and so cannot be liberated by the incision to any marked extent. After incising the skin with a 1 or 2 per cent. solution, a much weaker strength can be used; that recommended by Schleich, and called the "Number 2," is frequently valuable here. The formula of this consists of cocaine muriate, 1½ gr.; morphine muriate, $\frac{2}{5}$gr.; chloride of sodium, 3 grs.; distilled water, q. s., $3\frac{2}{5}$ fluid ozs. An ounce of this solution may be injected, if necessary, to complete the operation, though usually a much smaller amount is needed. Another method, and one equally efficient, is to make a solution of about $\frac{1}{8}$ to $\frac{1}{4}$ of 1 per cent. just before the operation. Tablets containing a grain of cocaine can be dissolved in sterile water, to which a little boric acid has been added, to make it mildly antiseptic.

The regional method of anesthesia is frequently employed along with the local method in performing operations in an area supplied by one or two nerve trunks that are readily accessible. This is very useful in operations for the radical cure of hernia. I have employed it several times with the utmost satisfaction in performing the Bassini radical cure, on one occasion ligating a large amount of the omentum. After anesthetizing the skin over the region of the internal ring, the subcutaneous tissue is injected with a weak solution and an incision gradually carried down to the aponeurosis of the external oblique. This is split opposite the internal ring and gently retracting the margins of the aponeurosis, the ilio-inguinal nerve comes into view; this nerve should then be injected by means of a fine needle with about two minims of a 1 or 2 per cent. solution of cocaine. I find that this anesthetizes the nerve more readily than weaker solutions, and by using only one or two minims, no practical danger in increasing the strength of the cocaine used is incurred. If the ilio-hypogastric nerve, which will be found a short distance above the ilio-inguinal, can be readily found, it, too, may be injected, though this is not essential. The skin incision is then completed by extending it to the pubes, but not into the scrotum, and the inguinal canal opened by extending the incision in the fascia of the external ring. It will be found that the sac can be dissected out and ligated without pain, provided no traction is made on its contents. Pulling on the intestine or mesentery always causes cramp-like pain. The sutures are inserted in the usual manner, taking care not to get out of the anesthetized area. It will frequently be found that the upper portion of the conjoined tendon will have to be infiltrated, but otherwise suturing causes but little or no pain.

As for the third method of using cocaine, i. e., spinal anesthesia, I have had no personal experience. The mortality of such procedure is large in the most experienced hands, and it can rarely be employed where either local or regional anesthesia cannot be used. The dangers of a spinal meningitis following a possible infection from the injection must be borne in mind, as well as the severe shock occasioned by the possible anesthetization of some important centers in the spine.

Certain things have to be taken into consideration when dealing with cocaine. For instance, it will be impossible to use it with satisfaction in patients who are excessively nervous or hysterical. The mere thought of being operated upon, the click of instruments, or any of the common details necessary to carry out any surgical procedure, will cause such an individual to suffer more from mental anguish than from the actual pain of the operation. Attention must also be called to the fact that morphine is a very satisfactory physiological antidote for cocaine, and before doing an operation with it a small amount of morphine, say 1-8 or 1-10 of a grain should be given. Cocaine does not act well in inflamed tissues, and is very rapidly absorbed here, so it is much more dangerous in this condition.

Taking these facts into consideration, and having a sensible patient, it is certainly more satisfactory for the patient to have such an operation as the Bassini for the cure of hernia performed painlessly, as it can be done under local anesthesia, than to suffer the after-effects of chloroform or ether. Not only that, but the vomiting which follows the use of a general anesthetic necessarily tends to weaken the sutures and to displace the various structures from the positions in which they have been approximated, and so interferes with perfect union—all of these disadvantages being avoided by the use of cocaine.

303 *West Grace Street.*

TREATMENT OF INFLUENZA.

By WILLIAM F. WAUGH, M. D., Chicago, Ill.

Isolation is impossible and useless in an epidemic. Disinfection of the excreta is unavailing in a malady whose germs can be found in the sputa for years after the attack. There have been given tons of quinine, other tons of ammonias, other tons of coal-tars, and when a serum comes along tons of it will be given, with as high hopes and as great initial enthusiasm. But up to the present, no remedy has proved of actual unmistakable value in checking the disease, shortening the attack, or influencing its termination. Possibly Raspail's camphor was better than any later fad.

We must go on general principals, applying the treatment that has given the best results in fevers of other forms. Empty the bowels with calomel, gr. 1-6 every hour for six doses, followed by a sufficiency of saline laxatives; then give enough of the sulphocarbolates to render the stools inodorous. Meanwhile give aconitine amorphous, gr. 1-134; digitalin Germanic, gr. 1-67, and strychnine arsenate, gr. 1-134, together, every hour, more or less, to control the fever, ease the suffering, and sustain the heart and the vital forces. While strychnine is exceedingly useful here, the tendency to push it too strongly must be avoided. It seems natural to feel that in a disease whose principal manifestation is a weakening of the general tonicity, a universal relaxation, this greatest of function incitors and tissue stiffeners should be indicated in quantities to meet the need. But there is also in influenza a deficiency in irritability, and very soon we see an exhaustion which is quickly followed by toxic symptoms from even moderate doses of strychnine. The writer has been compelled in many cases to lay aside this powerful weapon and substitute the weaker brucine, in doses of gr. 1-67 every one or two hours, in some cases.

The same may be said of other drugs—be careful in giving large doses of any of them. Nowhere is the importance of the delicately accurate system of minimal cumulative dosage instituted by Burggraeve better demonstrated than here.

Leave out the coal-tars. The alkalodial combination above advised will go far in subduing fever and assuaging suffering. Beyond it, rely as much as possible on heat. The hot bath and hot-water bag, skilfully applied, will be of immense benefit, and all anodynes are objectionable. Opiates are sometimes deadly; alcohol has been fully tried and found absolutely useless and dangerous, increasing the vascular and nervous relaxation and further depressing the vital forces. All the benefit obtainable from it is better secured from hot capsicum tea, with a few drops of tincture of camphor. Of course men would prefer punch, but we are talking medicine—not catering to depravity.

Various combinations of the ammonia salts have been lauded as means of relieving the suffering, and some benefit may be allowed them. There is no specific virtue in any of them; they do not act as antacids, for there is no acidity to counteract. The benefit is due to the momentary stimulation, and this is soon past, and their continued use is a disadvantage and a cause of debility—quickly induced in influenza. We may find better remedies among the so-called antispasmodics, to which group ammonia belongs. Camphor has been mentioned, and musk, castor, valerian, asafetida and sumbul, each possesses a decided power of relieving suffering and sustaining the vital forces in this malady. For convenience, the writer prefers the valerianates, and gives caffeine valerianate in doses of gr. 1-6 frequently repeated—small doses—but we are dealing with a disease in which the dosage cannot be too delicately adjusted. Atropine valerianate, gr. 1-250, is a more powerful anodyne, and is sometimes useful, especially when there is free sweating or special respiratory debility. Strychnine valerianate is also useful, and would be substituted for the arsenate, but for a lingering hope that arsenic may possibly exert a germicidal action upon the bacillus.

For joint pains, give quinine salicylate, gr. 1-6 every half hour—again, small doses! But eight grains a day is not homœopathic in minuteness; and some of us need an object lesson on the principle of the constant infiltration of a remedy into the blood by this cumulative dose system. It acts like the oil that quiets the waves—by preventing the beginnings of wave-formation.

Rest in bed as long as the depression lasts; rich, highly-nutritious foods, easily digested—turtle soup, clam broth, raw oysters and eggs, warm milk, pre-digested foods, fresh fruit juices, coffee; best in small quantities, frequently repeated—say every two hours—and pushed to the limit of the digestive capacity; gentle massage, rubbing warm codliver oil or goose-grease into the skin; hot salt baths and

rubbings are all useful. Change the air to seaside or mountain, with the taking of simple bitters and iron during convalescence. From its properties as a contractor of connective tissue, berberine may be preferable to other bitters—gr. 1-6 every two hours during the waking hours.

Thus far we are carried by experience. We still await the specific for influenza, the germicide that will pursue the bacillus into the blood channels and conquer it there. Possibly nuclein, by reinforcing the leucocytic garrison, may be of benefit, and it should be given in full doses, up to forty minims a day, as one remedy that will not exhause the susceptibility. Would saturation of the system with calcium sulphide render it uninhabitable by the influenza bacillus, as it does by the gonococcus? Will echinacea combat the toxin as it seems to combat snake venom? Does the anodyne influence of passiflora extend to influenzal pangs?

When old remedies fail, it is a duty to follow out every line of research that offers any, even the remotest, chance of success.

Persons suffering with influenza, or convalescing from it, are peculiarly liable to autotoxemia, and depressed by it in their mental faculties as well as their physical functions. Many a suicide might have been prevented by salines and antiseptics.

SOME OBSERVATIONS IN TYPHOID FEVER, WITH REPORT OF 153 CASES.*

By HUGH G. NICHOLSON, M. D., Charleston, W. Va.

When I was first asked to write a paper for the Society, it was very hard for me to decide what should be the subject. After thinking over the matter, I decided that typhoid fever being in the city almost endemic, was probably the most common disease the physicians of Charleston had to treat; and although I well know that I shall tell none of you anything new on the subject, I thought you might enjoy hearing a report of 153 cases treated by one method.

Infection.—It might be interesting to state that 14 of these cases were directly traced to infected drinking water as the cause. It might be interesting to further state that the spring from which this water came was within ten feet of the railroad track of the C. & O., and was more than likely infected by the stool of a typhoid passenger. Two cases were due to handling carelessly the bed-pans of patients ill with the disease; one was contracted from washing the drinking cups of patients, while still another was contracted from a very ill patient (one who had diarrhœa) by a graduate nurse, who took every precaution to prevent the disease by being clean in every way. She probably contracted the disease through the respiratory tract in changing the sheets of the patient's bed.

Temperature.—The temperature in the majority of these cases ran the usual course; after the first week, from 99° F. to 101° F. in the morning, to 100° F. to 103° F. in the afternoon. There was one case in a negro, male, age 23 years, which was a typhoid infection without fever. Unfortunately, I was not prepared at that time to make the Widal test, so the diagnosis was not verified microscopically, although the urine gave the diazo reaction. This patient came under my care seven days after being taken sick, and was under my care 21 days longer. He presented all the clinical signs of the disease excepting the fever. The highest temperature reached by any patient was 106.5° F., and it went to this point only on two days, beginning then a gradual decline. The most persistent temperature was over 104° F., both morning and evening, for eleven days before it commenced to fall. This patient also had a profuse hemorrhage, but recovered. It is now two years since the attack, and only recently has she had anywhere near her usual strength. This was one of the cases followed by neuritis.

Color.—Of the cases, 102 were whites and 51 blacks.

Sex.—Males, 126; females, 27.

Duration.—The average duration of illness in each case was between 43 and 44 days—the shortest being 14 days and the longest 110. The latter case was complicated, with acute miliary tuberculosis, which caused the patient's death. Having been ill three months before entering the hospital, I seriously doubt the typhoid infection having occurred much before he came under my care. The next longest case was 89 days. The time of average duration includes the period of illness before entering the hospital up to the time of discharge. Fever, of course, was not present all of this time. The average stage

*Read before the Kanawha Medical Society, March 21, 1905.

of convalescence being about 15 to 20 days before their discharge, would make the average duration of the febrile period about 28 days—the same as given in most of the text-books.

The period of shortest duration was 14 days of fever. All of the cases lasting less than twenty days occurred in my private practice, and only the febrile period is counted. Below is the period of duration tabulated:

Days Sick.—10 to 20, 6 cases; 20 to 30, 28 cases; 30 to 40, 26 cases; 40 to 50, 38 cases; 50 to 60, 24 cases; 60 to 70, 20 cases; 70 to 80, 8 cases; 80 to 90, 2 cases; 110 days, 1 case.

Invasion.—Two of the cases, when sent into the hospital, came with a diagnosis of appendicitis. Pain was marked and localized in the appendiceal region, and nausea and vomiting were present. With fever present, it was not until pain and nausea subsided and the disease had continued in its usual course that a true diagnosis was made. Another case that came under my care early I treated for nearly a week for choledocystitis. Jaundice, pain, nausea and tenderness over the region of the gall bladder were present. After finding a perforation in the gall bladder in another case, in which a post mortem was held, I am now under the impression that the gall bladder was markedly involved with the typhoid infection in this case.

Complications.—Acute lobar pneumonia was a complication in four cases, all of which recovered. Both lungs were involved in one of these cases.

Cerebro-spinal meningitis was present in two cases that died and in one in which recovery took place. The infection was undoubtedly typhoid.

Diarrhœa was persistent in two cases, but was finally controlled with quarter grain doses of nitrate silver three times daily, given as enteric pills.

Tuberculosis complicated two cases, with one death and one recovery.

Malaria complicated three cases. Patients gave a history of coming from a malarial section and of previously having had chills. Fever was continuous, and every second day they were chilly, with elevation of temperature. All the clinical signs of typhoid were present. Under quinine, the cases assumed a typical typhoid course.

Delirium was present a number of times when the patients entered the hospital, but in all cases cleared up under treatment.

Paralysis of the bladder was present in several cases on entrance, but disappeared under full doses of strychnia.

Boils complicated two cases, and were a source of much annoyance.

Large abscesses were present in one case, from which pus in large quantities was drained. They were principally on the back and the lower abdominal region, although one was on the left leg above the knee. This patient made a slow recovery. He was 18 years of age, and showed Hutchinson's teeth and other signs of hereditary syphilis. He was under treatment for syphilis when he contracted the disease. He was acting as orderly in the hospital, giving bed-pans to the patients, etc.

Meteorism was present in nearly all cases when entered, but disappeared under treatment.

Perforation occurred in four cases, all of whom died. I would have operated on two of them if I could have gotten help in time. The other two were so badly shocked that under transfusion and the most vigorous stimulation they could not be gotten in condition to put on the table. In one of these cases perforation was in the gall bladder.

Urine in all cases examined showed traces of albumin and gave the diazo reaction.

Bronchitis was present in fully 10 per cent. of all cases.

Tape-worm was present in one case. Patient had been sick about five weeks and normal four or five days. One morning he passed a section of tape-worm a foot long. Soon afterward he showed signs of perforation, and went so rapidly down hill that he died about twelve hours later. He never rallied sufficiently to be put on the table, although transfused and stimulated vigorously.

Relapse occurred in two cases. It was caused in both by the patient being given food of a solid nature within a day or so after normal was reached. In both cases the relapse lasted two weeks, the disease running a mild course.

Deafness, varying in degree, was present in about 5 per cent. of cases, but after convalescence completely disappeared.

Vision was impaired temporarily in a few cases during the febrile stage.

Reinfection occurred in one case. Patient had to get out of bed to have a bowel movement, and I attribute it to this as a cause.

Sequelæ.—Melancholia followed in one case, lasting two weeks. Recovery was complete.

Neuritis followed in two cases, the sciatic nerve being involved in both cases. Complete recovery followed in one case in three weeks and in the other in about six months.

Pain followed in several cases that were especially anæmie, but disappeared as the patients attained their normal standard of health.

Thrombosis did not occur in any of the cases.

Treatment.—All cases coming under my care early were given a calomel purge, followed by the following tablets to adults. Children were given the same in proportion:

℞—Salol .....Grs. ijss.
Zinc Sulphocarbolate.....Grs. ijss.
Strychnia Nitrate.....Gr. 1-30.
Eucalyptol.....Min. ss.
Powdered Tragacanth.....Gr. ss.
M. ft. Tablet j.
Sig. One every six hours.

The salol, zinc sulphocarbolate and eucalyptol acting as intestinal antiseptics, prevented the formation of gas from fermentation, and overcame the distension, which in some cases is so disagreeable. I noticed that in all cases, after about 48 hours, the temperature dropped from one to two degrees under this treatment. When the tablets alone did not control the meteorism, I applied hot turpentine stupes. You will notice that I commence stimulation as soon as the patient comes under my care—my idea being that you should not wait for the heart to flag before you begin to stimulate. If it should need extra stimulation, you have so many heart tonics that you have no trouble to keep it going.

Whiskey was used in a number of these cases, and it was a notable fact that cases in which it was given had no delirium, and when delirium was present in a case on entrance it soon disappeared. It was given on an average of half an ounce every two hours when indicated.

Sponge baths were ordered in all cases reach-102.5° F. I used plain hydrant water, and found it reduced the temperature more readily and for a longer time than when colder water was used. All that is necessary is for the water to be colder than the patient, and the temperature will be reduced. You have none of the shock that so often follows the ice bath. None of the patients were given a tub bath; but in the worst cases I had a rubber sheet covering the entire bed put under the patient. The weight of the patient caused the bed to sag sufficiently for a bucket of water to be poured around them. They were then sponged with this until the water from absorption became warm, when it was changed. In from 15 to 20 minutes the temperature was usually reduced from one to one and a half degrees, and in many cases the patient dropped into a refreshing sleep. If the patient's bowels did not move naturally every second day, an injection was given of one and a half ounces each of sweet oil and glycerine. In cases of hemorrhage I ordered a fourth grain of morphia hypodermically, and at the same time 20 minims of ergotole in the same way. An ice cap was put on the abdomen and the patient stimulated as necessary. In two cases I think I saved the patient's life following hemorrhage by infusions of salt solution. Ergot in 30-drop doses was given these cases for a day or so after the hemorrhage.

All cases were kept on a strict liquid diet until they were normal night and morning nine full days. To this I attribute the fact that there were no relapses. In the two cases in which relapses occurred, the patients were given food about the second normal day by sympathetic friends "who didn't think it would hurt." I used milk in all cases in which it could be used. When patients tired of it, I alternated with malted milk. The latter I found splendid when there was a tendency to constipation. Beef tea, chicken broth, liquid peptonoids, bean soup, buttermilk, &c., were also used. Several of my cases occurred in a small mining camp, and I had to depend entirely on bean soup for nourishment. This was prepared by using dry white beans and boiling them in water without any grease until they were completely disintegrated; straining through gauze to remove the hulls, and salting to suit the taste. The patients all seemed fond of it, and it was an exceedingly nourishing diet. Morphine was used in the meningeal patient in which recovery took place. I found it necessary to give a large dose one night in order to keep him in bed. He slept well all night and commenced to improve from that time.

Deaths.—In the series there were 17 deaths—8 whites and 9 blacks, 15 males and 2 females. The patients who died came under my care on an average of from 17 to 18 days after being taken sick, and in most cases having had no previous care, eating any thing and getting out of bed to answer the calls of nature. They died on an average of 11 days after entering the hospital. Death was due to perforation and hemorrhage in two cases, and to perforation alone in

two cases. One patient died with tuberculosis as a complication, one with hemorrhage, and two with marked meningeal symptoms. The others, numbering nine, were due apparently to a profound toxæmia. Subsultus tendinum was present in nearly all the latter nine. The percentage of deaths may at first glance seem high, but several of those who died entered the hospital in a moribund condition, and nearly all of them entered late in the second or third week of the disease. Most of them came to the hospital sitting up in the day coach, having come from 40 to 70 miles. When we consider how many of our cases die under the most favorable conditions, and then think of what these poor fellows had to contend with, it is not surprising that so many died, but it is surprising that as many recovered. The average time at which all cases came under my care was the tenth day.

The ages of the cases treated was as follows: One to 10 years, 9 cases; 10 to 20 years, 34 cases; 20 to 30 years, 81 cases; 30 to 40 years, 22 cases; 40 to 50 years, 7 cases. Two cases occurred in children 2 years of age, and the oldest person affected was 43 years of age. From this series we find that we are most subject to the disease between the ages of 10 and 40 years. It is not a disease of childhood or old age. One other fact I noticed, and that was that the quieter a patient kept, the better they progressed. Perforation in two of the cases mentioned was caused by the patient getting out of bed. I also noticed that patients who had a comparatively high temperature in the early stages usually progressed nicely.

Hemorrhage occurred in 16 cases, with 13 recoveries. My patients were always better after they recovered from the shock, and I must say that I would like to know if a patient would be benefited if bled and a like amount of salt solution introduced to take the place of the withdrawn blood. I have an idea that the toxemia would be reduced and the patient helped.

108½ *Capitol Street.*

When you find yourself, as I dare say you sometimes do, overpowered, as it were, by melancholy, the best way is to go out and do something kind to somebody or other.—John Keble.

ECTOPIC GESTATION TWICE IN THE SAME PATIENT WITHIN ELEVEN MONTHS—EXHIBITION OF SPECIMENS.

By H. A. ROYSTER, A. B., M. D., Raleigh, N. C.
Professor of Gynecology, Medical Department, University of North Carolina, etc.

During a comparatively brief operative career it has fallen to my lot to encounter more than my share of extra-uterine pregnancies, several of which have been noteworthy. Up to December, 1903, I had operated on eighteen cases, as reported in a paper read at that time before the Seaboard Medical Society. Three of these were beyond full term, one of them co-existing with an intra-uterine pregnancy. Since that date my records show eight operations for this condition, making a total of twenty-six. Among these there was one death, occurring two weeks after the operation, due to the exhaustion following upon infection from an acute pus-tube which complicated the case.

Only one of the remaining unpublished cases presents any points of special interest, and that one I take this opportunity of describing briefly. It was the occurrence of tubal pregnancy in a colored woman twice within a period of eleven months, the second attack being accompanied by appendicitis. The last operation was done by my colleague, Prof. A. W. Knox, to whom I return thanks for permission to include his notes of the case. I am also able to show the specimens as removed at each operation.

First Attack.—Sallie S., age 28, was admitted to my service at Rex Hospital on April 15, 1903. She exhibited evidences of shock and gave a typical history of ectopic pregnancy—the lengthened period of sterility, with cessation of menses for three months, followed by sudden abdominal pain and a flow of blood from the genitals. Examination showed a tender mass filling up the cul-de-sac and extending to the right. She was operated upon immediately, and a ruptured tubal gestation on the right side found and removed. The left tube and ovary, being apparently healthy, were not molested. The patient's recovery was prompt and uneventful, and she was discharged at the end of three weeks.

Second Attack.—On March 4, 1904, she was again admitted to the hospital, and symptoms pointing to appendicitis being most prominent and urgent, she was referred to the general surgical service. There was a history of amenorrhea for nearly two months. She was in great

pain, had moderate fever, but no shock. Bimanual examination under anesthesia revealed a mass to the left, which was somewhat tender. The patient was operated on the same day by Dr. Knox. The appendix was found to be acutely inflamed, stretching far over to the left and adherent to the mass before mentioned. This proved to be an unruptured ectopic sac developing in the left tube. It was removed along with the appendix. In separating some dense adhesions, the bowel was torn; this necessitated an end-to-end anastomosis, which was too much for the patient's strength, and she succumbed a few days later. Dr. Knox tells me that she would undoubtedly have recovered but for this accident.

Such cases as this are by no means very rare, but they are not sufficiently common to justify their being hid under a bushel. As far as I can discover from the literature, instances are exceptional in which the recurrence has taken place under a year. Both specimens in this case are unusually interesting.

202-203 *Tucker Building.*

X-RAY BURNS.

By L. R. McCREADY, M. D., Grand Rapids, Mich.

During the last few years there has been brought to a high standard of excellence many forms of apparatus suitable for the development and administration of the newer-discovered agents which for convenience we call "rays." Throughout the entire civilized world the general practitioner, as well as the specialist, has watched with much interest the results of these agents in overcoming disease. Medical journals and the public press have day by day reported the results achieved until at this date it is a recognized fact that ray-treatment occupies in medicine a position second to none.

Nevertheless, in spite of the great strides made in this direction, there still exists in the minds of both the operator and subject a fear that harm may be done to healthy tissues by improper handling of these elements, and we daily observe reports of burns resulting that have resisted treatment until fatal results develop.

Continued administration of rays, whether they be X-rays, violet-rays, actinic-rays, or, in fact, light-rays of any form developed by artificial means, when confined to any locality for a protracted length of time, are capable of doing great harm. Yet in the hands of careful operators we have here the greatest known remedy for many forms of disease, in particular tubercular diseases of the skin, lupus, epithelioma, etc.

Authorities differ as to how these rays can be applied to produce results, and while one operator states that results can be obtained without producing even a dermatitis, others claim that it is impossible.

In the treatment of many hundred patients, I have yet to find a case that is not more or less susceptible to the actions of these rays in one of their forms; but I find that the degree varies enormously. In many cases I have found it absolutely necessary to produce a dermatitis in order to secure desired results, and I find that a dermatitis to a small area is absolutely harmless. On the other hand, the careless handling of these agents may produce not only painful burns, but fatal results.

Radiant heat-rays, ordinary light, ultra-violet and Roentgen-rays produce burns of much different intensity and effect. I have seen serious dermatitis produced from the too long-continued use of the high frequency currents and ordinary light, as well as from the X-ray.

In the treatment of ray-burns, medical literature contains but little of real value, and the reports of results and deductions as to the *modus operandi* of handling this difficulty have been both immature and unsatisfactory.

The use of nearly all of the antiseptic products of the day have their advocates, while some operators claim that results of treatment are so unsatisfactory as to be classed as impossible. The use of caustic agents, acids, oil, etc., are to be condemned as useless. In a routine practice, burns are sure to occur, and must be treated in a scientific manner. The question arises of what this treatment must consist.

In the writer's hands, the treatment of the X-ray and violet-ray burn has been to give immediate attention to the case on the first symptom appearing, and to at once expose the affected part to the action of the Minin light, using the light until the heat rays become painful. The next proceeding is to cover the surface with a bland unirritating alkaline solution, covering with gauze and a close-fitting rubber bandage or adhesive straps. This dressing is only to be re-

moved once in twenty-four hours, when the solution is to be reapplied. This solution can consist of sodium bicarbonate or such an alkaline fluid as is obtainable. The writer has found that the most gratifying results are to be obtained by using the alkaline glycerine solution that is on the market under the name of glyco-thymoline, and is of the opinion that the above remedy being of standard strength, gives results, leaving nothing to be desired. The non-irritating properties of this agent allow of its being used at full strength, while the composition is such that the dressings remain wet for a much longer time than with other remedies, which is an all-important fact.

The writer has followed as a routine proceeding the application of a compress of glyco-thymoline after each and every treatment in all skin lesions treated with the rays, and finds that with this method resolution takes place much more rapidly, and that the patient is grateful for the relief obtained and insists upon a repetition of the treatment at each sitting.

Editorial.

Special License Taxes on Virginia Doctors.

During its session, 1902, the Medical Society of Virginia appointed a "permanent committee [composed of Drs. J. B. DeShazo of Ridgeway, M. D. Hoge and William S. Gordon of Richmond, Jesse Ewell of Ruckerville, Rawley W. Martin of Lynchburg, William D. Turner of Shoalbay, R. S. Griffith of Basic City, and R. L. Payne of Norfolk] to secure legislation looking to the removal or reduction to a minimum of the special license taxes imposed on legally-qualified physicians, surgeons, etc., practising within the boundaries of Virginia." During the session of 1903, this committee reported in effect that other medical legislation had so absorbed the attention of the General Assembly of Virginia of 1902-'3 that it was deemed wisest to defer effort concerning further medical legislation until the next session of the Virginia Legislature. As this legislative body will not meet until January, 1906, there is danger that the profession at large may overlook the matter unless attention be called to it from time to time.

The Committee of the Medical Society of Virginia has established a quarterly publication—*The Medical Legislator*—which, under the special editorial conduct of Dr. DeShazo, is doing excellent work for the profession in the direction indicated. The January number, 1905, presents a map of the United States which so graphically shows the States in which license taxes are assessed on physicians, and those in which license taxes are not assessed, that we reproduce it in this connection. From this map it is seen that only six of the forty-eight States (Delaware, Virginia, North Carolina, Georgia, Florida and Louisiana) impose annual specific license taxes on doctors; but in Delaware, North Carolina and Georgia no county or city license taxes are required. In Florida no county taxes are assessed, although city as well as State license taxes are required. In Kentucky and Indian Territory city licenses are assessed, but no State or county taxes are demanded. In Montana no State license tax is imposed, although counties and cities require such taxes. So that we have Virginia and Louisiana standing out conspicuously as *the only two States of the Union in which State, county and city license taxes on doctors are required.*

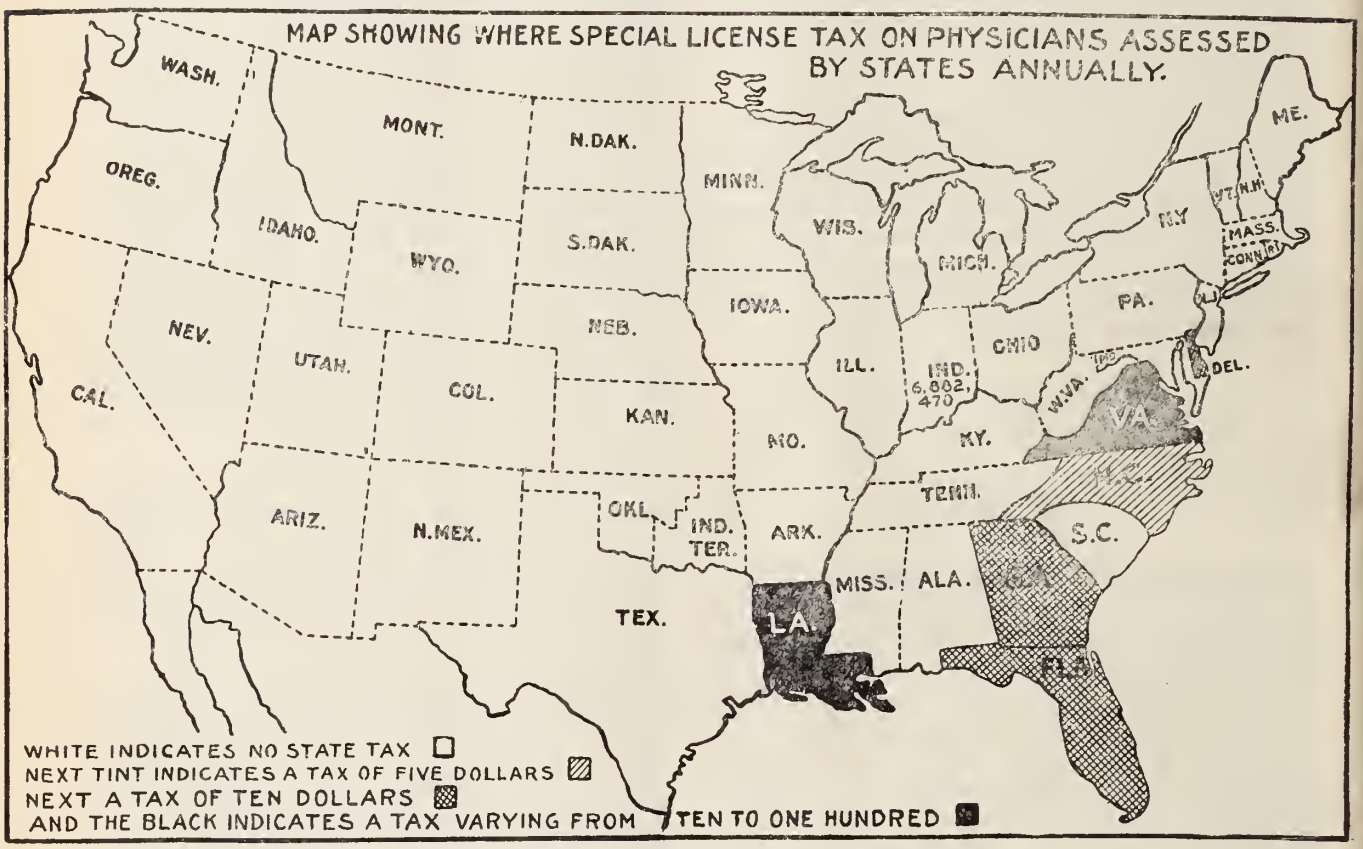
We have not exact figures before us, but it is safe to estimate the total amount of State license taxes assessed against practitioners of medicine in Virginia at over $30,000 annually. This, of course, does not refer to the additional specific license taxes imposed by cities and counties.

While the aggregate amount may not appear great, it is nevertheless a severe hardship on many individual doctors who are able men and worthy of handsome incomes. Be it remembered that these doctors are taxed as other citizens on whatever property they may own. Even their libraries, surgical instruments, office fixtures, horses and vehicles, and other things essential to their profession are also taxed. Are such things right in a civilized, educated community? Let us see.

Taking the blunt fact of money-making, is the profession of medicine a lucrative one? Beyond a relatively few, we venture the assertion that the vast majority of doctors in Virginia collect scarcely enough in dollars and cents from their practices to pay their living expenses, if so much. In fact, the estimate has been made that the *per capita* annual cash income of doctors in Virginia from their practices does not

exceed $600. When we take into consideration that a fortunate few collect from $5,000 to $15,000, or perhaps more a year, one may calculate for himself how much less than $600 must be the *cash* income of the vast majority.

Some one may say that if such is the prospective outlook of town and country practitioners, why do so many young men spend four years of the prime of their lives in the preparation at colleges for such a profession? A few are allured by fascination for the study of the practice of medicine which take some doctors—such as medical directors of life insurance companies, of medical chemists and analysists, etc. But all of this does not affect the town and country practitioner. So that after all the vast majority of useful doctors in communities are left dependent either upon scanty professional incomes, or else have to splice out their means from other sources. Hence money-making cannot be spoken of as the lot of the practitioner of medicine in Virginia.



A few cities in South Carolina, Kentucky and Indian Territory, and a county license tax in Montana, being local matters, are not indicated on this map.

science and art of medicine *per se*. Some have exalted ideas as to the profits of the profession when they hear of certain isolated cases of specially munificent fees paid by some wealthy invalids, and hope that it may be their good fortune to have such patronage. Others have ambitions for positions in the army or navy or the Public Health and Marine Hospital Corps, in which cases they have satisfactory salaries, with each of their promotions, and if disabled by wound or disease, or when the age-limit of service is reached, they can retire on pay by the Government. Then there are other services than

And yet what would the communities do without their home doctors, who are known to be qualified by education and experience to serve the people? The sick need the physician. And unfortunately for the pocket-books of the doctor, the great bulk of the people who need his services are unable to pay the usual small fees that might be charged for his attentions. Take the visiting list of almost any practitioner, and see how many cases are pecuniarily worthless to him. The widow and the orphan, the poverty-stricken old man or woman, or the impecunious young man and woman are on every page of his

visiting list. His vocation makes the appeals of suffering humanity a constant demand on his time and attention—oftentimes having even to serve the part of nurse and *giving* medicines or using expensive surgical instruments which have cost him money. Such patients have no other claim on the doctor than that of humanity. It might be said that the same claim of humanity would call on neighbors to make provision for such unfortunate sick or injured. But look around and see if the claim has the same effect upon the neighbor as upon the doctor! There may be isolated examples of neighborly provision, but they are very, very few. Such patients are peculiarly an expense upon the doctor.

Who beside the immediate sick person gets the benefit of such expenses and services by the doctor? The doctor's wife and children, or those dependent on him for a living, derive no profit from such patients, nor does the doctor himself. In fact, he is impoverishing himself for humanity's sake. Who cares? Does the public—except to say "the good old doctor"! And yet the better-to-do class of relatives of such sick oftentimes do not employ this doctor, for they say his practice is with the poor. The State and city or county show him no mercy, for these attempt to grind out of him the few dollars he has collected to pay special license taxes over and beyond all sorts of property tax. In most instances, the city and county almshouses are disreputable buildings; in rare instances are the hospital wards of such institutions much more than death-traps or disease-breeders. The State makes no adequate provision for its poor sick citizens. The few charity or "sheltering arms" hospitals founded by wills or subscriptions stipulate that the attending physician of the inmates shall make no pecuniary charge for services rendered. Even those hospitals established by medical educational institutions, such as the Virginia, the Memorial, the Eye, Ear and Throat Infirmary Hospitals of this city, and like institutions in other cities, are sustained for the most part by gifts of the *doctors* connected with them. All of such expenses are taken off the State and cities by the doctors; and yet for such gifts by doctors the State has the greediness to charge practitioners of medicine specific annual license taxes! It is a shame that Virginia should tolerate such injustice—such ingratitude to a class of citizens that neither the State, cities nor counties could do without—a class of citizens who in no proper sense are money-makers.

Doctors are constant contributors, without charge or compensation, of advice for the public health and welfare. They are teachers in every home they visit, and constant educators as to the preservation of health. If the college professor or the school teacher or newspaper or journal editor, etc., are exempted from specific license taxes; if the preacher and the humanitarian—in the proper sense of this term—are exempt from such specific taxation; if clerks and book-keepers, and stenographers, etc., are so exempt, then for a greater reason than for some of these, and for equal reason as for others, the practitioner of medicine should likewise be exempt.

Such a view is taken by other States; and in most cities and counties of the United States a like view is taken. Again we call attention to a study of the map reproduced from the January number of *The Medical Legislator.*

The doctors of a State have a powerful influence with the people of their several communities. We call upon them—each in his own immediate field—to arouse to the injustice of the specific license taxes imposed on Virginia doctors, and shake off the chains that bind them down to such wrong legislation. Let every doctor at once bestir himself, and show his legislator—now and prospectively—the wrongs and oppression of such specific license taxes on practitioners, and thus help to remove them.

The Anti-Tuberculosis League,

Mention of which was made in a previous issue of the *Semi-Monthly,* will meet in Atlanta, Ga., April 17-19, 1905, and promises to be a most important session, as well as far-reaching in its results. As in small-pox, so in tuberculosis, we have no specific remedy for the disease after it has once gained a foothold; but in the prevention of tuberculosis, we know what measures to adopt as much so and with as much certainty as we know the value of vaccination. Sanitary regulations regarding expectoration, the use of sputum-cups, the thorough disinfection of tubercular homes where ignorance and carelessness in this respect have prevailed, boiling suspected milk, cooking doubtful meat supplies, etc., are all measures that require attention in prophylaxis, though without question the most important of these is that of attention to tubercular sputum. Although we cannot hope

to eliminate tuberculosis very shortly, with the enforcement of such measures as those already suggested, we may hope that the disease will in years to come be under as absolute control as small-pox is to-day. All cases should be reported to health departments by attending physicians with as much regularity as are small-pox, scarlet fever, diphtheria, etc., in order that proper disinfection may be practiced and literature distributed. Naturally, all phases of this subject above mentioned, as well as those relating to cure of the patient—including open-air treatment at sanatoria, dispensaries, State hospitals, etc.—will receive a full share of attention at the League meeting, and we urge as large an attendance as possible.

Prevalence, Prevention and Cure of Tuberculosis.

The Antituberculosis League, to assemble in a few weeks at Atlanta, has an important work before it—the results of which are far-reaching, and, it is hoped, will favorably affect every community. As small-pox, yellow fever, and some other like epidemics have been proven to be preventable, so the day has come when science has proven that the devastations of past ages by the "great white plague" are in great measure preventable.

The University College of Medicine, Richmond, sometime ago inaugurated courses of popular lectures, with the view of educating the public, as well as the profession at large, in matters of health, etc. And it was very encouraging to witness the interest manifested in such matters by the class of leading citizens of the city and State in the address on the subject of this editorial by Dr. Wm. S. Thayer, of Baltimore, Associate Professor of Medicine in Johns Hopkins University, and President of the Maryland Tuberculosis Commission, delivered April 4th, in the amphitheatre of the University College of Medicine. That address will long leave its lasting impression upon the minds of the intelligent audience. The language of the speaker was non-technical, and for the purpose designed, the address was masterly.

In remarks preceding the speaker of the occasion, Dr. J. Allison Hodges, President of the University College of Medicine, referred to the public, as well as professional educational purposes of the course of lectures on vital questions of the day affecting public health, etc. Dr. P. A. Irving, Secretary of the Virginia State Board of Health, presented some statistics as to the prevalence and death rate of tuberculosis, which, if applied in any one year to diphtheria or other infectious disease, would alarm the public in a panic.

Dr. Thayer emphasized the remarks of Dr. Irving. He noted that tubercular meningitis, scrofula, white swelling, Potts' disease of the spinal colum, tabes mesenterica, consumption, etc., are all only different disease manifestations of the introduction into the system of tubercular bacilli. These germs seem to be almost ubiquitous so far as the habitable globe is concerned. At some period of human life, a very large proportion of persons—if not a majority—have been infected by these bacilli, as proven by necropsies of persons who would not otherwise have been suspected as being tubercular in life. But the very fact that the majority of such persons have long been known to enjoy excellent health preceding their fatal non-tubercular disease proves that the majority of persons recover good health even after a tubercular infection. It is from such records that valuable lessons are learned as to the curability of tuberculosis, if the condition is recognized by the physician in time, and proper means for treatment are promptly adopted. He cited a number of instances in his own, and in the practice of others to sustain this point.

There is no specific treatment for tuberculosis. The great principle to remember is the abundance of sunlight and outdoor exercise. An old author had quaintly asserted the truth in the statement that "the saddle is the seat of health." Tubercle bacilli will not live in sunlight, nor thrive in a properly oxygenated system. Medicines, as such, are useful as stimulants to healthful appetites, and diets should be of the most nutritious kind. But exercise in the open air, with patients properly clothed as to seasons of the year, etc., are the important facts to be remembered. The value of sanitaria for tuberculosis was emphasized. In the home of the patient, it is almost next to impossible to carry out the line of treatment satisfactorily. Proper attention is rarely given to the use or the disposal of the sputum cup. The room is inconveniently arranged, as a general thing, to insure the abundance of sunlight required for the invalid's apartment. Conveniences are not at hand for the disposal of dejecta, etc. The bacilli sputtered about on bed or personal clothing, or on the carpet or floor out of the sun-

light, or on the walls or on furniture, etc., have only to dry to be wafted about the sick room to infect some healthy member of the family. But in sanitaria properly located and managed, all of these things are provided for.

As at present established, such institutions are all right for the wealthy, in whom the infection has not progressed too far. The very fact that such patients see others recovering who were as bad off as they are gives healthful cheer and encouragement to persevere in the line of treatment laid out for them.

But it is pitiable to see how the tubercular patient, known to be such, is curtailed as to his opportunities. Now that it has become commonly known that tuberculosis is an infectious disease, he is shut out of boarding houses, hotels and even general hospitals will not receive such patients at any price. In illustration, he instanced a case where a wealthy tubercular patient begged admission to a hospital—not for the purpose of getting well, for he knew he was too far gone for recovery, but for a place to die, and yet was denied admission.

If such cases occur with the rich, how much worse must it be for the poor tubercular of every community! An appeal was made for the States and cities and counties to take such cases in charge and make proper provision for them in humanely conducted, properly officered, and amply provided sanitaria. It is a great mistake to suppose that such institutions—properly conducted—with plenty of area around for outdoor exercise, etc., are hot beds for the spread of consumption, etc. Records prove conclusively that doctors, nurses, attendants, etc., in sanitaria properly conducted, and where hygienic rules as to each patient are properly enforced, are as healthy as like persons in non-tubercular hospitals, etc.

Prevention of the spread of the disease by proper care and instruction of the consumptive, use of spit-cups, disinfection of infected quarters, etc., were dwelt upon at length as the means of eradication of tuberculosis, and were urged as of prime importance. Tuberculosis is absolutely preventable, though owing to the ignorance of this fact by the general public, and the lack of control of this class of patients in most communities by proper laws on the subject, further progress has not been made in its elimination. Education of the people in popular lectures impressing upon them the need for attention to the matters above suggested, will make easy the way to legislative enactment of laws for the control of and appropriation of money for the care of these ostracized and otherwise unfortunate individuals. Until we have this preliminary education of the general public, little help may be expected from the majority of our law makers.

The above is an outline of some of the more impressive points in Dr. Thayer's lecture.

It was encouraging as to the prospects for this city to hear from Mayor Carlton McCarthy how the address had impressed him, and of full recommendations which he had made to the City Council along the line suggested by the distinguish?ed speaker of the evening.

Dr. W. T. Oppenhimer, President of the Richmond City Board of Health, also strongly advocated the views so ably impressed by Dr. Thayer.

This is but a beginning of the good work inaugurated in this State and city in the campaign to be waged against tuberculosis as a prevalent disease of every community. There is every reason why the profession in every town and hamlet should spread the interest awakened in the public mind of this city by the timely address. Educate the people, and through them awaken such a sentiment among legislators—State, city and county—as will finally lead to the establishment of suitable means for stamping out tuberculosis from the list of fatal human diseases.

The Isthmian Canal Commission

Has undergone a complete reorganization as to its personnel. In compliance with instructions from President Roosevelt, Secretary Taft requested members of the Commission to tender their resignations in order that the President might have a free hand in reorganizing it. While not so stated, it is inferred that the report submitted by Dr. Charles A. L. Reed, who was sent with full authority to investigate the conditions in Panama, perhaps had considerable to do with the action above mentioned, for, after stating in his report, which was filed on his return from Panama, March 1, 1905, numerous instances of mismanagement and "red tape," he boldly recommends that these resignations be asked for. It is asserted that this Commission obstructed, either by delay or modification, the plans formulated by the efficient sanitary staff to such an extent that preventable diseases have been prevalent and are far from a satisfactory control.

American Journal of Surgery.

After nearly twenty-five years' work in the editorial field, Dr. Emory Lanphear, of St. Louis, Mo., has retired to private practice, in which he will limit himself to gynecology and surgery. *American Surgery and Gynecology,* the journal he has so ably edited, and which has won its way in professional esteem for its many sensible and independent expressions, has been sold to Dr. Joseph MacDonald, Jr., of New York, for fourteen years managing editor of the *International Journal of Surgery.* From this time Dr. MacDonald's publication will be known as the *American Journal of Surgery,* and will be issued from 92 William street, New York. Dr. Walter M. Brickner, also of New York, will be editor. A long list of prominent collaborators is named, and ample capital is said to back this new enterprise.

The Tennessee State Medical Association

Will hold its seventy-second annual meeting in the Watkins Institute Building, Nashville, Tenn., April 11, 12, and 13, 1905. The President, Dr. Paul F. Eve, of Nashville, will preside at the meetings of the House of Delegates, whose session begins on the morning of the first day. The general meeting will be called to order at 10 A. M., same day, by Dr. A. B. Cooke, of Nashville, chairman Committee of Arrangements. Including the President's address, there are thirty-two papers on the program. Dr. Deering J. Roberts, Nashville, Tenn., is Secretary.

Gaillard's Southern Medicine

Is the new name of *Southern Medicine and Gaillard's Medical Journal,* a publication which was until October, 1904, issued as two separate journals, one at Savannah, and the other at New York. In condensing the name into *Gaillard's Southern Medicine,* to begin April, the identity of the two publications is preserved, while at the same time the shorter name is a matter of much convenience. Dr. William Edwards Fitch, of Savannah, the energetic editor, remains in editorial charge, as heretofore.

The Texas State Board (Regular) of Medical Examiners

Will hold its next meeting in Austin, Texas, May 2, 3, 4, and 5, 1905, for the examination of applicants and transaction of other business. For further information, address the secretary, Dr. M. M. Smith, of Austin. Dr. J. T. Wilson, of Sherman, Texas is president.

The Hygeia Hospital, Richmond, Va.

This private hospital, conducted by Dr. J. Allison Hodges, has become so overcrowded with patients that he will close it in a short time in order to build additional rooms, etc. The improvements he hopes to have completed by early autumn, when the hospital will again be opened.

Edmondstone House Telephone.—Edmondstone Company, telephone manufacturers, advertise a line equipment set useful for physicians in service from office to any part of their residence. They also have an equipment which is ideal for the replacing of push buttons at the bedside in hospitals. Those interested in hospital work should write to the manufacturers for their complete catalogue.

Obituary Record.

Dr. Samuel Davies Drewry

Died at his home near Centralia, Va., April 2, 1905, at the ripe age of 73 years. He was born in Amelia county, Va. He graduated in medicine from the University of Pennsylvania 1853, and the Medical College of Virginia 1854, and was elected a Fellow of the Medical Society of Virginia 1903. He was a man of strong personality, and was noted for his hospitality, for kindness of heart, and unswerving devotion to duty. His first wife was Miss Claiborne, of Pittsylvania; his second, who survives him, was Miss Alice McGill—whose father was the late Dr. Charles McGill, formerly of Hagerstown, Md., but afterwards surgeon in the Confederate army. It was Dr. McGill who made arrests of some of the parties of the notorious John Brown's raid in Virginia immediately preceding the Confederate war, and delivered his prisoners to authorities at Harper's Ferry—now in West Virginia. Dr. Drewry's funeral services were conducted from St. Paul's Episcopal church, of Richmond, and his remains are interred in Hollywood.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 2.
Whole No. 218.

RICHMOND, VA., APRIL 21, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

Case of Extensive Embolic Gangrene: With Remarks Upon the Indications for Multiple Amputations of the Extremities.*

By MAURICE H. RICHARDSON, M. D., Boston, Mass.,
Professor Clinical Surgery, Harvard Medical School: Surgeon Massachusetts General Hospital, etc.

Some ten years ago a freight brakeman on the Boston and Maine Railroad was thrown from a car to the rails on a drawbridge over the Charles river. The train was moving slowly. He struck the track, and, to keep from falling into the water, threw one arm over the rail, where it was crushed by the wheel of the following car. Not realizing quickly enough that he had better fall into the water with one arm intact than with both crushed, he tried to cling to the bridge by throwing over the other arm which the train immediately passed over. Then the thing which he had tried to prevent necessarily followed: he dropped at once into the river with both arms crushed. Many men would have done instinctively what he did in the few seconds given him for thought. He was rescued and brought to the Massachusetts General Hospital, where I amputated one arm near the shoulder joint and the other near the wrist. This man was awarded some thirteen thousand dollars by the railroad. He squandered the money in riotous living and drunkenness, which caused his death in the course of a year.

A long time ago the son of a prominent physician in Boston was run over while playing on the railroad tracks, and lost both legs. Being young, he was very successful in learning the use of artificial legs. He has been able to ride a bicycle, to play base ball and other active games, and to enjoy life almost if not quite as well as other boys.

A physician in Lynn told me recently that, as a student, he was asked by Dr. Bryant, of New York, to observe the gait of a man running across the amphitheatre, and to say which leg was artificial. The student was unable to tell. Then Dr. Bryant demonstrated that both were artificial.

Some years ago, after prolonged and careful study, I tied the femoral artery for aneurism of the right popliteal in a man with double popliteal aneurism. The leg became gangrenous, and amputation was performed. The question then arose as to the treatment of the other aneurism. Digital compression and other non-operative measures were seriously considered. Many palliative measures had been tried, but no other course seemed open than ligation of the other femoral. Whether the patient preferred to suffer from the aneurism untreated, or whether he, on other grounds, refused to run the risk of a second amputation, I never was able to find out, for I lost sight of him. The dilemma was certainly a serious one.

The question of multiple amputations in the surgery of the Accident Room is easy of solution, for in most cases the matter has already been settled by the accident itself, as in the first case mentioned. In non-traumatic cases, however, several interesting considerations arise when it is proposed to amputate one or more extremities. The subject seems perhaps hardly worthy a place on the programme of this Association, and yet the questions with which it deals are likely to arise in the practice of any active surgeon. When a case like the one upon which this paper is based presents itself, the surgeon may feel in grave doubt as to his duty, especially when he is confronted—as I have been—by marked opposition and by sharp criticism on the part of influential friends of the patient.

Some of the questions which arose in connection with this subject are:

1. What constitute the pleasure and satisfaction of mere animal life?

2. Who besides the patient is to decide the question of the desirability of a prolonged but maimed life?

*Read before Southern Surgical and Gynecological Association, 1905.

3. What is to be the limit of prolonging life at the expense of limb?

4. What has the physician to do with questions of pleasurable or of painful existence, provided he can help to maintain the mere spark of life?

If the physician feels justified in preserving life at the expense of one leg, is he justified in preserving life at the expense of both legs? And if he feels that duty requires the amputation of both legs, will he still feel justified in amputating for the same end both legs and an arm; or, in a perfectly conceivable emergency, in preserving life at the expense of both arms and both legs? Would the principle of prolonging life at the expense of limb still be reasonably maintained?

The following case seems to me to present features of considerable pathological interest. It is an example of the importance of the questions raised in the foregoing cases.

Margaret S. (S. H. R., vol. liv., p. 160) aged sixty years, married, a seamstress, I saw on February 28, 1902, with Dr. E. A. McCarthy, of Cambridge.

The family history was good. The patient had had in childhood scarlet fever and smallpox. In the middle of March, 1902, she was seized with cramps and numbness in both legs. The right leg within a few hours recovered normal appearance and sensation; but the abnormal condition of the left leg persisted. For several weeks she had been suffering from dyspnœa, and she had had palpitation of the heart. There was marked pallor of the face, and her general condition and appearance were not good. There was a systolic murmur transmitted into the axilla. The pulse was weak, irregular, intermittent. The left leg below the knee was enlarged and painful. The vessels in the calf were blue and cordlike. The leg was totally necrotic from the ankle half-way to the knee. The femoral pulse was perceptible to the apex of Scarpa's triangle.

On the 18th of March I amputated the left thigh. The femoral vessels at the level of the amputation were firmly plugged by thrombi.

Soon after the amputation of the left thigh, this patient began to complain of pain in the right foot, which on March 21st was mottled and purple. No pulsation could be detected in the tibials or in the popliteal arteries, though the femorals were pulsating vigorously.

On the 22d of March the right thigh was amputated. The femoral vessels were found plugged with thrombi.

The patient made a good recovery from the amputation of the right thigh, and she was very comfortable.

The changes in the left foot were preceded by an attack on March 30th, of sudden pain and distress in the epigastrium followed by numbness of the right arm. No radial or brachial pulse could be detected. The hand was pale and cold. There was no discoloration of the skin.

This patient was a favorite seamstress among the ladies of Boston, and she had therefore many influential friends who were deeply interested in her case. The ethical question which arose was, in my experience, a new one,—namely, whether the surgeon is ever justified in refusing to prolong life, when there is every reason to believe that life can be prolonged perhaps indefinitely. I have many times amputated the thigh for gangrene of the toes, and the patients have enjoyed years of life thereafter. Indeed, I know of no more satisfactory operation in certain cases than a high amputation for gangrene of the foot. Mrs. S—— had a husband, children, a good home, and, as I say, many devoted and influential friends. There was every reason for the first amputation. The only bar to good health was the condition of the heart, and that was no serious bar, for it seemed clear that the cardiac source of the embolus depended upon some acute temporary condition there—a temporary loss of force which permitted the formation of the embolus.

There was some little criticism of the first amputation. The friends of the patient asked me why it would not have been better to let her die. I replied that the first duty of the physician was the preservation of life, under all circumstances, and the second duty was the relief of suffering. In the case of this patient, by the amputation we preserved her life and we relieved her suffering. When, a few days after the amputation of the left thigh, the right leg showed symptoms of beginning gangrene, then the objections to further operation were still more strongly expressed, although I did not hear of them until later, and then indirectly. There was great pain in the foot. The woman's general condition was good. The thigh was small; the shock would evidently be trifling.

I therefore decided to amputate the right thigh, and this operation was performed on the 22d of March, four days after the first amputa-

tion. The patient survived the operation, which was a very rapid one, and the stump followed a very favorable course of healing. The criticisms of the first operation became tinged with indignation when the second operation was performed, although the friends of the patient were friends of mine, and had been, in my early general practice, my patients. I could reply to this criticism only by saying that I agreed that the patient would be better dead than alive. After the loss of both legs she would, of course, require a constant attendant. It seemed to me, however, that I had fulfilled the two chief duties of the surgeon—I had relieved her pain and I had prolonged her life.

The ethical objections to the second amputation I appreciated as well as anybody else—perhaps even better than the lay friends of this patient. I nevertheless believed, and I still believe, that the course which I took was the right one. As I say, the patient made a good recovery from this amputation, and was entirely relieved of her pain. When, however, after an attack of precordial pain and distress, changes began to take place in the right arm, and the question of further operation came up, even I began to wonder whether my duty toward this patient had not been, if not fulfilled to the utmost, at least fulfilled to a reasonable extent. One can imagine that life might be tolerable to a patient without any legs; but it seemed to me questionable whether, under any circumstances, life could be worth living to a patient who had lost both thighs and the right arm. The ethical question was rapidly being settled by *reductio ad absurdum*. After the loss of both legs and the right arm, what if the left arm should become gangrenous?

The patient continued to retain her strength and cheerfulness to a remarkable degree. When it appeared likely that there would be gangrene of the arm and that another operation would be considered the friends expressed very strong indignation. Although I sympathized very deeply with the patient, and also shared in the feelings of her friends that it would be much better for her to die, yet when it seemed likely that the arm would become gangrenous, I thought that the wishes of the patient should decide, as they had in the two previous operations.

Fortunately the question of amputating the arm never arose, for the hand rapidly regained its normal condition. By the 1st of April a feeble radial pulse could be detected. On the 17th of April an embolus lodged in the brain, and on the 18th of April the patient died. This event had been much desired by everybody, except perhaps the patient, and rendered unnecessary the consideration of any further operating.

At the autopsy the anatomical diagnosis was as follows:

(1) Mitral stenosis; (2) Hypertrophy and dilation of left auricle; 3() Thrombosis of left auricular appendage; (4) Embolic thrombosis of right axillary artery; (5) Hemorrhages into the basal ganglia on the left side; (6) Multiple infarcts of the spleen and kidneys; (7) Obturating thrombosis of the left common iliac and external iliac veins; (8) Infarcts in the left lung; (9) Ulcer of the duodenum; (10) Hemorrhage into small intestine; (11) Malformation of left common iliac vein.

In this case the patient was anxious to live—so anxious, indeed, that she submitted gladly to the first and to the second amputation. She was rendered thereby absolutely helpless and forever dependent upon uninterrupted external assistance on the part of those who might not be prepared always to grant it. Yet the mere pleasure of living would be much greater than if she had been paralyzed below the waist. Indeed, the destruction of both lower extremities—even amputation at both hips—would have left her much better prepared for a comfortable existence than a broken back, or disease of the cord attended by vesical paralysis and incontinence of feces. The patient deprived only of legs, unable to stand or to walk, is incomparably better fitted for a pleasurable existence than the bedridden patient with paralyzed sphincters. I have seen many cases of broken back and of spinal disease in which the patients have nevertheless lived for many years an extremely comfortable life. Their happiness, to be sure, was dependent largely upon their ability to be well taken care of. One patient in particular, with the paralysis of Pott's disease, is able to enjoy life in every way in which personal locomotion is non-essential. We can therefore answer the first question by saying that the pleasure and satisfaction of mere animal life may not be hopelessly impaired by inability to walk, or even to stand. One has not only intellectual pleasures, but the physical pleasures of unimpaired arms and trunk. Existence without legs and with but one arm may be conceivably worth maintaining. To carry the case one point fur-

ther, however, and to remove the remaining arm, seems a *reductio ad absurdum*. And yet there then remains the life of eating, drinking and sleeping, with the highest enjoyments of life—the purely intellectual. And what greater satisfaction can any one get out of life than those of animal existence and intellectual enjoyment? He can get only the pleasure of helping himself and of using his own arms and legs. If he is able to procure from others sufficient assistance, he can still enjoy much. If he is not able to call upon others to supply the defects of his body, he must perish helpless. The environment of the patient and his ability to take from others the forces of which he has been himself deprived—these things have an important bearing upon the question.

But assuming that the patient is poor and friendless, has the surgeon even then the right to refuse him life and relief from suffering? He has no right, I maintain—no more right than the community has to leave uncared for the hopeless paralytic or the hopelessly insane, or even the hopeless consumptive.

If one can conceive of a state of things in which one limb after another is removed successfully and there remains but the head and trunk, with what degree of satisfaction can the surgeon contemplate his work? Is he to take upon himself the responsibility of refusing an operation which will maintain an existence in the enjoyment or in the sufferings of which he has no immediate concern? If it is not the duty of the surgeon by his operation to preserve life at no matter what cost of immediate and subsequent pain, why is it not the duty of the surgeon to destroy life in the prevention of hopeless and unendurable pain. The physician is not justified in causing a painless death to relieve extreme and hopeless suffering, and yet there are probably few physicians who have not seen many cases in which a painless death would be welcomed by patient and by friends. Many years ago a patient in the greatest agony of dyspnœa from the pressure of an enormous and hopeless recurrent cervical tumor for which he was being given hypodermic injections of morphine, begged the physician to give him a fatal dose. The physician, a man of the highest, the strongest, the most upright character, complied. For the sake of humanity he defied laws and conventionalities. Who can say that he really did a wrong? Few of us would have the determination and the strength of mind deliberately to incur so great a responsibility and so manifest an infraction of the laws, and yet no man in his heart can deny that the right thing was done. I dare say many men would have attempted the removal of this tumor in the hope that the operation would mercifully be unsuccessful, for breathing was possible only by the continuous lifting of the tumor from the trachea by an assistant. In cases like this the patient begs for death. It is denied him.

Are we justified, on the other hand, in refusing surgical aid when the patient is willing to purchase life at the expense of many operations and much suffering, and the loss even of every limb? In my opinion we are not justified in refusing operation even under these circumstances: we are as firmly bound by the unwritten law to preserve a life that asks to be spared as—in the opposite extreme—we are, by the written law, to maintain a life that begs to be destroyed. No one but the patient is to decide the question of the prolonged but maimed life. There is no limit in prolonging life at the expense of limb, and it seems to me that the physician has nothing to do with questions of pleasurable or of painful existence, providing he can help maintain the mere spark of life.

224 *Beacon Street.*

THE IMMEDIATE REPAIR OF LACERATIONS OF THE CERVIX.

By EDWARD McGUIRE, M. D., Richmond, Va.

Professor Gynecology, University College Medicine, Richmond, Va., Gynecologist to the Virginia Hospital, etc.

The importance of this subject has been impressed on me by being compelled to close lacerations of the cervix for hemorrhage at the time of parturition. The success in securing primary union was most gratifying, and led me to consider the value of immediate repair in all cases of extensive laceration with or without hemorrhage.

In considering the subject, I desire to call the attention of the society to the importance of differentiating between postpartum, uterine, and cervical hemorrhage as indicating the presence of extensive lacerations of the cervix. It is my belief that excessive bleeding after labor is much more frequently due to lacerations of the cervix and pelvic floor than to the uterus as a source, and that there is a tendency on the

part of obstetricians to ignore lacerations of the cervix as a cause, and to conclude that all post-partum hemorrhages are from the cavity of the uterus.

Extensive laceration of the cervix frequently occurs in the primipara, especially if the forceps are used; they also often occur in cases where the mechanism of labor is abnormal—as in posterior rotation, face or breech presentations, and in cases of long standing lacerations that have been repaired. In my experience, I have performed this operation twenty-eight times—in twenty-three, good union occurred; in three, partial union, and in two no union occurred. In all these cases, there was also some extensive injuries to the pelvic floor which required suturing. In two cases there was infection, but in neither was I justifiable in inditing the operation as the cause nor the cervix as the site of the infection. In one of these cases of infection, the stitches were allowed to remain and the uterine cavity explored and irrigated with primary union as the result. In the other, the stitches were removed, but there was no visible points of infection noticed, and at the end of the first week both were convalescing. All of these cases except one were delivered at their homes.

The necessity of immediately closing up a laceration of the cervix in cases of excessive hemorrhage originating from this source is recognized and advised by all obstetricians, but there is an almost universal tendency on their part to advise against the operation except in cases of hemorrhage that cannot be controlled by other means. In support of this view, it has been urged that the tissues of the cervix are so swollen and deformed that proper approximation and accurate coaptation are impossible, and that therefore union will not result. Secondly, that lacerations of the cervix heal spontaneously and that the operation is not necessary. Thirdly, that the operation narrows the lumen of he canal and interferes with the free discharge of the lochia. And finally, that it increases the danger of infection.

Taking up these objections seriatim, I would say that my experience does not coincide with the objections raised. While it may be true in some cases that the cervix is so injured by prolonged pressure as to interfere with union, this is rather the fault of the obstetrician in not intervening earlier and terminating the labor before this condition occurs. Besides, there is no portion of the body which recovers so quickly after such severe injury, and should this condition be present, an intermediate operation can be done forty-eight hours later—possibly as late as five days—with primary union as the result. To answer the objection that primary lacerations heal spontaneously, one has only to recall the number of lacerated cervices with which he meets in practice. The direction and extent of lacerations vary within the widest limits, the usual directions being anterior, posterior and lateral. Anterior and posterior lacerations—especially the former, owing to the relations of the vaginal walls which keep the torn surfaces in contact, do frequently heal spontaneously. In lateral and bilateral lacerations the flaps are more apt to diverge—the anterior passing forward towards the outlet, and the posterior backward towards the vaginal fornix. This interferes with primary union, and in my opinion, a bilateral laceration extending over a half inch or reaching to the vaginal attachment rarely ever heals by primary union. The objection that the immediate closure of the cervix impedes or interferes with the lochial discharge is untenable because the lumen of the cervical canal is not encroached upon if the operation is properly done, and the dilated cervical canal is equally as large as it was before the laceration took place. As to the fourth objection, the danger of infection, if this operation is aseptically performed, instead of being increased is actually lessened, for by the operation you close exposed surfaces peculiarly liable to infection on account of their anatomical structure and position.

The advantages, then, may be briefly stated as follows: That it has all the advantages of immediate perineorrhaphy; that it lessens the danger of infection; that it furnishes relief of mind from a dread of a secondary operation; and last but by no means the least, it removes all the dangers that may result from pathological changes consequent upon delay.

The technique of the operation is simple, though the operator should have some knowledge of vaginal work, and thorough asepsis in all its details is essential. Unless these conditions can be obtained, the operation should not be performed. The vagina and cervix should be douched with an antiseptic solution and the lips of the cervix caught with a single or double tenaculum and drawn down towards the outlet. The vaginal wall, if necessary, should be retracted with a speculum or with the fingers.

Any loose shreds of torn tissue should be removed with scissors. Catgut stitches, commencing at the upper extremity of the laceration, should be introduced about one-quarter of an inch apart to within one-sixth of an inch of the termination of the tear. It will be noted that the external portion is not closed, and the mistake of closing it should not be made as it will heal spontaneously. These stitches should not include the mucous membrane lining the canal, and they should be tied firmly to allow for shrinkage during the process of involution. The operator should then repair the lacerations of the pelvic floor if any are present, and the vagina again cleansed with an antiseptic solution.

411 *East Grace Street.*

CIRCUMCISION—ITS TECHNIQUE, ANESTHESIA, OPERATION, AFTER-TREATMENT AND REPORT OF CASES.*

By ERNEST A. TIMMONS, M. D., Columbia, Tenn.

The Technique.—Ordinarily the general practitioner, who engages in this kind of work, makes only an antiseptic washing of the parts for all conditions, and each patient is ready for the next step. In subjects, where there is no existing genital or venereal trouble, that simple procedure is quite satisfactory. But the vast majority of cases, presenting themselves for circumcision, have existing one or more of the above diseases. This fact necessitates full as much, if not a greater, difference in the technique for the patient' welfare as it does in the operation.

When a subject comes solely for the removal of a non-diseased prepuce, I always cleanse the field with a solution of permanganate of potash (about 1-3500 or 4000). I consider this a prerequisite in nearly all operations for circumcision. The fetor of the smegma is best overcome with this wash. Therefore, I use it not so much for its antiseptic as I do for its deodorant properties. It certainly eliminates the foul stench of the prepucial secretions. The pubes, the inner thighs, the scrotum and all the adjacent parts are scrubbed with the preparation. Following this I am not quite so routine in the use of antiseptics. Kreso, carbolic acid, bichloride of mercury, etc., are as good as can be obtained for this work. However, for the past eighteen months or more, I have almost exclusively followed the permanganate scour with a kreso wash, the reason for which I shall give under the division,

The Operation.—After scrubbing with the kreso solution (2 to 4%), I saturate some absorbent cotton with it, place the cotton upon the scrotum, around the penis, especially around the glans and in the cervix glandis. This is done more to thoroughly antisepticize the parts by holding the solutions in close contact, and to keep the operative field protected, while further preparations are being made. Thus the cotton remains on for several minutes before removal, after which the subject is ready for the anesthesia.

But, as already stated, different pathologic conditions usually require different or a more extended technique. So, where there are chancroids, multiple or single, on the prepuce, glans penis, in the cervix glandis or elsewhere near the operative field, after such a technique as mentioned in the previous paragraph and after cocainizing these sores, I always touch the latter with a good caustic (nothing is better than nitric acid) before further procedure.

If a gonorrhœa is present, the urethra first should be irrigated, and then followed with the above technique, so as to rid the urethra of any contaminating pus that might possibly escape upon, and render the cleansed external field infected, in case the irrigation is put off till the last. If there's a hypersensitive urethra, with an excessive discharge, the acuteness should be corrected first and then operate. While this is being done, the other conditions, if there be any, also should be treated with antiseptic washes, dusting powders, etc., as preparatory to the operation. From the proper care, within four to six days usually, the patient is ready for the table.

Venereal warts need but little more technique, if any, than is necessary for nonpathologic subjects. Sometimes it may be necessary or rather conveniene to clip a few out of the way from the muco-prepuce and to use adrenalin chloride or a caustic to stop or prevent hemorrhage. However, clipped warts bleed but little while the tourniquet is on the penis. Those on the glans should not be clipped until the foreskin is

*Prepared for Tennessee State Medical Meeting, held at Nashville, Tenn., April 13, 14, 15, 1905.

off, sutures introduced and tied, as an earlier interference only renders the glans more sensitive and the operation more subject to pain.

In paraphimosis, where there is much edema, it is good surgery to incise the constricting bands, use a soothing antiseptic poultice, and to wait two or three days on the edematous resolution.

In phimosis the sooner the circumcision is done the better it is for the patient. In this condition, the glans and adjacent prepucial surface can be tolerably well cleansed by means of a small tipped syringe, using permanganate solution, also followed by kreso irrigation. If the prepucial orifice is too small to admit the syringe tip, the orifice can be slit so as to do so. If an acute balanitis is present also, a four per cent. solution of cocaine thrown around the glans and held there for a few moments will render the cleansing almost if not totally painless.

In this era of anesthetics the surgeon who does not use these little minor precautions for the best comfort of his surgical patients is scarcely worthy of his professional degree, much less suffering humanity, as patients, who plod their weary way day by day to him for relief and ease.

In *herpes prepucialis,* or in irritations of the glans from irritating nonspecific secretions, the technique is about the same as that heretofore set forth for nonpathologic condition. Howsoever, in quite severe cases, it is well to postpone operating, and first use the proper means to subdue the malady. Other conditions from those already mentioned, may and do occasionally arise that call for alterations and some changes in the foregoing techniques. Each condition must be met with a proper devised technique to bring about the quickest and best results. With these suggestions I will proceed with the next division.

The Anesthesia.—The technique having been made according to the healthy or diseased condition of the case, the tourniquet next is tied around the penis near the latter's root. Nothing answers better for a tourniquet than a medium size male urethral rubber catheter. It should be placed at this stage to close out the systemic absorption of the local anesthetic, and to prevent the latter's constitutional effect. When this is done the time to anesthetize is at hand. To produce local anesthesia, so as to get the parts perfectly painless to the operation, is what for a long time puzzled me. I at first used a 4, 5 and even a 6 per cent. solution of cocaine, both hypodermically into the foreskin and externally around the cervix glandis. This gave total anesthesia of the integument or derma, but the muco-prepuce continued to give more or less pain on amputation, trimming and suturing. I then resorted to cholretone with, it seemed to me, more pain than the former. I next tried cocaine hypodermically with chloretone locally, hoping for better results. But I got no more satisfaction, if as much, than I secured with my first effort.

After giving all of those procedures a fair and impartial trial, and my patients more or less pain, it seemed that my long-sought-for attempts were all in vain. However, the thought came to me: Oculists use the crystals of cocaine for eye work. By this means they obtain a complete anesthesia, so that eye operations are made painless. Now, the muco-prepuce is no more sensitive than some of the tissues of the eye. This being true, a somewhat similar procedure, properly carried out, ought to give similar results upon the muco-prepuce. So I tried the suggestion. I first placed a number of crystals of cocaine around the cervix glandis and upon the muco-prepuce. I waited fully six or eight minutes for their absorption before using the hypodermic solution. The moist mucous membrane absorbed the crystals readily. I made five or six injections (4 per cent. solution) through the integument and around the penis just back of the corona. I gently massaged the area until the injections thoroughly met and intermingled. I waited about five minutes, until no pain was produced by pricking the foreskin. This gave about twelve or fourteen minutes for the crystals to cocainize the mucous surface. Having previously prepared the instruments, sutures, waters, etc., there was nothing to do but to proceed rapidly and uninterruptedly with the operation in chief. This I did.

It is needless to say that success was mine. Since this discovery I have operated on about twenty-five persons for circumcision. They laughed, they talked, and some of them smoked while upon the table, in the midst of the operation, the same as if they were in a barber's chair having their hair cut. They all were practically painless operations. This may sound somewhat like a fairy tale, but it is a fact. There is an art in learning how to produce local anesthesia, and how to entertain patients while

you operate. With the proper administration of such a good local anesthetic and an effort to entertain, both the anesthetic and mental suggestion keep the patient in good spirits, freed from pain, with such success I never think of etherizing or chloroforming a person for circumcision. The operation, in my hands, has not proved severe enough for me to subject my patients to the nauseating effects and hazardous risks of a general anesthetic. The operation rarely ever forces them to bed. Ether or chloroform will keep them in bed a day or two. This is another objection to a general anesthetic.

The Operation.—As already stated, the operation frequently has to be modified to suit the conditions of the case. Diseased tissues necessitate these alterations. However, in non-pathologic subjects, the following is now my method of operating. The tourniquet being in place, and while local anesthesia is being procured, I arrange all necessary articles for the operation at the patient's side convenient to me. Allowing the foreskin to remain in its natural position over the glans, with a pair of scissors, I nip the integument on the dorsum about a quarter of an inch back of the corona. I also nip it on each lateral side, the same distance from the corona, and underneath about half an inch in advance of the lateral nippings, towards the glands. The forceps are placed on, so as to flatten the lateral sides and to allow the dorsum nipping and the nipping underneath to be at the edge of flattening. All of these four nippings are drawn just even with the convex border of the forceps opposite the border against the glans. Now the instrument is locked and the prepuce is held firmly. With a keen-edged scalpel or a pair of sharp scissors the foreskin is amputated almost within a twinkle of an eye. The forceps are hastily removed, the integument goes back out of the way with its own accord; and, with the scissors, the muco-prepuce, remaining over the glans, is hastily slit to within a quarter of an inch to its cervo-coronal attachment, and is trimmed off about that distance to the attachment from side to side. In trimming the mucous membrane underneath I leave the frœnum with somewhat a concavity about half an inch deep from side to side. This somewhat prepares (to use the technicality of a wood workman) a curved mortise near the frœnum to receive the convexed edge of the to be approximated integument. It makes a perfect fitting joint, so to speak.

With tissue forceps, needle, sutures, etc., I first unite the integument and mucous tissues with one suture on the dorsum. I then place one at either side and one underneath, drawing together the tissues. This is done so as to suture the edges more evenly together, after which the other sutures are placed interruptedly.

I never use the continuous sutures in circumcision for three reasons:

First. If a suture or two cuts or pulls through, the rest are rendered more or less slack.

Second. If one breaks the others slip more or less and the tissues are more liable to pull apart before union.

Third. The frequent uncontrollable priapisms that these operations on the penis cause renders the possibility of the previous objections more liable to occur.

I don't want any catgut or other absorbable material for ligatures to be used in this operation. They sometimes get offended at the unruly conduct of this courageous member, and give way when they are in great need. I like sterile silk for circumcision. It stands until I am ready to remove it.

After all ligatures are in place and tied, the tourniquet is removed. A few moments are allowed before dressing for the parts to bleed, so as to eliminate the cocaine from being absorbed. If the oozing is tardy it is materially aided by gently massaging the penis towards its glans.

The foregoing described operation is by far the neatest and most cosmetic circumcision, in my opinion, that can be performed upon the penis. When the patient is well of the operation the integument around the dorsum to the sides fits snugly up against the corona, with none of the muco-prepuce showing whatsoever. The frœnum also presents a handsome appearance; and by being left may add more to the sexual pleasure than there would be were it removed. I don't know whether it does or not. I have heard so. So I give my patients the benefit of the doubt.

This operation can be performed on all non-diseased subjects and upon most pathologic patients. As already stated it is the operation that I perform when I can do so. However, disease occasionally forces me to operate, so as to excise the worse pathologic, that I may unite the more healthy tissues.

Therefore, I once did an elliptic excision of a very angry sore upon the dorsum of the penis

within an inch and a half of the latter's root. The excision extended fully four-fifths the circumference of the penis. The patient was dismissed within six days of the operation with perfect union. There not having been much foreskin in this patient the excision gave him a perfectly bald glans. However, when I see a person with a mucous covering of the penis, all the way from an inch back of the corona to an inch and a half upon the pubes, I am inclined to think that the gentleman has certainly been "up against" hard luck! Yet disease will work curious contortions of the penis and will produce wonderful abnormalities of it.

The After Treatment.—If the technique and operation have been within the bounds of antiseptic surgery, there's but little to do in the after treatment, save to keep the wound in a thoroughly aseptic condition, in antiseptic wash of kreso (1 to 2 per cent.), carbolic acid (1 to 2 per cent.), or bichloride of mercury (1-2000), a dusting powder of aristol, equal parts of aristol and acetanilid or equal parts of acetanilid and boracic acid, (there are other good powders too for this dressing), a small piece of sterile bichloride or borated gauze placed around the wound, over which is wrapped a clean bandage, are all that is necessary for each dressing, repeated usually only four to six times on non-diseased subjects. If convenient, when the dressing is soiled with blood stains, I like to remove the soiled and to replace it with a clean dressing in five or six hours after operating. I insist upon this being done any way the following day. Experience has taught me that this is a better method. Nature being kind under such treatment the cases are dismissed with perfect union within seven to ten days. We pay too little attention, usually, to frequent dressings. Frequent cleansing is the secret of success.

The additional treatment in pathologic patients depends upon the type of the disease and the progress of the case. If a chancroidal infection is present upon the glans, corona or in the cervix, it may be necessary to canterize the infection a time or two and to dress the parts daily. If warts are found instead of chancroids, the additional treatment is the same. However, the cauterizing should be preceded by placing a few crystals of cocaine upon such conditions to prevent pain. In addition to the daily dressings a cure is greatly aided by having the patient to soak his penis in a vessel of a kreso (3 to 5 per cent.), carbolic acid (the same per cent.), or a bichloride (1-1000) solution for twenty to thirty minutes. In my opinion, the best powder for a dressing in these patients is aristol. Iodoform is as good, but the best class of patients object to it, and I don't blame them.

If pus forms in the sutures or elsewhere nothing I have found is so good to cut it out as the peroxide or dioxide of hydrogen previous to the other antiseptic wash.

The reason I place kreso and carbolic acid at the head of the list in circumcision, is because I think I get better results with them than I do with any other antiseptic. Both are good deodorants also, and deodorants come in handy in most circumcisions. Bichloride is a splendid antiseptic, but is void of deodorant properties. Of the three kreso gives me the best results in operations upon the penis.

Report of Cases.—An engineer got a furlough for two weeks in which time to be operated upon for a constricted prepuce and to be well of the operation. I operated one Tuesday, just after he had got in off of his day's run. The following Friday I removed all sutures. There was perfect union. Sunday he reported for work. Monday he went out on his regular run, losing only five days on a two weeks' furlough.

A shoe clerk came to me Sunday afternoon before the first Monday in January with an exceedingly long foreskin. I removed it at that visit. He was up early Monday and waited on a large crowd all day with very little inconvenience. He was dismissed the following Sunday, at which time I operated upon his brother, clerk for the same house, with a same eight-day result.

I circumcised a hotel clerk one Saturday night. He was at his post all day Sunday from early morn till late at night, and was dismissed the following Sunday perfectly well.

Once a gentleman entered my office. I addressed him: "Good morning, sir, anything I can do for you?" "Yes," he replied, "there's something the matter with my dog." "Well," said I, "bring your cur into the private room and I will see what is the matter with him." On viewing his penis the head presented the physiognomy of that of a bull pup after a courageous prize fight, so mutilated was the prepuce with chancroids and warts. Fortunately the glans and mucous membrane near the corona were not infected. I did the cosmetic operation. The result was so satisfactory that the gentleman never called his penis a "dog" any more.

Those are a few recent painless operations I have performed according to the method I described for non-diseased subjects and treated according to the already prescribed treatment for the same. Not a man was dismissed but that he went away highly pleased with the results.

The pathologic patients, where all diseased were removed, have been dismissed within a period of from eight to sixteen days after the operation. The longest I ever had to treat one was twenty-one days. There had to be some granulating of the frænum.

In patients where it was impossible to remove all diseased tissues, I succeeded in dismissing them in from twelve to twenty days usually, not later than thirty days. In most of these cases it was the ulcer or ulcers granulating that took up the time and not a faulty union of the sutured healthy tissues. I have had chancroidal ulcers in the line of sutures, just back of the corona, and by cauterizing them a time or two and properly dressing them daily, induced early granulations and a rapid cure.

My experience has been that chancroids, even when upon the glans, corona and in the cervix glandis, will heal more rapidly from circumcision and after treatment than they do when treated without the operation. The prepuce over and in contact with the glans and the irritating secretions keep the sores a-fire. So, with the patient's consent, I don't hesitate to operate for fear of chancroidal infection. The infection is already there, and I want to get rid of it as soon as possible.

I am somewhat of the opinion also that the removal of a long irritating foreskin is beneficial in aiding an earlier cure of an acute and a subacute gonorrhea. At least the few cases with it that I have operated on the gonorrhea seemed to have yielded better to treatment.

Circumcision has a splendid effect in helping to check nocturnal emissions when the prepuce is long. It will stop certain forms of epilepsy (those that the prepuce itself produces) in male children, to say nothing of the chances at venereal diseases it reduces. It's the thing to do, whether there's disease or not.

Life is not so short but there is always time for courtesy.—Emerson.

ASTHMA.*

By J. GARNETT NELSON, M. A., M. D., Richmond, Va.
Chief of Medical Clinic, University College of Medicine.

A desire not to consume too much of your time has induced me to limit this paper entirely to asthma, on which subject alone, enough has been written to fully occupy a zealous student's time for many days. The bone of contention has been the etiology, nor has this bone been thoroughly digested even in this brilliant medical period of profound knowledge and vivid imagination.

Perhaps every comprehensive article should begin with a suitable definition. The best I have found is as follows: "By asthma we understand a neurosis in the distribution of the respiratory nerves, which leads to attacks of dyspnea with a peculiar secretion and distension of the lungs." So we see that there is a nervous error of some sort, which is fundamentally responsible for the attack as the practitioner sees it. This mischievous nervous condition is often present and unsuspected until some unusual or even trivial daily event causes an explosion of nerve energy, and one more victim is added to the asthmatic hosts.

We observe that this definition is incomplete, especially in that no mention is made of the pathology of asthma. This is because the pathology is not understood. We do not know exactly in what portion of the system the trouble lies, but the idea seems to be that we must blame the respiratory centre in the medulla.

The contributing etiological conditions are as numerous as the ills that man is heir to. Hare divides them into mechanical, chemical and reflex, and cites, especially, goitre, aneurism, foreign bodies, dusts, diseases of the vertebræ, of the heart and of the lungs, nose, etc.; certain renal and gastric conditions; certain odors, places, foods, sights, emotions, such as fear or anger. Elsewhere, we find enumerations of contributing factors filling closely printed pages too numerous to even epitomize. And, finally, it is said that there are many cases of asthma for which no cause of any sort has been found. This has been called "essential asthma," which is, to my mind, in this connection, a barren phrase and means nothing.

In asthma uncomplicated by any other disease of the heart or lungs, there is in the beginning,

*Read before the Richmond Academy of Medicine, and Surgery, March 28, 1905.

no constant pathologic condition. During the attack itself, several important points manifest themselves. In the bronchial tubes of even the smallest caliber, muscle fibres are to be found. The idea that there is a spasm of these fibres has been advocated and rejected by equally competent observers. The former seem to have the upper hand at present. The idea that the difficulty is, to some extent, due to an hyperemia of the lining of the smaller tubes is now generally accepted. But these two conditions may both be present and cause intense dyspnea without a typical asthmatic seizure. Indeed, death may have resulted from one or both of them, and there has been none of the peculiar expiratory difficulty that belongs to asthma. So, as Lebert has said, it is necessary to invoke the action of the diaphragm as well as of other muscles of respiration, besides those of the tubes, to properly explain an asthmatic paroxysm.

Among the other interesting pathological conditions should be mentioned a dilatation of the air cells, a large number of eosinophiles in the sputum as well as the mucous lining of the whole respiratory tract, the presence of the Charcot-Leydon crystals and Curschmann's spirals. A very similar crystal is found in the semen and in the blood and marrow in lenkemia. I have been unable to find mention of the spirals in connection with any other disease, though there is a somewhat similar appearance in keratitis.

It is believed now that the material of which the spirals are composed is not to be confused with that present in a simple catarrh nor a fibrinous bronchitis, but is of a specific nature. Many ingenious explanations of the peculiar and characteristic shapes this secretion takes have been offered. Osler suggests that the currents of air produced by the ciliated epithelium may be rotary. Some one else has advanced the very plausible idea that the terminal branches of the whole bronchial tree normally end in spirals, arguing that in the distension of the lungs in inspiration, the bronchi must, of course, follow the distension; and it is hard to imagine that the bronchi as long straight tubes distend longitudinally.

No one who has ever seen an asthmatic paroxysm is at loss to give a description thereof. There is, frequently, a premonitory sensation of some sort, but, generally, the patient is roused from a sound sleep by a sudden air hunger. We find him sitting or standing, unable to lie down, complaining of suffocation, his breathing labored, not increased in frequency but distinguished by a peculiar long drawn out, audible, whistling expiratory sound, his face cyanosed and covered with perspiration. We note an immobility of the whole chest and abdomen, and a marked prominence of the auxiliary muscles of respiration. A woman in the acme of her labor scarcely presents a more pitiful picture.

So much for a general description of an ordinary attack. Of course, there are many variations of and departures from this; and inexplicable nervous seizures in children, as well as adults, have, after many repetitions with gradually increasing respiratory difficulty, and the presence of eosinophiles, spirals and crystals, been recognized as asthma. I may mention just here, that of two hundred and twenty-five cases reported by Hyde Salter, the disease began before the tenth year in nearly one-third of the number.

The physical signs of an asthma are as follows: Inspection reveals the peculiar posture, the cyanosed appearance, the free sweating, the dyspnea, the number of respirations not increased, often diminished on account of the prolonged expiration which may be three or four times as long as inspiration. We note the convulsive contraction of the auxiliary muscles of expiration. Palpation reveals an increased fremitus. Percussion gives a somewhat higher pitched note. We find a downward displacement of the liver, a diminished cardiac dullness and limited excursions of the borders of the lungs. Auscultation gives sonorous and sibilant rales, and towards the end of the attack, moist rales as well. Of course, these signs are only present during the attack. After it is over, there are no physical signs. Indeed,there is nothing the matter except possibly, an hyperirritability of the respiratory centre.

The diagnosis is to be made from other forms of dyspnea by means of five features, namely, the fact that the attacks are *intermittent,* the fact that the difficulty is chiefly *expiratory,* the presence of *eosinophiles* in large numbers, the Curschmann's *spirals* and Charcot-Leydon *crystals.* Careful records of clinical symptoms and use of the microscope make an error almost impossible.

The treatment must be discussed under two distinct heads: *First,* that of the paroxysm, then that of the interval. It is alike in the one par-

ticular that in both we must take a shot at the cause immediately. For example, an attack whose contributing feature is indigestion, may be brought to a sudden happy end by an emetic; and repeated attacks caused by adenoids may be forever arrested by their removal.

During the paroxysm, morphine is our sheet anchor. Chloral hydrate is highly recommended, also amyl nitrite, atropin, inhalations of chloroform and ether, bromides in large doses, inhalation of turpentine, carbolic acid or pyridin, smoking cigarettes of stramonium, inhalation of the vapor of burning nitre paper, the vapor of warm water. Heroin has a number of ardent advocates, as have the coal tar preparations, paraldehyde, nitroglycerine, tobacco in those unaccustomed to it or a dose of Dover's powder.

The treatment of the interval depends entirely on finding and removing the cause, which cause frequently needs the attention of a specialist. The general practitioner must use some discretion in selecting his consultant, and sometimes, turn from a specialist in one line to one in some other. The ever-so-skilful work of a rhinologist can be of little service when the contributing factor is an uterine polyp. Nor can the scrapings and repairs of a gynæcologist be curative when a nasal septum needs straightening. Find the irritated focus that sends the stimulus to the medulla, relieve the difficulty there, and all will be well. Very simple remedial measures may prove curative: A gentle purgative repeated from time to time, restriction of the diet to easily assimilable foods and only moderate quantities of these. Change of locality is to be emphasized, especially, a trip to the seashore, the good effects of the sea air being attributable to its density, large amount of moisture and freedom from dust. Certain climates are especially beneficial—in this country, Florida and lower California, and in selected cases, the high altitudes of Colorado.

Of the drugs used in the intervals, iodide of potash is most popular. It is given in small doses and increased to the point of tolerance. The tincture of belladonna may be tried, given in ten minims doses for a long time. All of the bitter tonics are beneficial; the alteratives also, especially quinine and mercury. I think arsenic may be said to rank next to iodide of potash in popularity.

In conclusion, I must apologize for lack of originality and new material in this paper. I have searched with a fair degree of diligence, and have found that but little progress has been made in the treatment of asthma for many years.

932 *Park Avenue.*

CASE OF MULTIPLE PERFORATIONS OF STOMACH, MESENTERY AND INTESTINES, WITH RECOVERY.

By JOHN EGERTON CANNADAY, M. D., Paint Creek, W. Va.

Charles Scott; race, Ethiopian; nativity, Pittsburg, Pa.; age, 17 years; occupation, hobo; a lithe and wiry youngster of comparatively slight build; height, five feet three inches; weight, about one hundred and five pounds; dark skinned, having a slight admixture of white blood, nervous, irritable temperament, entered the hospital September 5th, 1904, at 4:30 P. M. Was in a state of severe shock, hæmatemesis, cold extremities, profuse cold perspiration, temperature 95 2-5° F., pulse 120, respiration 38. Evidently suffering from severe internal hemorrhage. Was stealing a ride on a freight train when he was shot with, probably a thirty-eight calibre pistol, by a man standing on the same car two feet from him. This happened at 3 o'clock P. M. The freight conductor brought his patient on to our station, where he was admitted to the hospital. A warm sponge bath was given him, patient wrapped in blankets, hot water bottles applied, strychnia 1-30 grain and adrenalin minims v. were given hypodermatically. Patient was taken to the operating room at 6:30 P. M. As his condition was very bad he was given 1000 c. c. of normal saline solution by hypodermoclysis, simultaneously with the administration of the anæsthetic (chloroform) and the performance of the operation.

Assisted by my colleague, Dr. J. H. Hansford, I opened the abdomen in the median line, extending the incision from a point just below the ensiform cartilage nearly to the umbilicus. The abdomen was found to be filled with blood from a very profuse hemorrhage resulting from an injury to a large artery of the mesentery.

The ball entered in the lower outer quadrant of the epigastrium, just below the liver line. Entered the stomach near the pyloric end, ranged downward and emerged at a point 5¼

c. m from the place of entrance, did not injure the transverse colon, then passed through several knuckles of the jejunum and ilium, making eight perforations of the small bowel, some of them being of the "keyhole" character had nearly severed the continuity of the bowel; fortunately the mesenteric border of the intestine had not been injured in a single instance. Although the intestinal wounds were near each other and two of them were as much as 1.8 c. m. across, it was decided to suture each one separately rather than resect the gut. Then the ball passed through the left upper portion of the umbilical region, afterwards into the left lumbar division, emerging a short distance above the anterior superior spine of the ilium. In addition to the intestinal wounds there were three complete perforations of the mesentery at points about midway between the visceral and parietal attachments, the ball passing through one fold and cutting off an angle of another.

The perforations of the stomach, mesentery and small intestine were each closed in turn with fine silk. In this work I used a highly curved round needle having no cutting edges, and pierced all the coats of the gut.

The peritoneal toilet was made by thoroughly removing all blood and fecal matter by copiously flushing the cavity with warm saline solution, some of which was left behind when the abdominal wall was closed. The external bullet wounds were carefully cleansed.

The incision in the abdominal parieties was closed without drainage by silk and silkworm gut sutures, fine silk for peritoneum, mattress sutures of silk for fascia, tension sutures of silkworm gut for fascia, muscles and skin, and button hole stitches of silk for the skin approximation.

The patient was so seriously shocked that but a small amount of chloroform was administered, and hence he soon regained consciousness. As the patient was very restless and in great pain ¼ grain morphia with atropia was given. Temperature continued subnormal, blood pressure low, pulse rapid from 130 to 140, respiration shallow, stimulation had to be kept up throughout that night and most of the ensuing day. Two enemata, each containing two ounces of hot whiskey and six ounces of normal saline solution, were given during the night. Adrenalin was administered hypodermatically every three hours in four minim amounts well diluted with saline solution, alternating with strychnia, grain 1-30, every four hours. Patient remained hard to control, having only an occasional nap of a few minutes. When the stage of shock had passed adrenalin was discontinued and the strychnia kept up with fewer doses. Nutritive enemata of peptone two ounces, saline solution four ounces were given at six hour intervals, while saline solution enemata were administered every three hours, and oftener when needed to relieve thirst. The first period of convalescence was stormy. The second day the temperature ranged from 101½° F. to 102 3-5° F., pulse keeping above 130, respiration varying from 34 to 50. The kidneys were active, plenty of urine being voided. Patient was delirious at intervals and suffered from paroxysms of severe abdominal pain. Fourth day the temperature declined, pulse and respiration improved. The rectum became irritable from the continued introduction of nutrient enemata, these were for a time discontinued, later given twice daily. There was a considerable discharge of bloody mucus from the rectum and even the saline injections were retained with difficulty unless a small amount of tincture of opium was added. The sixth day the patient was allowed water by mouth for the first time in one ounce amounts. The seventh day peptone was added in two ounce doses every three hours. The temperature, which had been quite irregular, dropped at once to normal and remained so. The ninth day semi-solid articles were added to the diet and the external stitches were removed. Healing was *per primam*. The twelfth day the patient sat up, and at the end of the fourth week left the hospital.

The points I would emphasize in this case are the value of: First, appropriate stimulation, saline solution by transfusion or by rectum to make up the lost content of blood, to relieve thirst, and promote kidney activity; adrenalin to raise blood pressure and give tone to the vascular system in conditions of shock; whiskey and strychnia as general stimulants. Nitroglycerine, I believe, to be a dangerous drug in shock; as it dilates the blood vessels, it is but fair to presume that it increases the pathological entities that go to the making of the condition called shock. Second, total and absolute rest for the perforated and sutured bowel until healing has so progressed as to be beyond the possibility of the danger of leakage. And last, but most important, early surgical aid in these cases.

THE CONTRACT DOCTOR.*

By GEORGE A. HOGAN, B. S., M. D., Bessemer, Ala.

This subject is so broad that it would be inexpedient to discuss its pros and cons. I might tell you of companies which collect one thousand dollars per month, and employ physicians at three hundred dollars per month, who are to furnish medicines, surgical dressings and appliances, etc.; I might tell you of corporations that charge ten per cent. for collecting stoppages for the physician in charge; and I might tell you of companies which turn over the full amount to the physician, charging no percentage for collecting.

It has occurred to the writer that there should be general laws enacted regulating the contract work, one of which might be the forcing of companies to turn over to the physician in charge the full amount collected for his services; for he subserves a two-fold purpose. He attends to the illnesses of families, and to accidents that may happen outside of the works, for the money the employee pays through the office—commonly designated "Doctor's Stoppages." And on the other hand, he looks after the accidents that happen in the works for the company. This is gratis, or *vice versa*.

We have regular and irregular contract doctors. We will arbitrarily call those "regular" who are employed by the company, or men, as the case may be, and who receive the amount in full, collected for medical and surgical purposes. The irregular contract doctors are those who work for salaries less than the amount of "doctor's stoppages"; those who permit the company to charge a percentage for collecting from the men employed; and those who use the list. An example of the last is the doctor who will take one or more men, working for different enterprises, at one dollar per month, if married, and seventy-five cents if single. There are as many classes of irregular contract doctors as there are varieties of eczema. To give one more in passing: We have the physician who will take families indiscriminately at one dollar per month. Then they make monthly visits to see if all are well, leave a few pills, and possibly, though not probably, collect the all-important dollar.

How to do contract work in locations or camps will be considered more particularly.

The contract system of practicing medicine is not confined entirely to our own country, as it has been in vogue for many years throughout the mining districts of England, Scotland and Wales. It is here to stay, and it should be of paramount interest and vital importance to the doctors engaged in this work to learn how to do it systematically, scientifically and ethically.

To explain what is meant by doing contract work *systematically* will be attempted by telling you in a simple way our every-day work. The Tennessee Coal, Iron & Railroad Co. has recently put in operation two hospitals in their ore-mining district at Fossil and Readers. This system was introduced into the Birmingham district by the present officials of this company, they bringing it from Minnesota, where it has been found to be of the greatest value. That it is humane is already clearly and forcibly demonstrated. The system has not yet reached the degree of perfection desired by these gentlemen.

Readers is headquarters of this division, and here they have their main hospital and chief surgeon. These hospitals are commodious and up-to-date in every particular. The one at Readers will be described. It has white and colored wards, both general and private; white and colored reception rooms; consultation, drug, linen, dark, assistant and nurse rooms; laboratory, kitchen and dining room; laundry, janitor's quarters and furnace room. It is lighted by electricity, heated by steam, and supplied with pure spring water.

The company will furnish ambulance for the conveyance of sick or injured from the different mines and furnaces to the hospital. There will be lockers at the mines and furnaces, with combination that foremen will know, each of which will contain stretcher, blanket, a cord and splint. On the outside of the door of this locker will be instructions of how to stop hemorrhage, how to apply splint to fractured limb, and also where to find physician.

The accident cases are received in the wash room, where they are thoroughly scrubbed all over, and then taken into the operating room, adjoining. These rooms have tiled floors and wainscoting—every facility for aseptic work. The hospital is constructed and arranged for doing general and accident work by the most improved methods. It is furnished jointly by the company and the surgeon in charge.

The company collects seventy-five cents per month from every one employed who come

*Read before the session of the Medical Association of the State of Alabama, April, 1905.

under the care of the hospital. This is known as the "flat rate." The "flat rate" might meet with some opposition on the part of the unmarried in the begining, but when it is demonstrated to them that they are in need of the hospital services in case of accident or sickness more than the married, or those with families, they will cease their rebellious spirit and be one of your staunchest supporters. There is no percentage charged for collecting this money; the amount is turned over to the surgeon in charge and he pays the running expenses of hospital, assistants, etc. It is needless to say that to be successful in establishing these innovations you must have the support of the company.

Office hours are from 8 to 9 A. M.; 1 to 2 and 7 to 8 P. M. The people are encouraged in the beginning to leave calls at morning office hours—this is compulsory after you have become established. Prescriptions that the physician may leave on his morning rounds are brought in to be filled at the 1 to 2 office hour. The 7 to 8 office hour is more especially for the convenience of the men working. It is the rule not to wait on any one between office hours, unless, of course, it be a case that demands immediate attention. There are no extra charges for anything except venereal diseases, obstetrics, and injuries resulting from fights.

With this description given, does it appear to you that contract work can be done *scientifically?* It is true that specialism is growing, and that one has innate aversion to the multiplicity. Yet, when we reflect upon the vastness of the natural resources of our country, the diversity of the methods employed and utilized to develop, manufacture, and render commercial these resources, we are not surprised that this calls for men trained to do one thing. Efficiency, expediency and reliability are the accomplishments desired and obtained by the specialist. What is good and done by the commercial world is practiced and found to be none the less indispensable in the medical.

You must not imagine that the contract doctor does one thing, and that he does it well. Far from it. His work is somewhat in line with the Medical Department of the Army. He is sanitary and health officer, surgeon, pharmacist, and also what we are familiarly called, "Doc." If training be one of the essentials in the army medical service, why not in the contract system? Specialism is not practiced per se, but this kind of work needs training before one can begin to practice efficiently and satsifactorily. One can know the responsibilities and dilemmas of a contract doctor only by doing the work.

The ideal has not been reached. Medicine is a progressive science and the results obtained and the means used are as fundamental and as exact truths as gravitation, chemism, and the indestructibility of matter. Yet we are prone to be over anxious, and to embrace new ideas and become faddists. It is not difficult to adopt what is good and reject what is bad, at the same time not falling in with the extremes which necessitate constant changing. "Prove all things; hold fast to that which is good" has not ceased to be wisdom. One must not be mentally fossilized, but possessed of sufficient enthusiasm to investigate before condemning. Be conservative even to the extent of acknowledging facts when demonstrated and proven. It takes more moral courage to be wrong and to say so than to be right and say nothing about it.

What is it, then, that will show the officials of companies the necessity of having well equipped hospitals and paid physicians? *Results* is the word that explains the whole thing in a nutshell. It is the keynote to success in any undertaking.

To have a place for everything and a time for doing your work is approaching improvement. Keep a good supply of drugs and dressings on hand—look over your stock every week. Believe that there is something the matter with every case that comes under your service until you prove otherwise. Give your patient a thorough examination if sick or well, and if the latter, he will not trouble you again unless he is sick, for your trouble becomes his. It is a fact that the more trouble you put a suspected well person to in your examinations the less you will be called on by him. By doing this you impress him with the importance and the business-like methods employed and he invariably sees his own folly. Endeavor to make a diagnosis before giving treatment.

Thus far, in a hap-hazard, clumsy, and casual way you have heard the system, and the science, if you please, of doing contract practice. This leads up to the last and most important phase of the subject—*the ethics;* most important, for it is just here that one will rise or fall, as the case may be, succeed or fail. That it is harder to be ethical in this work than in private practice goes without saying. You feel that you are paid to practice for friend and foe. And you are. But there is no excuse for not doing or being right.

If you are called to a case and you find that an outside doctor is treating it, tell the patient you cannot take charge, and then tell him what is proper. It is true that it takes time, and that you will become worried in repeating the same old story over and over, but you will find the people eager to learn, and more than willing to do what is right. Again, if you are treating a case, and you find that another physician is also treating it, do not become offended, but tell the patient what is proper, and have nothing further to do with this particular sickness unless the other physician is properly informed. Watch your patients, and if you find just reason, ask them for consultation before they do you—anticipate them. In either case get the physician they choose. "The laity and the profession alike have notions, maybe right or wrong. They will practice their individual conception of right or wrong, in spite of any and all of our efforts to the contrary, and we gain less rapidly when our sense of independence and personal importance runs against theirs. It is a great thing to be able to say to the misbehaving patient, and say it gently, 'Of that if you do omit them, not I, but you, take the responsibility.' Say that and see how quickly the moral atmosphere will change."

Analyses, Selections, Etc.

Another Anti-Vaccination Lie Nailed.

An item has been going the rounds of the press relative to the death of William Taylor, a child, at Port Huron, alleging that "the parents believe that his death was caused by vaccination." But an official report to the Secretary of the State Board of Health clearly proves that the alleged belief had no foundation in fact. A short time after vaccination the child was taken sick with bowel trouble, and had no medical attendance, the parents being Christian Scientists. After the death of the child the coroner called in a reputable physician and found the vaccinated arm, aside from a small scar, was exactly the same as the other, and showed no sign of having been inflamed. The physician and the coroner came to the conclusion that the child died of entero-colitis. It appears that the parents belong to a sect whose members do not believe in vaccination, nor in calling a physician, and undoubtedly would have been pleased to have had the death recorded as due to vaccination, especially as otherwise there is a suspicion as to the effect of the lack of proper medical attendance for the relief of the inflammation of the bowels.—*Nashville Jour. Med and Surg.*

Bromide Poisoning.

Dr. C. C. Stockard, resident physician to Halcyon Retreat, of Atlanta, presented a paper before the recent meeting of the Georgia State Medical Association on the subject, based on a number of cases coming to him during the past few years—the most of them not having been properly diagnosed. Some of them resulted from efforts to get release from morphine habit, two ounces or more of the bromide of soda having been taken in 48 hours. One case resulted in a two weeks' sleep which was followed by three weeks of insanity—after taking the drug for several days and a final dose of nearly one ounce. Other cases resulted from the same freedom being given patients as to amounts and intervals between doses, while still others resulted from the prevalent idea among the laity that "bromides" is a very simple and harmless remedy. Taken thus freely, and sometimes in smaller doses, because of idiosyncrasy, in a few days toxic effects develope, the more pronounced symptoms being muscular weakness, drowsiness, heavily furred tongue, foul smelling and metallic breath, followed by sleep lasting from two days to two weeks, and this succeeded by mental derangement, hallucinations of persecution being common. At this stage the condition resembles somewhat delirium tremens and has been mistaken for it. All the cases seen recovered except one, this case going into a coma soon after reaching the sanatorium and never regained consciousness.

Commitment of the Insane.

Dr. M. L. Graves, Superintendent Southern Insane Asylum, San Antonio, Texas, in an address before the medical department of University of Texas, March 24, in speaking of the lunacy laws, makes some very suggestive remarks (*Tex. Med. Jour.*, April, 1905,) applicable to a few other States as well as Texas. We cling to ancient and obsolete practices, maintaining a custom designed when lunacy was re-

garded a crime and not a disease. Criminal methods of procedure are followed in the apprehension, trial and commitment of insane to hospitals.

What justification can be made for such a course? How like a criminal procedure throughout! A warrant directed to a sheriff, who goes armed with a six-shooter and handcuffs, as if they were necessary, and who seeks to arrest the victim of disease, and drags him to the county jail, and there incarcerates him, with felons of every description, until the day of his trial before a jury, and is then actually *prosecuted by a lawyer for being sick in mind!* When sentence is passed upon him, he is returned to jail, awaiting his transfer by the armed sheriff to a hospital purporting to be for the sick! What absurdity! What outrage! What would the people of the State think if law empanelled a jury to try patients for typhoid fever, pneumonia or pleurisy, and direct the armed sheriff to take the patient to a hospital?

Why any trial, any jury or any sheriff? Why any court scene at the home or the court house? It is all unnecessary, expensive, unjust and offensive. It neither safeguards the rights of patients nor protects the public. Recognizing insanity as a disease, let the committal to hospitals be by certification of competent medical men, who examine the patient, and make proper affidavit before the county judge, who may then summon any other evidence thought necessary, and let the patient be ordered to a hospital in a humane way without public *trial* of any kind. Exceptions could be made of criminal cases, or of those whose property rights are endangered, or where serious family difficulties may occur, or where contentious persons demand a trial—in which event, the law could be made optional, not mandatory.

When crime has been committed by a person actually diseased of mind, it is wrong to punish such person as a criminal; and every fair-minded man should be willing to give this plea fair consideration—always safeguarding the public safety. The speaker's experience of six years among the insane has given him observation of only two cases when the plea of insanity was a distinct dodge, but in neither case did the criminal escape just punishment. In fact, more who are actually insane, and commit crime under the dominance of an insane delusion, are convicted with never the thought of a plea of insanity as a defence than there are parties who escape just punishment upon the impostor's plea of insanity.

As to insane criminals, Dr. Graves advocates that all insane criminals and criminal insane who plead insanity as a defence for such major crimes as homicide, rape, etc., upon due proof of insanity, should be committed to an insane hospital for not less than five years, and then released only upon certification by the hospital authorities, attesting the full recovery of the patient, and recommending his discharge, to be filed with the Governor of the State, and to receive his approval before the patient is released.

A better plan would be a written certificate from a commission composed of all the asylum superintendents of the State, who shall familiarize themselves with the case, and finally, upon the recommendation of the superintendent in whose care the criminal insane may be, make a final examination, and certify in writing to the Governor as above. Their judgment should be unanimous, and their recommendation without any restriction on the Governor.

This course, while protecting public safety, will prevent fraudulent cases from seeking to evade the law by pleas of insanity in all minor criminal cases; and in the major cases, it will present so many obstacles to success, and so much certainty of failure to the impostor that it will be rarely sought; and it is safe to add that very few criminals will escape the just penalty of the law.

It is a growing conviction that the criminal insane and insane criminal should not be permitted to occupy institutions with the ordinary insane, who have no criminal habits or instincts. It is unjust to the latter, demoralizing to their good order, and destructive to their peace and enjoyments; furthermore, it requires stronger restraint, more secure provision, and much greater restriction of liberty and personal privilege. A few criminal cases will restrict the liberty and interfere with good order and discipline of an entire ward or a whole institution.

Under such circumstances, an institution will have to be established for the class criminal insane and insane criminals spoken of. In the meantime, a separate and stronger pavilion with a large force of employees and greater security in every way can be erected at one of the present State institutions, and all insane criminals from penitentiaries and jails, and all insane who develop criminal and dangerous habits in the insane hospitals should be confined therein.

Provision should also be made to accommodate all epileptics of every class and character, and they should not longer be tolerated in an asylum proper. With the segregation of the criminals and the epileptics, and the isolation of the tuberculous, our hospitals for the insane would take on a larger liberty, and more beneficent results would be immediately appreciable.

Treatment of Menstrual Disorders, Especially with Mental Disorders.

Dr. George S. Walker, in charge of Female Department, Western State Hospital, Staunton, Va., says (*Brooklyn Med. Jour.*) that the connective between menstrual disorders and disorders of the brain and nervous system has long been recognized. Amenorrhea is not infrequently met with in the insane. The importance of correcting any such disorder is shown by the fact that improvement of the menstrual function in many instances leads to marked amelioration in mentality. These cases need a safe and efficient emmenagogue, without either exciting or depressing the patient, etc. Apiol, the active principle of apium petroselinum (parsley) has long been known to possess marked emmenagogue properties. But apiol of the markets of this country is full of impurities, and bad after effects are due to these impure elements. It is only within the last few years that chemists obtained a pure product. The preparation which contains the purpest product of apiol obtainable is ergo-apiol (Smith)—a liquid dispensed in gelatine capsules—which also contains ergot of rye, oil of savin and aloin. Dr. Walker reports several cases in which the most gratifying results followed the use of this preparation. One or two capsules, three times daily, beginning a little before the menstrual period, and continuing their administration through the period has proven the most efficient, prompt and safest emmenagogue that he has ever employed.

Important Discovery in Destruction of Disease Germs in Water.

The necessity of finding some cheap, practical method of preventing or removing algal contamination of cress beds led the U. S. Department of Agriculture to investigate the matter. The first experiments in 1901 were so successful that Congress granted authority "to study and find methods for preventing algal and other contaminations of water supplies." The Bureau of Plant Industry has annually reported the progress of the investigation. Though the work is not yet completed, the results obtained have been published for boards of health and officers in charge of public water supplies.

Dr. Moore and Mr. Kellerman, in charge of this work, have shown that it is entirely practicable cheaply and quickly to destroy objectionable algæ in small lakes, ponds, storage reservoirs, and other similar bodies of water, by the use of *extremely dilute solutions of copper sulphate or of metallic copper.* The fact that an extremely dilute solution (one to one hundred thousand) will *also destroy the most virulent typhoid and cholera bacteria* at ordinary temperatures in three hours is of great importance and significance. Solutions of copper as dilute as this are not considered injurious to man or other animals. The value of copper, especially colloidal, in preventing or treating typhoid and other related diseases should be carefully investigated by competent pathologists.

The investigators state that, so far as bacterial contamination of water is concerned, the methods proposed are not to take the place of, but are simply to supplement the standard methods of filtration; neither can too much stress be laid upon the importance of using boiled water for drinking purposes when taken from a contaminated source.

Upon application to the Department of Agriculture by proper authorities, information and assistance will be furnished in determining the organisms causing the trouble in cases of algal pollution, and the proper treatment will be recommended.

The following are *conclusions* drawn by investigators:

The disagreeable odors and tastes so often present in drinking water are due almost exclusively to algæ, although the economic importance of studying these plants has not been recognized until recent years.

These algal forms are widely distributed, and reservoirs in many States have been rendered unfit for use by their presence.

The methods now known for preventing or removing the odors and tastes caused by algæ have proved unsatisfactory, either because of prohibitive expense or failure to accomplish result. It is therefore desirable that some new, cheap, harmless, and effective method be devised for ridding reservoirs of these pests.

It has been found that copper sulphate in a

dilution so great as to be colorless, tasteless and harmless to man, is sufficient toxic to the algæ to destroy or prevent their appearance.

The mode of application makes this method applicable to reservoirs of all kinds, pleasure ponds and lakes, fish ponds, oyster beds, watercress beds, etc. It is also probable that the method can be *used for* the destruction of mosquito larvæ.

At ordinary temperatures, 1 part of copper sulphate to 100,000 parts of water destroys typhoid and cholera germs in three to four hours. The ease with which the sulphate can then be eliminated from the water seems to offer a practical method of sterilizing large bodies of water.

The use of copper sulphate for the prevention of disease is regarded as incidental, and is not designed in any way to supplant efficient preventive measures now in use. It is believed, however, that, up to this time, no such satisfactory means of thoroughly, rapidly and cheaply sterilizing a reservoir has been known. Since the selective toxicity of copper sulphate renders it fatal to pathogenic forms peculiar to water, while the saprophytic or beneficial bacteria are unaffected, the method is particularly well adapted for this purpose.

Definite knowledge in regard to what organisms are present, the constitution of the water, its temperature and other important facts are necessary before it is possible to determine the proper amount of copper sulphate to be added. A microscopical examination thus becomes as important as a bacteriological or chemical analysis.

No rule for determining the amount of copper sulphate to be added can be given. Each body of water must be treated in the light of its special conditions.

The cost of material for exterminating algæ will not exceed 50 to 60 cents per million gallons, and will usually be less. The destruction of pathogenic bacteria requires an expenditure of from $5 to $8 per million gallons—not including the cost of labor.—*Scientific Amer.*, March 18, 1905.

Limitations of the Value of Nitroglycerin as a Therapeutic Agent.

Dr. H. P. Loomis has tested the effect of this drug on arterial pressure in patients by means of the sphygmanometer, and also in animals, and finds that high arterial pressure in man is not perceptibly affected by it nor is dilatation of the blood vessels apparent. Some of the conclusions reached are as follows: The usual dose of nitroglycerin of 1-100 grain is too small to produce any effect in pathological conditions; 1-50 grain is a minimum dose. It is a perfectly safe drug to use. Even in large and repeated doses the author has never seen any ill effects. Its effects are very transient, as shown by the experiments on the dogs, and the ordinary dose of 1-100 grain every four hours could not possibly have any effect on the arteries. Nitroglycerin is said to increase the quantity of urine in chronic Bright's disease, but after keeping accurate records of the daily amount of urine passed, the author was never able to satisfy himself that any increase seen was due to this drug. In conditions due to arterial spasms, so-called, such as angina pectoris, migraine, asthma, nitroglycerin may be of benefit, in full doses often repeated, but not in arterial sclerosis where the arteries themselves are more or less changed.—*Med. Rec.*, March 18, 1905.

Book Notices.

International Medical Annual, 1905. New York: E. B. Treat & Co. Cloth. Small 8vo. Pp. 844. $3.

This 23d *Year Book of Treatment and Practitioners' Index* commences a new series, with larger pages than its predecessors, and yet without increase in price. About 35 specially-selected contributors have done the compiling from the medical literature of 1904, and this work has been done so well—so concisely and yet so satisfactorily—that the practitioner of medicine or surgery, or of the different specialties will regard the book, after examination, as one of the most valuable additions to his library for frequent reference to point out true advances. So much new and valuable fact with reference especially to tropical diseases has been brought out that the selections on these subjects would reward the professional purchaser. While it is not usual for such a book to be read *serialim*, but rather to be used as a reference work, the systematic page-by-page reading will give many new ideas, and afford very general and profitable instruction to the doctor. This is a very valuable annual for the practitioner,

well gotten up and well indexed, and is a cheap book for the price charged.

Thoughts for the Occasion—*Fraternal and Benevolent.* Compiled by FRANKLIN NOBLE, D. D., Editor of *Treasury Magazine.* New York: E. B. Treat & Co. 1905. Cloth. 12mo. Pp. 576. $2.

Fraternal orders are so numerous and so popular that the ordinary man scarcely knows even the names of half of those now existing and prospering. The title of this book, however, but poorly describes its purpose. An historical sketch of each of the orders or fraternities is given, detailing their purpose; also a number of addresses delivered before the bodies, and some editorials or journal articles about most of them. We do not see, however, that one called on now to deliver an address on any special occasion before one of these orders would derive any special assistance, suited to the new occasion, from a perusal of the addresses or excerpts published, but the orator would find many facts historical about these fraternities or orders which would afford food for thought.

Text-Book of the Practice of Medicine. By HOBART AMORY HARE, M. D., B. Sc., Professor of Therapeutics and Materia Medica, Jefferson Medical College, Philadelphia; Physician to Jefferson Medical College Hospital, etc. *Illustrated with* 129 *Engravings and* 10 *Plates in Colors and Monochrome.* Lea Brothers & Co., Philadelphia and New York. 1905. 8vo. Pp. 1120. Cloth $5, *net;* leather $6, *net;* half morocco $6.50, *net.*

The author's other works—one on *Practical Diagnosis* and the other on *Practical Therapeutics*—have established him as a writer worthy of full recognition. His training as a physician and teacher in hospital wards, and his acquaintance with the needs of the student and practitioner well qualify him for the task he has assumed in the issue of text-book on the practice of medicine. The fulness of illustrations in order the better to explain the text gives a special value to a work of this scope. The arrangement of his work is very much like other standard text-books of the day—beginning directly with the individual infectious diseases, and ending with functional nervous diseases. We cannot get over the idea that all such books should have a beginning chapter in which, in a popular way at least, the *principles* of practice are set forth, and certain general conditions are described, such as inflammation, septicæmia, fever, etc. True, these things are described in full in other works. But go over the libraries of *practitioners,* and see how relatively few up-to-date books there are on pathology, bacteriology, etc. The *practitioner* is thus weaned from the studies of the *principles* of medicine. Taking the book before us, as we find it, however, the effort *to be practical and useful to the doctor* in the presence of disease is a prominent characteristic throughout. While the author's definitions and descriptions of special diseases are fully the equal of other standard books, special value attaches to the work in that so great clearness is given to the clinical and differential diagnoses of diseases, and to the fullness of therapeutic advice. Dr. Hare secured the services of Prof. William Pickett to prepare the chapter on Diseases of the Nervous; and Surgeon U. S. A., Dr. Charles F. Kieffer, prepared the chapter on tropical diseases, as he has seen service in the Philippines and other places where such diseases are prevalent. A good deal of such matter is included in this work, which helps to give a large demand for the book. It is an excellent text-book on medicine, and will no doubt have a rapid sale.

Diseases of the Heart and Aorta. By THOMAS E. SATTERTHWAITE, M. D., Professor of Medicine in New York Post Graduate Medical School, etc. E. R. Pelton, New York. 1905. Cloth. 8vo. Pp. 304.

This book is the one for practitioners interested in heart diseases. Its style is plain, its descriptions good, and the line of therapy advised is practical and in accordance with the more advanced developments of the day. While the X-ray, Cook's modification of the Riva Rocci sphygmanometer, etc., are all used in diagnosis, still the author, in recognition of the fact that such instruments are not in the hands of most doctors, gives special attention to the diagnostic signs and symptoms which may be recognized without such appliances. The Nanheim methods in chronic heart diseases, with American adaptations are clearly given and the beneficial results noted. Much space is given also to other modern methods of treatment. The author presumes the reader has a fair knowledge of the anatomy of the heart and its adnexa, and but little space is given to surgery of the heart and aorta, as this subject would naturally be looked up in surgical books, although paracentesis pericardii is described. A careful and interested reading of the book leads us specially to recommend it for the uses of the general practitioner.

American Alkalometry. *Vol. IV. A Digest of Clinical Teachings* 1902-3. Editors: W. C. ABBOTT, M. D., and W. F. WAUGH, M. D. Chicago. Cloth. 8vo. Pp. 742.

This is a curious book, without preface to indicate its purpose, and filled with matter that may be spoken of as "good, bad and indifferent." It would seem to be for the most part a compilation from a scrap book, without sufficient system in the arrangement of the material at hand to supply the needs of the reader. For instance we notice in this volume such hieroglphics as B. U. T., which further reading shows that they refer to somebody's "uterine tonic," but the composition of which we have not found stated, nor is it indexed. Too many of the papers published are of the "gushing," off-hand type and by irresponsible writers, who rush to print with a single observation or two, not studied from a scientific standpoint. This book's advocacy of the use of alkaloids of drugs instead of crude preparations—so far as they have been separated and their effects studied, physiologically and therapeutically—is strong and convincing; and the same may be said of certain other parts of the work. But it needs more systematic cullings and better arrangement of the material included in its pages, and a better *Index.*

Practical Medicine Series of Year Books. 1905. General Editorial charge of GUSTAVUS P. HEAD, M. D., Professor Laryngology and Rhinology, Chicago Post Graduate Medical School.

This *Series* comprises ten volumes on the year's progress in medicine and surgery, of uniform 12 mo. size, bound in cloth—the price of which series—if paid in advance—is $5.50; but if bought separately, each volume has its own price varying from $1 to $1.50. The Year Book Publishers of Chicago are the publishers. Each volume has its specially selected editor or editors.

Volume I on *General Medicine* is edited by Frank Billings, M. S., M. D., head of Medical Department, and Dean of Faculty of Rush Medical College, Chicago, and J. H. Salisbury, M. D., Professor of Medicine, Chicago Clinical School. Including the *Index,* it has 347 pages and the price of this volume, if bought alone, is $1. It reviews the literature of general medicine of 1904, in a condensed form, and yet full enough to convey the meaning of the authors. Examination of this book marks advances during the past year concerning diseases of the respiratory, circulatory systems, of the blood and blood making organs. It notes many advances in general infections, parasitic and metabolic diseases; diseases of the kidneys and ductless glands.

Volume II on *General Surgery,* edited by Dr. John B. Murphy, Professor of Surgery, Northwestern University Medical School, etc., reviews advanced literature on every part of general surgery. These volumes are of greatest practical value to general practitioners.

International Clinics. *Vol. I. Fifteenth Series.* 1905. Edited by A. O. J. KELLY, A. M., M. D., Philadelphia. With the Collaboration of Twelve Leading Authors in the United States, Canada, Scotland, England, France, Germany, etc. Philadelphia and London. J. B. Lippincott Co. 1905. Cloth. 8vo. Pp. 312. $2.

The "quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, neurology, pediatrics, obstetrics," etc., fully maintains the standard of practical value to the practitioner established by former volumes. Every department of practice is covered by the articles and lectures of these *Clinics.* It is an excellent quarterly series for the doctor in general or special practice, and this volume especially gives in quantity and quality of material more than the price ordinarily can secure.

Editorial.

The Richmond Association for the Prevention of Tuberculosis

Was organized in this city, April 15, 1905, at a meeting of representatives from the Medical Society of Virginia, Richmond Academy of Medicine and Surgery, University College of Medicine, Medical College of Virginia, and the Associated Charities. Among those present were Drs. Henry Wireman Cook, M. D. Hoge, W. S. Gordon, Manfred Call, A. L. Gray, Ennion G. Williams, John P. Davidson, and Messrs. Robert Lancaster and Semms, and Miss Cabaniss. The stated objects of the Association are:

(a) To accumulate and systematize data, literature and general information concerning tuberculosis.

(b) To educate the public into a knowledge of the cause and nature of tuberculosis, the methods for its prevention and cure, and the present local conditions relating to that disease.

(c) To obtain the passage and enforcement of improved sanitary laws.

(d) To better the present deplorable condition of the tuberculous poor; to prevent the communication of their disease to others, and to cure those already attacked.

This subject had been only feebly agitated—if at all—in this locality until within the past six or twelve months, when it was largely through the efforts of Dr. Henry Wireman Cook that the great possibilities for good in the prevention of tuberculosis were urged by constant presentation of this question by resolutions, short talks, etc., along this line before both the State and local medical societies, and through his energy in interesting others. This Richmond Association is the first organization of its kind in Virginia. The benefits to be derived by a community through the active work of such a body are so apparent that concerted action by the doctors of every city should be taken to the end that consumption may be stamped out.

According to Dr. P. A. Irving, secretary of the Virginia State Board of Health, there are about 12,000 tubercular cases in Virginia—many of whom, under proper instruction and treatment, might be restored to health and strength, and be made bread winners instead of being consumers and sources of contagion. In Richmond for the year 1900—which would probably be an average year—there were 2,465 deaths from all causes. The number of deaths from consumption was 308, or about one out of every eight deaths. The onset of the disease is so insidious, that it is not until we meet with figures like these that we are made to realize the true value of prevention.

The use of the new dispensary of the University College of Medicine for the treatment exclusively of tuberculosis, as well as the co-operation of the general dispensary of that institution, were offered the Richmond Association through Dr. M. D. Hoge, while the co-operation of the dispensary of the Medical College of Virginia was tendered through the superintendent, Dr. Manfred Call. Miss Cabaniss offered the support and co-operation of the District Nurses' Association.

Several committees were formed. As the success of the undertaking depends in great part on a general recognition of the danger and the needs to the accomplishment of this great reform, it is the purpose of the membership committee to obtain as many members as possible in order that the people may feel a personal interest in the work. A finance committee will solicit and receive all fees, subscriptions and donations.

The library and publication committee will collect and systematize data and information relating to tuberculosis and its sanitary control, and shall endeavor to keep the question alive before the public, especially by three means—first, presenting to newspapers various phases of the question, either as short articles or notes of interest for editorial comment; second, to publish pamphlets for distribution concerning the nature of the disease and recognized methods for its cure and control; third, to have physicians or interested laymen or noted men from other cities to address public meetings, especially endeavoring to present the question to school teachers, labor unions and fraternal orders.

The legislative committee will attempt to interest the mayor and City Council in the passage of proper laws, relating to reporting and registration of cases of tuberculosis; to disinfection of premises occupied by tubercular cases; the provision of a city bacteriologist, who shall make free sputum examinations for indigent cases; to prevent promiscuous spitting; to accomplish the compulsory observance by tuberculous patients of proper measures to prevent the spread of the disease.

The sanitarium committee will work to obtain and control a farm or sanitarium outside the city for the care of early cases.

The hospital and dispensary committee shall obtain and control or use in connection with medical schools isolated accommodation, where advanced cases may be segregated so that they cease to become a focus of spreading infection; also a dispensary for treating ambulatory cases.

The visiting committee will employ nurses and inspectors or co-operate with the existing nursing system in order that cases which are reported to the Board of Health or registered at dispensaries, or returned from the hospital or farm, and which are not under the regular care and supervision of an attending physician, shall be visited and taught in their own homes proper methods of sanitation, and assisted in the means for carrying them out.

Sections of the State Medical Societies.

The number of papers announced in the programs of State Society sessions is annually increasing. Thus for the session of the Medical Association of Georgia, held this week at Atlanta, the titles of 66 papers are announced. For the Medical Association of Texas, to be held next week, 119 titles of papers are given in the official program. Other State Societies show like large numbers of titles in their respective official announcements. It is evident that it is impossible for any such number of papers to be read and discussed in general sessions within the two or three days allotted for each society meeting.

In the few State societies which still attempt to have all the papers on the official program presented in general session, we recognize failure—many of those so announced being read only by title. It is unnatural to suppose that authors of carefully studied manuscripts will long remain content at lack of opportunity to present the results of their work to audiences for which they were prepared. Annually, such papers are withdrawn from the publishing committees of societies in order that they may be more widely read in the journals than they would be if left for non-conspicuous position in the *Transactions* of societies.

In sympathy with the feelings of authors of specially prepared papers, and recognizing the general importance of measures adopted by other State Societies, the Executive Committee of the Medical Society of Virginia will recommend the creation of at least two sections—one of Medicine and one of Surgery—to begin to be operative at the Norfolk session next October, provided satisfactory local arrangements as to nearby halls can be made. Perhaps a third section to include certain specialties may be recommended. Such division into sections will very much relieve the usually congested scientific program, and will enable members interested, first, in a surgical paper, and then in a medical paper announced to go from one section room to the other.

Such a plan would in no way interfere with the general sessions of the whole Society where matters of general interest could be introduced and discussed. It would afford all members opportunity to express their views on any proposition and to act upon it in the old democratic way, and not surrender their votes to delegates who might not represent the majority opinion. The sections, of course, by the plan proposed, would have no authority to adopt a measure affecting the whole Society unless introduced as a resolution and voted on by the general session. The function of the sections would be simply to hear and discuss papers of scientific interest and importance.

Installation of President of University of Virginia.

No greater occasion in the educational line has ever occurred in Virginia than the ceremonies incident to the installation of Edwin Anderson Alderman, D. C., LL. D., as the first President of the University of Virginia, on April 13th. Distinguished representatives of the leading universities, colleges and schools from all parts of the United States were present; while the alumni and friends of the institution from all over the country crowded every available space in and about Charlottesville on that day in order that they might do honor to the occasion. Dr. Alderman is a North Carolinian by birth, and for some years past has been President of the Tulane University of New Orleans. Beside his marked ability, his advanced ideas of university education, his indomitable energy and persistent activity, he is a man of magnetic personality, and as a result we may safely predict for the University of Virginia even a grander record than it has ever yet furnished. Under the new regime, the University of Virginia is not in competition with any of the colleges or schools of the country, but rather seeks the opportunity to impart further education to the best of the graduates of these colleges and high schools.

All Insane Tubercular Cases in Virginia to Have Open Air Treatment—Also Colony Method for Treatment of Certain Quiet Insane.

The General Board of Directors of the State hospitals of Virginia have ordered all the tubercular cases in the Western and Eastern hospitals to be transferred, as early as practicable(to the Southwestern Hospital, at Marion, Va., and, together with the tubercular cases of that institution, given the "open air" treatment in canvas tents. A desirable location near the Southwestern Hospital will be selected for this purpose. This plan for caring for the consumptives in the hospitals for the insane has been

tried successfully at the Central State Hospital, Petersburg, for a year past. About fifty of such patients were comfortably cared for in tents all through the severe winter.

The board is also contemplating extending the colony method of caring for certain quiet cases of insane, it being both economical and efficient, as has been demonstrated at the hospital at Petersburg, which has in operation two such colonies. Training schools for nurses have been established at the hospitals at Williamsburg and Staunton, there already being one at the hospital at Marion.

Though somewhat crowded, all the white insane of the State are being cared for in the institutions for the white insane. The colored insane have ample provision at the Central State Hospital, where additional buildings have been recently erected for acute cases and for the attendants and nurses respectively.

Bad Ethics of Journal American Medical Association.

The *Charlotte Medical Journal* may now look out for exclusion from further mention under the head of "Current Medical Literature" in *The Journal A. M. A.* Such would seem to be a way of "setting down on" journals that refuse to bend the knee in servitude to that mighty power in the land. The *Charlotte Med. Journal,* April, 1905, says: "The whole cause of the bad ethics so often seen scattered through the reading and advertising pages of *The Journal* (A. M. A.) is due to Dr. Simmons, and not to the trustees of the Association. He is a cunning politician and a typical commercial gentleman. As long as he has control of the Association *Journal,* it will succeed financially, but will never take a decent stand ethically." This is pretty plain talk coming from the representative journal of a State Medical Society recently "reorganized" along the plan advocated by Dr. Simmons.

The Fairfax County (Va.) Medical Society

At its last meeting, held in Washington, D. C., March 2d, 1905, informally decided to attempt the organization of a district medical society, whose territory should embrace the northeastern portion of Virginia, and Drs. R. M. Slaughter, T. C. Quick and S. B. Moore were named a committee to "start the ball rolling."

This committee has decided to call a meeting of the profession in the above mentioned section of the State for the purpose of effecting an organization. This meeting will be held in Hotel Rammel, Alexandria, Va., Wednesday, May 17, 1905, at 11 A. M.

All members of the profession in that section are invited and requested to be present.

The West Virginia State Medical Association

Will hold its thirty-eighth annual meeting at Wheeling, W. Va., May 24-26, 1905. Titles of papers to appear on the official program must be in the hands of the secretary not later than May 3, 1905. Every effort is being made to make this meeting one of great scientific interest, while the social side of the session will in nowise be neglected. The usual arrangements for special railroad and hotel rates will be made. Dr. T. M. Hood, of Clarksburg, is president; Dr. William W. Golden, of Elkins, is secretary, and Dr. S. L. Jepson, of Wheeling, is chairman of the Committee of Arrangements.

New Orleans Polyclinic—Summer Session.

The Summer Session, by the lecturers and assistants New Orleans Polyclinic is intended for recent graduates and other physicians who have been unable to attend earlier. It will last six weeks and begins June 1. Teaching in eighteen branches, including the specialties, laboratory work and cadaveric operations. Table of rates: Any single branch, six weeks, $15.00; four weeks, $12.00; any two or more branches, each, six weeks, $12.00; four weeks, $10.00; all branches, six weeks, $100.00; four weeks, $75.00. For further particulars write New Orleans Polyclinic, Liberty and Tulane avenue, New Orleans, La.

Obituary Record.

Dr. John S. Williams

Died at his home at Gladys' Va., April 9, 1905, aged sixty-nine years. He was born in Campbell county, Va., and graduated at the University of New York in 1859. He served as an assistant surgeon in the Confederate Army. He was a member of the Medical Society of Virginia, as are two of his sons, Drs. H. B. and W. L. Williams.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 3.
Whole No. 219.

RICHMOND, VA., MAY 12, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

A PSYCHOLOGICAL INCIDENT IN THE COURT ROOM.*

By T. D. CROTHERS, M. D., Hartford, Conn.
Superintendent Walnut Lodge Hospital, etc.

For many years I have urged that inebriates should be treated as irresponsible, especially those who had used spirits for any length of time. These views were generally opposed in the court room and when urged in defence of criminal inebriates, have been regarded as untenable. Formerly a defence of criminal inebriates on this ground was rare, but within the last few years it is quite common, and the courts are obliged to recognize its possibility, and accept theories of limited responsibility, but the subject is not yet very clear. The older medical experts strenuously deny the claims of disease in inebriety, and the more modern physicians admit that under certain circumstances insanity and irresponsibility may be present, while a very small number of experts insist on the recognition of mental impairment and insanity of all persons who use spirits to excess.

As an advocate of the latter doctrine my services have been called for in many important cases, particularly in some of the large Eastern cities. It so happened that on several trials, where the responsibility of the inebriates was the central point in issue, that two quite eminent medical experts have been frequently opposed to me. Both of these men were well versed in medico-legal literature and had large experience as expert witnesses in court, and both believed that inebriety was largely a moral disorder, and that only in exceptional cases, was the inebriate unable to understand and reason as to the nature and consequences of his acts. Of course they urged that such persons were responsible and should be punished severely. On the other hand I have contended that no one could be poisoned continuously by spirits and possess a sane mind, and that crime committed under this condition, was not to be judged by the ordinary methods.

These views have not often been accepted by the courts or jury, and the opposing counsel and experts frequently made them an occasion for ridicule and contempt. The consciousness of being correct has given me renewed courage to press and support these views wherever there was a reasonable basis in facts. As a result, many of the trials in which these conflicting views became prominent, were scenes of technical word battles in which opinions and definitions were contested, and mental tricks to confuse and disparage these different views were not infrequent. These experts by suggestion to counsel and preparing the questions propounded to opposite experts, often made the scene very lively and spirited and frequently to the disparagement of the intelligence of the witnesses.

One of these occasions, especially noteworthy, is the subject of the present paper: The prisoner, a man from a good family, after an altercation with a transient acquaintance over a trifling matter, borrowed a gun and followed him round from place to place and finally shot him. Both had been drinking heavily and the prisoner had announced his intention to shoot the man before the act, and told several of his friends how he was going to do it. The murder was particularly aggravating from the apparent motive, and persistent purpose, and degree of sanity displayed by the prisoner. His heredity and early history clearly showed that he was a defective, and his conduct in other matters before the crime confirmed this. I was retained as a witness to bring out these and other facts. The friends of the murdered man were exasperated, and determined that the prisoner should be punished to the fullest extent of the law; hence they had employed an eminent lawyer to aid the district attorney, and also strong medical experts, and great interest centered about the trial.

*Originally published over two years ago in *Hughes' Journal.*

I was surprised to find on the opposite side for the prosecution as medical experts, the two well known antagonists who had been in conflict with me on several trials before: One a distinguished superintendent of an insane asylum, and author of a text-book; the other a medical teacher and author, and both men of strong personal opinions and large experience as witnesses, and both had occasion to feel annoyed at the acceptance of the views I urged of alcoholic irresponsibility in a previous trial. While we were friendly, it was evident that they were determined, should an opportunity occur, to destroy my influence as an expert physician, and show the fallacy of the disease theory of inebriety, which I had urged so often. This case seemed to present some strong features favorable to their views, and difficult questions to make clear to a court and jury. The lawyer employed to conduct the examination for the State was an eminent examiner and a man of more than usual force and legal acumen. It was evident that a great effort was being made, and the defence would have hard work to convince the jury, and explain the insanity of the prisoner. The two expert witnesses were at the elbow of the lawyers suggesting questions and advising generally. There was little dispute about the facts of the crime. The prisoner's previous habits and his unusual conduct on many occasions were clearly established. His heredity and previous excessive drinking were all brought out distinctly, and the attempt to show insanity was skillfully opposed. The hypothetical questions were arranged with unusual care and shrewdness, and followed by a cross-examination intended to be destructive to my testimony in every way. The opposite experts were suggesting questions, and the lawyer was presenting them in the most seductive way, to bring out doubtful and confusing replies. While watching the lawyer narrowly I detected mental surprise and concealed alarm at some of my answers. On two or three occasions his astute manner changed, and he was evidently disturbed by something which my answers had suggested. He was clearly asking questions, that had not only been suggested by the medical experts, but something different with other motives than the answers he expected me to give.

On adjournment of the court it occurred to me that a personal acquaintance might furnish some hint of the character of the lawyer, and thus enable me to understand his purposes better, and in this way neutralize and lessen the sharpness of his examination. After an introduction I quietly congratulated him on the skill of his cross-questioning, saying that I had rarely heard anything so clear, and that it could not all have been suggested to him, that there must be some basis for his knowledge of this subject beyond that of reading. He looked at me with a startled look, as I repeated the idea in another form; said with a quiver of his lips, "You are right. I have some sad experience which has taught me more than books." I remarked that unconsciously we all display the current of our lives and thought which good observers readily detect. After a little conversation he said, "Would you come to my room to-night a little after 10 P. M.? I wish to have a personal talk with you; but this must be confidential, no one must know it, it would compromise us both if we were seen to confer."

Promptly after 10 I knocked at his door and he received me warmly. He said, "Our relations must be dropped in this trial. We meet unprofessionally and I have asked you to come here to talk about an event in my life, which has caused me great suffering, but has been concealed from all my friends." I assured him that it would be confidential and frank. He said in substance:

"I had an only son, on whom I lavished everything that money could procure. He had the best education possible, graduated with high honors, entered the profession of law and gave promise of being a man of more than usual brilliancy. Both my wife and myself were proud of him and looked forward to his success as the triumph of our lives, when suddenly our hopes were blasted by the knowledge of his secret drinking. He had deceived us for years, and finally it broke out into a pronounced dipsomania. He had attacks of impulsive drinking, in which he appeared like a veritable mad man, acting wildly and most disreputably, associating with the lowest characters and drawing checks on me, which for awhile I honored, until concealment was no longer possible. Then followed a few years of angry resentment and fierce quarrels with him in which I tried to make him change by appeal, remonstrance and force, all of which failed. My wife insisted that he was crazy and not responsible, and that I was too severe. To me he seemed a criminal of the worst type, taking advantage of every opportunity, with no respect for his character or mine. As a result of a long series of dis-

tressing occurrences I drove him away from home, with orders never to come back. This my wife opposed, and it was the great sorrow of our lives that we should differ so sadly. He went to a Western city and, after a checkered career, was sent to State prison for life for manslaughter, where he is at present. He appealed to me for help, which I refused. I could not understand his conduct; it seemed that of the lowest criminal and as a possession of the devil. The tender relations between my wife and myself were broken up, and our home was darkened. We never mentioned the name of my son or anything that would recall his memory. Gradually my wife's health declined and, after two years of invalidism, she died of some unknown disease. On her death bed she requested a promise that if ever my son was released, I would take care of him the rest of his life; in this way I might correct the great mistake in not recognizing his disease and protecting rather than punishing him. I have thought of what she said a great many times, and your answers to my questions to-day opened up a concealed fountain of sorrow and suggested a new light which had never appeared to me before, that possibly my wife was right and I was wrong. Now, I want to ask you, did I blunder, and could anything have been done for my boy?"

I told him frankly that his boy was an inebriate and pointed out to him in a delicate way the meaning of the facts of his life and heredity and the possibilities from a full recognition of his condition, and the application of exact means of science for restoration and cure. We talked the matter over until long after midnight. He thanked me very warmly for what I had said and remarked that his life would change from that evening, that hereafter he would never make a blunder in this direction. Not a word was said about the trial, but I knew that the prisoner I was defending would not be convicted, that my testimony would appear to the best advantage and clear the victim, and that the trial was practically settled.

Next morning in the court room the rigid cross-examination went on. His severe, astute manner appeared unchanged, but as we looked at each other there was a clear understanding and a double meaning to all his questions. I recognized in his sharp cross-examination the favorable facts he wished me to make prominent, and that he was convinced of the insanity of the prisoner. Evidently the history of his son was vivid in his memory and he was reassuring himself of the facts of diseases and their meaning. The intense earnestness he manifested in requiring detailed descriptions of insignificant phases of the subject, and his treatment of other more important ones as of little interest, together with forcing confused opinions in some directions, and permitting clear ones to pass in others; all this showed a legal master with other motives than the conviction of the prisoner.

In the examination of the State experts he showed the same psychological shrewdness, in encouraging their eagerness to clear up the disputed questions by allowing them to enter unguided into a vast wilderness of explanation and opinions, with citations from text-books and theories, which not only increased the mystery, but involved and left their testimony in hopeless confusion. His apparent efforts to clear this away only increased the doubts and suggested to the defence lines of examination to deepen the obscurity, which they quickly took advantage of. In all this there was an apparent great earnestness to find the exact facts, but literally the theories of sanity and responsibility were mystified by the prolix testimony, and the facts of disease were permitted to stand without explanation, as if they were insignificant.

The medical testimony dragged through two days and the jury brought in a verdict of not guilty by reason of insanity. The experts were surprised and thought the jury stupid. No one seemed to realize that the changed conviction of the State's counsel had actually saved the prisoner from death, and that the midnight interview with me was the turning point of the trial. The zeal of the experts to make out a strong case, and show their learning, had literally invested the question of sanity in a fog bank of doubt, which the jury could not understand; hence they reasoned his insanity was more certain. The State's attorney made a pretense of clearing up this mass of theories, but actually turned them into more confused relations, and the defence concentrated all their examinations on side lines, which had no practical interest and only increased the bewilderment of the jury. The experts were never able to understand the verdict. In their opinion they had established and proven the sanity and responsibility of the prisoner beyond all question. Two

years later the prisoner died of dementia, which the experts claimed was the result of confinement in an asylum.

Some years after I dined with this lawyer in his home and was introduced to a shrinking, imbecile man as his son. There were no explanations or questions, but I knew that the father had secured the release of his son and was carrying out the instructions and promises of his wife made on her death bed. This lawyer is now dead and his son is an inmate of a private hospital.

An obvious lesson from this incident is the power of a shrewd lawyer to make his convictions felt, no matter which side he may be advocating. The testimony of experts in the hands of such a person may be moulded in almost any shape, particularly if the expert is not familiar with his subject, and happens to be an egotistical man. One rule I have adhered to as a witness in court on disputed technical questions, is to have the counsel who employs me, thoroughly convinced of the accuracy of the theories and evidence I shall give. When he is converted to the belief or doctrine I present, he becomes of great assistance to make the court or jury understand the facts.

Another fact is important, viz.: To study the character of the opposing counsel and attorney; to ascertain if he fully believes the theories he urges. If he is only professionally an advocate and does not understand or is not convinced of the reality of the facts he presents, he will blunder and exhibit weakness that will be apparent. But if he believes with all his heart and honestly tries to make his convictions clear, look out for him. A thorough knowledge of all the facts that are likely to be disputed and a general conviction of their accurate meaning, is the one essential to make strong and expert testimony.

CASE OF ABSCESS OF THE LUNG—OPERATION WITH RECOVERY.*

By W. D. TRAVIS, M. D., Covington, Ga.

On January 20th, 1904, I was called to see Mr. W. H. S., married, age about 42, whom I found to be suffering with la grippe, with the usual symptoms of the disease. In a few days he developed a case of lobar pneumonia which involved both lobes of the left lung. The lung failed to clear up in the usual length of time except in upper lobe, and I made an effort to hasten resolution by means of counter irritation and internal medication. My treatment was of no benefit and he soon developed pus symptoms. His heart was weak and kidneys decidedly inactive. Ascites and anasarca in both legs which extended up over the pelvis was marked. Patient was unable to lie down, and spent all of his time in a chair. He rapidly became weak and emaciated, had high temperature and hectic flush. His cough was painful and his sputa abundant, offensive and purulent. His surroundings were extremely bad from a sanitary standpoint, and on account of his general physical condition, I hesitated to do any operation for a time. On percussion, I found that instead of the dullness which had persisted since his attack of pneumonia that he had developed flatness with the symptoms of a pleuritis. On aspiration I found an empyema, and decided to do a complete operation. Under chloroform anesthesia, I made a free incision about four inches in length over the sixth rib at anterior axillary line and resected three inches of the ribs. The pus flowed freely, in fact, so freely that I had to check its flow several times on account of the cyanosis in my patient. There were a number of adhesions between the pleuræ which I broke down with my fingers. I found the opening into the lung through which the abscess had opened into the pleural cavity. The abscess cavity was cleaned out with gauze by means of a long pair of dressing forceps, and I inserted drainage, using two soft, perforated rubber tubes and iodoform gauze. The patient could easily blow through this external opening and thereby force out large quantities of pus.

Almost immediately after the operation the patient began to improve, and in two weeks walked three miles to see me. The dropsical effusion in the abdomen, legs and pelvis disappeared, strength and weight increased, and in two months the wound had healed nicely and the patient was able to go to work.

I saw this case this year; he was in good condition and has had no further trouble except a slight tenderness at point where rib was cut.

He who can take advice is sometimes superior to him who gives it.

*Read before the Medical Association of Georgia, at Atlanta, April 20. 1905.

Pernicious Malarial Fever, with Special Reference to the Hemorrhagic Types—Report of Cases.

By W. L. CROSTHWAIT, M D., Holland, Texas.
President Bell County, Texas, Medical Society, etc.

This disease may be defined as a destructive form of malarial fever, virulent in its course and rapidly fatal.

In thus defining this condition, it will be noted that we are using the descriptive word pernicious; (Lat. *pernices,* destruction, and *pernicosus,* of a destructive character), as explicative of the type of disease represented by the term "Pernicious Malarial Fever," and as best descriptive of its approximate major-genus and adequate difference. This definition is also suggested by a study of the etiology, pathology, symptomatology and clinical course of the disease.

Pernicious malarial fever is an infectious disease, the infecting agent being the "hæmatozoon malariæ" and is characterized by a great destruction of red blood cells, marked hydræmia and free hemaglobin in the blood serum. It is also characterized by certain syndromes, as hemoglobinuria, coma or syncope.

Dr. Osler asserts that pernicious fever is always associated with the æstivo-autumnal parasites. Other eminent authorities declare that it is as often found associated with the malignant tertian parasite. Its geographical distribution, we know, is coextensive with the æstivo-autumnal and regular remittant fevers, being dependent, of course, upon the virulence and duration of these infections, and upon certain telluric and meteorological conditions.

It is epidemic in many portions of the South, and in some seasons it proves to be of a very malignant and fatal type.

Prophylaxis of malaria will do away with pernicious fever. If we consider that it is possible for the infection to take place, by the entrance of the parasites through the respiratory tract, by breathing malarial laden air; or through the digestive tract, by drinking contaminated water, etc.; or if we hold to the theory that the only source of infection is the mosquito acting in the capacity of intermediate host, and that the parasites gain entrance into the system only through the skin, from the bite of the anopheles claviger, the culex penicillaris or the culex malariæ, the proper preventative measures are at once suggested. By way of parenthesis I wish to add that while the last named theory is the only one that has been experimentally proven, I am inclined to think that infection may take place through either of the three mentioned channels, and I therefore direct my prophylaxis accordingly.

Many different forms of pernicious fever have been described, each one having some peculiar characteristic from which it takes its name, as pneumonic, pleuritic, choleraic, cardiac, gastric, diaphoretic, syncopal and gangrenous. By grouping the most characteristic symptoms of the various forms of this disease it may be, for purposes of description, divided into three classes: (a) comatose, (b) algid, (c) hemorrhagic.

The symptoms of pernicious malarial fever are so marked and characteristic that there is little room for an error in diagnosis—simulating conditions usually very easy to differentiate. However, in cases of pernicious fever associated with the æstivo-autumnal malaria, the symptoms may so closely resemble typhoid that the Widal test and an examination of the blood may constitute the only means of making a differential diagnosis.

Pernicious malaria may be confused with yellow fever, the two diseases having many symptoms in common; the hemoglobinuric type may be confounded with the ordinary paroxysmal hemoglobinuria; the comatose type may be mistaken for insolation or sunstroke. These conditions may simulate each other so closely that a blood examination may constitute the only means of making a positive diagnosis. Due consideration must be given to the loss of time in making a blood examination, as in many instances the patient will die if the disease is not promptly and correctly diagnosed and proper therapeutic treatment begun immediately.

Quinine is the therapeutic test in ordinary malarial conditions, but it is obvious that it should be used only for specific, and not for diagnostic purposes. The recent clinical history of the patient, the length of time he has been in the malarial district and the length of time he has had fever, either intermittent or continued will be of great value as diagnostic aids. Unless there are some especial personal predispositions or some unusual peculiarity of the parasites, I do not think that pernicious symptoms will show themselves at the beginning of an attack of malaria in this country. To make this statement clear I will state that I have observed in a few patients, a special predisposition to develop pernicious symptoms

whenever attacked with malaria. I recall one case that would, with each attack of malaria, develop the disease in one of its pernicious forms, with symptoms of the comatose variety usually predominating. Again, very rarely, some malarial parasites may possess such a high degree of toxicity or virulence as to cause pernicious symptoms from the beginning of the invasion. Or some anatomical leision might cause thrombi of red blood cells containing malarial parasites to accumulate and produce toxins in certain localities, thus very quickly causing pernicious symptoms.

In the *comatose form* of pernicious fever the earliest characteristic symptom is coma. In many cases the stupor is so profound that apoplexy is seriously considered. The breathing is sterterous and irregular; the pulse weak and rapid, or slow and gaseous. The fever is usually high from the beginning, and the skin is hot and dry. This condition will last from 12 to 18 hours to be followed by a similar attack on the second or third day. Every symptom points to the brain as the special localization of the infection. It must be borne in mind the cerebral symptoms are not due to an active hyperemia or congestion of the brain but to the collection of thrombi of malarial parasites at some particular point where marked secondary changes are produced and malarial toxins are elaborated. I will report one case of this type of pernicious malaria as best illustrative of the disease as we usually find it in the South.

On June 21, 1904, I was called to a patient in a tent on Little River. Man 30 years old. I found him lying on a cot in a state of such profound stupor that I was unable to arouse him. Pulse weak and rapid; Cheyne-Stokes respiration; temperature per rectum 106.5° F.; skin hot and dry; tongue coated black, dry and swollen to such an extent that it was protruding from his mouth; voiding feces and urine involuntarily; eyes unevenly dilated but respondent to light. The wife gave of him the following history: Had lived in present locality ten months, had been having chills and fevers for three months, had a severe chill the day before. Had been up and out in the sun at work all the forenoon until about 11 o'clock, when he complained of feeling chilly and started to the tent. He fell on the way and was carried to the cot where he remained in the condition I found him at 3 P. M.

There could be no doubt of the diagnosis in this case. Could it have been a case of sunstroke complicating the malaria? I did not deem it necessary to make blood examination in this case. The recent history of the patient, the general malarial cachexia together with the chain of symptoms as outlined above were to my mind sufficient to justify prompt and heroic anti-malarial treatment. This patient recovered without a second paroxysm.

The *algid form* of pernicious fever is ushered in with every symptom of approaching collapse, coldness of the surface and extremities of the body, extreme feebleness and cold, clammy perspiration. The temperature in the beginning of the attack is usually subnormal; pulse weak and compressible; respiration slow and shallow. Gastric symptoms may predominate from the beginning, with vomiting and diarrhœa of a choleraform nature. In this type of malaria the gastro-intestinal mucosa is the probable seat of invasion of the parasites.

I will report one case of this type of fever: Man 32 years old; previous health good up to three months preceding this attack. Had intermittent malaria for three months; had remittent fever for ten days; chills every second day. On the twelfth day the attack which I will now describe and which I term the algid type of pernicious fever occurred.

In the early forenoon the patient complained of feeling cold and of extreme weakness; temperature 97° F.; pulse slow and compressible; medicinal stimulation and external heat failed to restore the natural bodily warmth. Symptoms of collapse rapidly became more positive—the surface of the body becoming extremely cold and bathed in a cold and sticky perspiration, the eyes sunken, pupils dilated and countenance drawn. He seemed to be unable to make the slightest movement of his body and soon became so apathetic that he would not talk, while seemingly he remained in full control of his faculties of speech and reason. The heart sounds became so feeble that they were barely audible. This condition lasted four hours and was followed by a high fever which lasted twelve hours, when it declined to 102°, around which point it remained until the second day, when a second paroxysm occurred, presenting the same symptoms in, if possible, an intensified form. That afternoon the patient died.

The *hemorrhagic form* of pernicious fever is rare with the exception of hemoglobinuria, or that form of the disease known as malarial hematuria or "blackwater fever," which is the most frequent and perhaps fatal form occurring

in the South, and which on account of its gravity and more frequent occurrence we will consider as a separate and distinct type, and to which special reference will later be made.

The hemorrhagic form is characterized by extensive hemorrhages into the skin and from the mucous membranes, epistaxis, hæmoptysis, enterorrhagia and by hemorrhages from the gums, retina, etc.

I saw one case of this type in which there appeared during the course of an attack of remittent malarial fever a most alarming case of hæmorrhage—profuse nose bleed, hemoptysis, hemorrhages from the buccal membrane of the mouth, and from the bowels. The loss of blood in this case was great. Adrenalin chlor. solution was administered hypodermically; normal salt solutions were used subcutaneously, and astringents given internally. The hemorrhages were controlled by these means or ceased of their own accord, after a few hours but promptly reappeared upon administration of quinine, given for the purpose of controlling the fever, which was proven to be of malarial origin. Quinine was discontinued and methylene blue, Warburg's tincture, and hypophosphite of sodium substituted. The patient recovered.

The chief characteristics of malarial hematuria are the severe chills, the hematogenous jaundice, the hemoglobinuria and the abrupt onset. It is a syndrome appearing in patients who have had repeated attacks of malaria—rarely if ever occurring in persons who have not harbored the infection for a considerable time. I cannot recall a single case occurring in a patient who had not been in a malarial district for at least six months, and who had not been having regular intermittent or irregular remittent or continued fevers for at least two months. This statement, based upon personal observation, is confirmed by the experience, as reported by many eminent physicians located in malarial districts, and from deductions from well established theories; 1st, malarial parasites destroy the red blood cells, thus setting free toxins and hemoglobin in the blood plasma in such enormous quantities that the liver cannot dispose of them fast enough, consequently resulting in hemoglobinuria; 2d, hematuria is said to have for its basic etiological cause anemia. It is obvious that it requires time for either of these conditions to be produced. Koch claims that hemoglobinuria will occur only when one-sixtieth of the total hemoglobin of the body is set free. It has been experimentally proven that it requires repeated malarial paroxysms for a disolution of red blood cells to occur to the extent of causing that amount of hemoglobin to be set free. There is a strong tendency towards restoration of the red corpuscles during the interval between the paroxysms; however, there is a net loss following each paroxsym. It is the sum of these net losses, following repeated paroxysms that results in an anemia sufficient to cause hematuria. The more intense the infection and the shorter the interval between the paroxsyms the more rapid will be the increase of the anemia and of the free hemoglobin in the blood serum. But I believe that in all cases it requires considerable time for the symptoms of hemoglobinuria to manifest themselves.

It is possible that many of the cases of pernicious hematuria reported from the country as occurring simultaneous with or very early in the beginning of an attack of malaria might have been mistaken for one of the several conditions with which this disease may be confused, such as "hematuria simulee," cystorrhagia, hematuria renalis, symptomatic hematuria and ordinary paroxysmal hemoglobinuria.

Certain prodromal symptoms characterize malarial hematuria, each attack being preluded by a period of general malaise, severe backache, paroxsyms of ague and marked anemia. It is also influenced by certain personal predispositions, such as the history of the continued use of alcohol, syphilis, physical fatigue, mental worry, exposure or the long continued use of quinine. Also location, climate and season must be reckoned with as etiological factors.

Relative to the clinical course of this disease it may be classed as (a) intermittent, (b) remittent, (c) pseudo continued, and (d) continued. Symptomatically it may be classified as (a) comatose, (b) hepatic, (c) renal.

The classification which we will adopt is based upon the etiological causes of the disease and is as follows: (a) hemoglobinuric malarial fever, (b) post malarial hemoglobinuria, (c) quinine hemoglobinuria. There is some disagreement as to whether the intermittent paroxysmal hemoglobinuria should not be included as a fourth variety of this disease. I do not include it from the fact that it is essentially a condition dependent more upon some underlying dyscrasia or kidney lesion than upon malaria, and with which it is always associated. I do not include it for the reason that it is absent

only during the paroxysm, it produces no systemic disturbance and yields readily to quinine.

The first named variety, *hemoglobinuric malarial fever* is the true malarial hematuria or "blackwater fever." The malarial parasites are present throughout the attack. It has a characteristic fever curve the same as the malarial fever which it complicates.

The second variety, the *post malarial hemoglobinuria* is associated with malarial infection only in the beginning. Early in the attack the parasites disappear from the blood, from what influence is not known. The hematuria with marked physical disturbances continues for several days.

Quinine hemoglobinuria is a syndrome usually occurring in the course of malarial fever, in persons possessing some peculiar susceptibility to quinine or the cinchona derivaties, and in whom marked anemia and specific alteration of the blood has taken place.

As it does not occur often, if ever, independent of malarial infection it is generally overlooked and classed as strictly malarial or post malarial hemoglobinuria.

Just what role quinine plays in the production of hemoglobinuria is a question much debated. That it does produce it has been experimentally proven. After the attack has been precipitated I have so often seen it influence the condition unfavorably that, now I discontinue the use of it upon the first appearance of the hematuria.

Prof. Koch declares that hemoglobinuria in all of its forms is the result of quinine intoxication. He is supported by the seemingly well grounded theory, to-wit: "The hemoglobinuria of malaria is caused not by the hæmoparasites but by their toxins; quinine will destroy the infected cell, setting free its contents and thus increasing the toxins in the blood plasma." Again it has been experimentally shown that hemolysis is increased in pernicious malarial blood when brought in contact with quinine solution.

Aside from all theories I will say that my experience with the disease has thoroughly convinced me that quinine has no place in the therapy of pernicious fever after the appearance of the hematuria.

Again, it is obvious that the kidney is in such a pathologic condition that quinine cannot be eliminated through its parenchyma. Then is it not reasonable that the drug might acquire a massive action easily producing on a system greatly weakened by malaria hemoglobinuria, all of the bad effects of quinine poisoning and resulting in death? I am sure that I have seen this happen in a number of cases.

Pathological changes occur during the progress of malarial hemoglobinuric fever in the spleen, liver and kidneys, with alteration of the blood as has been previously referred to, and characteristic changes in the urine. It will be of special interest to note the pathological condition of the kidney during the progress of this disease. It is always inflamed, increased in size, pale and anemic in color. The tubules are swollen, their lumen often obstructed with thrombi of broken down cells, casts, epithelium, etc. The pyramidal tract is inflamed and dark red in color.

The urine is red in the beginning of the attack and with the progress of the disease becomes darker, at times nearly black. It is full of bile and albumin. The bile usually imparts to the urine a greenish and frothy appearance. The amount secreted is diminished as the disease progresses and in the later stages there are many times complete anuria.

I will report one case which I class as *quinine hemoglobinuria*: Patient man 51 years old, had been having chills for one year; had taken quinine continuously, had taken 15 grains of quinine every day for 3 days. He was up and feeling about as usual the morning the attack occurred; had not had a chill for several days. Without premonitory symptoms and unaccompanied by systemic disturbances the hematuria appeared, continued and increased until the second day, when a physician was called, who promptly but sadly erroneously made the diagnosis of malarial hemoglobinuria, and instituted vigorous anti-malarial treatment. With the first dose of quinine the hematuria increased, hæmotogenous jaundice began to appear and cardiac disturbances began to manifest themselves. Quinine was continued in 10 grain doses every two hours until 30 hours later, at which time I saw the patient.

The urine now was, from microscopic appearance, almost pure blood, the quantity secreted being very small. Heart action very bad, dyspnœa, and pronounced symptoms of syncope. Within a few hours the patient died, not from the effects of the hemoglobinuria *per se*, but from the complex result of quinine poisoning and uremia. In this case there was absolutely no indication for quinine; blood ex-

aminations would have shown, as demonstrated in many similar cases that there was present in the blood no parasites.

In like cases, as outlined above quinine could do nothing but as has been shown, increase the free hæmoglobin in the blood plasma, promote hemolysis, inflame the kidney, induce uremia, paralyze the heart and kill the patient. Quinine is only indicated in the type of hemoglobinuria belonging to the first class, i. e., those cases in which there is an infection of the malaria parasite throughout the attack. It should then be administered cautiously and in doses sufficient to destroy the parasites at once. It is dangerous to continue the use of quinine throughout the course of an attack of hematuria.

The rational idea in the treatment of all forms of hemoglobinuria is to reach the liver. If that organ is able to properly perform its functions the hemoglobin reaching the kidney will be reduced to nil and the hematuria cease. Large initial doses of calomel, followed by 20 to 30 grain doses of hyposulphite of sodium at intervals of two hours will do the work. Aside from that, rest, stimulation as indicated and proper nourishment, meet all of the therapeutic measures indicated.

NEPHRECTOMY PERFORMED FOR GUN-SHOT WOUND.*

By J. McFADDEN GASTON, A. M., M. D., Atlanta, Ga.

The history of this operation was considered interesting enough to detail before the nurses of the Presbyterian Hospital, the day after the operation. Since the remarks I made then were taken down verbatim, they are given here as the best report of the case I can give. The operation was done March 7, 1905, only twelve hours after the man was shot. He was supposed to be in a dying condition, and his testimony was taken in regard to the shooting; but he has recovered entirely, and the other kidney is also performing its function perfectly.

Nephrectomy is the removal of the kidney entirely, with ligation of the renal artery and vein. The operation is not indicated except under rare circumstances.

* Read before the Georgia State Medical Association, during its session at Atlanta, April, 1905.

Nephrectomy consists of the delivery of the kidney first, as we do in floating kidney; and then ligation of the arteries and veins, cutting off the kidney and packing the wound with gauze. That, in brief, is what was done in this case.

Two incisions, possibly three, are used. One is the operation transperitoneally—that is, the abdominal operation, going in from the front. But we will not deal with this operation particularly, because it was not used here. There are two operations that may be done in the lumbar region. The incision in one case is immediately transversely as to the kidney; in the other, rather diagonally across from the tip of the twelfth vertebra or the tip of the floating rib, on a line, or parallel with the tenth rib.

The kidney anatomically, is lodged in a space between the vertebral column on the inside and the three lower ribs around it, having also muscular tissue of portions of the diaphragm, psoas, and quadrate lumbar muscles, with a space bounding it below and above, which we have to traverse in making the operation. In the ordinary operation for floating kidney, there are very few difficulties. The floating kidney, as its name implies, is already loose in its attachments and movable, dropping down, very often, with other organs, as, for instance, the stomach. But in the case of a healthy man, wounded, as this man was, such is not the case. The kidney was thoroughly embedded, and held up above the ribs.

This man is 22 years old. He had been shot in the left ninth interspace in the mid-axillary line on the evening before I saw him. He was supposed to have been shot in a diagonal direction, the bullet ranging down toward the crest of the ilium. The diagnosis was made from the bloody condition of the urine. To ascertain positively its character we removed a portion with the catheter and found it still to be full of blood. In one suffering from other things, of course, we would have had to exclude disease. But in a man who was healthy and who had been shot, there was no other diagnosis that could have been made. It was gun-shot wound of the kidney. The kidney was considered to be wounded, because the bullet was in a direction so as to wound the kidney. We did not consider that the ureter could be wounded, or the bladder, because they were not in the line of the wound, and not tender either, and we considered the diagnosis plain. Therefore, Dr. J. H. Green, of Decatur, who was his fam-

ily physician, Dr. Lucius Orr, of the Tabernacle Infirmary, who had also been called in, and I determined that it was a case for immediate operation.

We made the incision mentioned, and found, by palpation of the kidney, that the wound started at the external portion and ended at the hilus. The kidney was so thoroughly embedded and encased, that it was very difficult to remove.

The fingers could grasp a portion where the exit of the bullet occurred, and using that, and pulling it until it was loosened from its attachments, I succeeded, after a great deal of effort, in detaching only half of the kidney. It was so wounded that this portion pulled off, leaving other portion of the kidney attached. The renal artery and vein were in the first portion and were tied, but the ureter was left loose. There is no danger of regurgitation of the urine from the bladder into the kidney, and neither was there any danger of regurgitation here of the urine into the open space left where the kidney had been; therefore, we left the ureter for nature to take care of, packing the kidney space thoroughly with iodoform gauze and putting in some stitches of silk in the external wound, simply to hold the iodoform gauze in contact with that portion of the wound—this being done when the other half of the kidney had been brought out.

The man was put back to bed, in a rather uncertain condition. The shock had not been so very great, but the hemorrhage had been considerable and his condition was very precarious. However, as the man was healthy—not sick—he was able to stand more than a sick man could stand. By using bottles filled with hot water around him he reacted. He spent a comparatively comfortable night with two hypodermics of morphine, one of which had been codeine. The patient was visited by Drs. Green, Orr and myself. His temperature reached 100° F. the day after the operation, and pulse about 100. I hoped for the best in this case, after he had gone over 48 hours since the operation.

This has been one of the few operations in the history of surgery, so far as I can find—one of a half dozen operations done for this condition of the kidney.

Ashhurst's Surgery, page 965, on *Extirpation of the Kidney—Nephrectomy*—gives a table of cases of nephrectomy which shows that out of 532, eight operations were for injury of kidney or ureter, with two deaths, six recoveries—a percentage of mortality of 25. Of 299 cases tabulated by John Ashhurst, Jr., there was a mortality of 24.4, but he makes no division into wounds, etc. (Ewing Smith.)

Of 84 cases of operations on the kidney and ureter reported by George Emerson Brewer, of New York, one out of six emergency operations was a nephrectomy for traumatism; and his experience leads him to believe that all conditions of the kind require operative interference, with exploration of kidney and ureter. (*Med. Record,* Feb. 18, 1905.)

Nephrectomy is done for a great many other things. Among other conditions, we have very frequently suppuration going on from the kidney. Then nephrotomy or nephrectomy has to be done. The danger from a kidney when wounded is that the blood may come down and clot in the bladder or ureter and cause retention of urine, with blood poisoning and urinary infiltration. We have, therefore, a condition which warrants an operation in all such cases, where the diagnosis is plain and where the other organs are not seriously involved.

The organs in this case were not involved, so far as we could tell. The intestines had not been seriously injured. Forty-eight hours after the operation an action from his bowels showed an uninjured condition immediately after taking a dose of oil. The kidney on the other side was still acting well, and no blood found. It is altogether possible that some blood may be found after an operation, as the ureter is still open so as to permit it to come from the wound itself.

Everything must be taken into consideration in determining upon an operation. For instance, there would be no use in cutting down and removing the kidney, if, at the same time, some other organ, such as the pancreas or the stomach had been seriously wounded, unless it was also repaired.

A case of gun-shot wound is of great interest, because there is no telling when a patient may come in in just such a condition as this man was. He was a colored man it is true, but his life was valuable to his own people and to himself. There are indications, therefore, for thorough operative measures and the most careful nursing; but in this case we could not have a trained nurse. This patient was under unfavorable circumstances. He had his home, but time was an element, as was the care and attention of his mother and wife, which had been

very good. Under all the circumstances, he has gotten good attention—not such attention as could have been given in a hospital; but we must not wait for hospitals, or anything else, when life is at stake, and where the habits and condition of the patient are such that probably we would get along just as well at home, where the atmosphere and the surroundings are such as not to infect and frighten him, and where he could see his loved ones. In many cases there is a trouble from crowding of patients, especially negroes, in wards where they hear that so and so said this and that about them. Probably this young negro man did not know but that all that was done was to remove the bullet, although we told him before the operation that the kidney was involved. The bullet was not found. It had probably ranged downward, and there was a track in the muscles through which the incision was made, showing where the bullet had found its way. In these cases, we know that the bullet is dangerous only if in contact with some nerve or blood vessel; that the bullet has done most of its work when it has traversed an important organ, and the ravages done by the bullet being repaired, the man can get well without the removal of the bullet.

The prognosis should be very guarded in all these cases. The mortality, under the best surgeons, has been about 40 per cent; whereas in ordinary nephrectomy, 50 per cent. Lumbar operations, however, have given better results, and statistics show that the mortality here has not been over 4 per cent. When the peritoneum has been traversed, there is always more danger, but in cases where the lumbar incision has been made for any cause, whether for floating kidney or otherwise, the muscles can be opened up safely, and the fibers can be turned aside. I found it absolutely necessary to cut the muscles only at the last point; the incision was five inches in length.

Abscesses have formed in the wake of wounds of the kidney similar to this, when no operation was performed, as the result of suppuration which came about by urinary infiltration. Some cases have recovered without operations, where the kidney was examined post mortem, and found to have healed. They are, however, very few. There are a great many cases where an autopsy was held, where a diagnosis of wound of the kidney was not made, although it was seriously wounded by the bullet.

There have been some natural cures well authenticated, but they do not warrant the assertion that these cases are safe without operation. The exceptions prove the rule. There is one case mentioned in Ashhurst's *International Ency. of Surgery* where a certain amount of cicatricial tissue only remained. That kidney was useless. It really atrophied and was not doing its purpose. Nature had formed a barrier such as is done by a nephrectomy, to the normal function of the kidney. Urine of that kidney would have been poison.

I have given briefly some of the main points about an operation for nephrectomy for gun-shot wound, where the indications were clear and well defined for an operation, but that does not mean that every case where blood in the urine is found, in gun-shot wounds, should be operated upon. Each case is a law unto itself, and has to be carefully and praverfully considered.

EXCISION OF THE URINARY BLADDER.*

By GEORGE TULLY VAUGHAN, M D., Washington, D. C.

Assistant Surgeon General, U S. Public Health and Marine Hospital Service, Professor of Surgery, University of Georgetown, etc.

Excision of the urinary bladder is a rare operation even in these days of bold and radical surgery; but when the bladder is the seat of extensive malignant disease with all the pain and misery it entails, if there is any prospect of cure, relief or palliation, the surgeon has no right to withhold this chance which will give the patient at worst euthanasia, perhaps prolong his life and make it more comfortable, or possibly even result in cure.

Some gentleman writing in the *International Journal of Surgery* from Berlin, and signing himself "M. B.," states that total extirpation of the urinary bladder was first done in 1887 by Bardenheuer, and that since then 28 operations have been done, and that only one of the patients was still alive, operated on by Pawlik in 1889 for papilloma. In four cases death occurred during the operation, and in nine, after a few days, while with the others death usually resulted from the malignant growth in a few months.

Dr. Frank Hartley, in the *Medical News* of August 29, 1903, reports three successful cases

*Read at the meeting of the Fairfax County, Va., Medical Society, May 4, 1905.

of cystectomy with implantation of the ureters into the intestine—one for tuberculosis, and two for exstrophy of the bladder. He states that this operation has been done 46 times for exstrophy of the bladder with a mortality of 15 per cent.

He refers to 23 cases of complete cystectomy for *malignant tumors* with 12 recoveries—mortality 47.83 per cent—five patients dying from shock, two from uræmia, two from failure of union of ureters with the intestine, sepsis and uræmia, one from pyelonephritis antedating the operation and one from septic peritonitis. He argues in favor of total extirpation in preference to partial cystectomy requiring implantation of the ureters into the reconstructed bladder, as 12 operations by the latter method resulted in seven deaths—a mortality of 58.33 per cent.

The chief causes for which extirpation of the bladder has been performed are malignant growths, tuberculosis and exstrophy.

The following case is reported because I believe that the true interests of science are best promoted by telling the whole truth and reporting our failures just as fully and completely as our successes:

A. L., white male, aged 32 years, was referred to me by Dr. Minor in August, 1903.

The patient had been taken about a year before with hæmorrhages from the bladder which occurred so frequently and so severely that Dr. Minor did a suprapubic cystotomy and found a tumor situated in the vesicle trigone. He removed a portion of the tumor, which was examined and pronounced sarcoma. The patient grew steadily worse, and in spite of the free use of morphia and drainage of the bladder by a catheter introduced through a perineal wound. suffered agony on account of the constant vesical tenesmus and begged for relief. Under chloroform the operation was performed at the Emergency Hospital, August 20, 1903.

It was my intention to remove the entire bladder, except a portion containing the ureters and a margin of half an inch beyond, and to transplant this portion into the sigmoid flexure according to the method of Maydl, but it will be seen why this could not be done. The rectum was packed with gauze, a curved incision was made across the perineum, the bladder and prostate were dissected from the rectum and the space stuffed with gauze. The abdomen was then opened through the left rectus muscle, and by an incision at right angles along the pubes, chiseling off the bony attachment of the recti muscles. The urethra was then divided in front of the protate gland and the bladder separated from its attachments as far as the ureters. The peritoneum was split over the ureters and the bladder lifted up and opened, in order to see about removing the segment containing the mouths of the ureters, but as the disease involved the entire bladder, this could not be done.

The right ureter was completely occluded with two or three small calculi near its mouth, and was dilated to the size of one's finger, with dark bloody urine. The ureters were cut off near the bladder and implanted separately into the sigmoid flexure by means of fine silk sutures. The patient died at the close of the operation from exhaustion—probably from the effects of the anæthetic, added to the loss of blood, although little blood was lost, but in the patient's weak condition the shock was more than he could stand.

1718 *I Street, N. W.*

TYPHOID FEVER.*

By F. M. BRANTLEY, M. D., Senoia, Ga.

After wrestling with this insidious disease over sixty years, I trust this Association will allow me to venture some of my convictions as the result of this experience.

Because of want of better knowledge of the pathology of typhoid fever, the fight against it has been like one beating the air. Conforming treatment with theory has been about all there was in it. The "expectant" was the general plan, but the expector was a later comer—like one who locks the stable door after the horse is stolen.

It is funny to observe the extremes in treatment of typhoid, and it is amazing how sincerely and tenaciously doctors hold to their special fad. I was amused to hear one in high authority say that all he wanted in cases of typhoid fever was a plenty of buttermilk and brandy. Like the weaver's shuttle, treatment has run from extreme to extreme, and thus it goes from bad to no better. We can only hope for improvement when the disease is better understood.

We have some pioneers who are shedding

*Read before the Medical Association of Georgia, at Atlanta, April 19-21, 1905.

light on the *causes* of typhoid. Such men as Manson, McCallum, Ross and Laveran have brought to light facts which are revolutionizing the therapy of this and other diseases. These investigations have determined the fact that typhoid fever is due to microbes acting upon parts of the intestinal canal. Hence some of the profession practice what they call the "eliminative and abortive treatment." Drs. Woodbridge, Hubbard and others deserve much credit for their zeal and success in applying the principles alluded to. They are on the right line, as demonstrated by numerous successes reported.

Miasmatic or malarial fevers are also microbic, and are cured by the antidote—quinine. But quinine does not seem to affect typhoid bacilli; hence we have to look for other remedies.

Typhoid fever is an infectious disease caused by toxins generated by specific bacilli, found in animal debris or effluvia. The disease exists anywhere these deposits are found, regardless of clime or season. These microbes may be wafted in the air as far as the scent of effluvia goes, and but little further, if any. They live in polluted water or fluids. Hence they find their way into the system through all the inlets; but mainly by means of contaminated drink or food, or by the air passages, under given conditions. When the microbes are taken in by the lungs, with their characteristic effects in the intestinal glands and other parts, they soon manifest themselves in that notable rash on the breasts, so often associated with pneumonic complications; when by the stomach, tympanites is significant—followed by the various mishaps so usually seen as a part of the ordinary history of the disease. In short, the microbes of typhoid soon find their way into the circulation, and are carried the rounds, showing, however, a special inclination to attack Peyer's patches. The absorbent glands are their main resorts. The toxins of these microbes impregnate and infect the whole system. This general infection is demonstrated by the abscesses and ulcerations which so generally form a prominent feature of the disease. Commonly, large patches of the inner coats of the intestines about Peyer's patches are destroyed by the specific ulcerations —even perforation of all the thickness of the wall of the bowel at times occurring, as demonstrated by autopsy.

The infected condition of the blood also accounts for the stupor, cerebral disturbances, and other nervous manifestations.

The cause being determined, the remedial measures should conform to the facts. Remove the cause, and the effect ceases. Hahnemann's motto may apply in this disease—*similia similibus curantur.* Although at first much ridiculed, yet time has brought us approximatively to his infinitesimal therapeutics; the alkaloids are in favor now.

Antiseptics should be resorted to early and late in the treatment of typhoid fever. I know of nothing better to begin with than calomel in very small doses, so that it can be absorbed, and, possibly changing to bichloride, act as a systemic as well as local antiseptic. Large doses are purgative; but in smaller doses it is not. From one-sixteenth to one-fourth of a grain every three hours should be given for two or three days—when the patient is awake. These doses should be repeated later on in the disease should they be indicated. Woodbridge's treatment comes in well after the calomel, as does also any other efficient antiseptic. As the fight is between the vitality of the patient and that of the bacilli, all treatment must be based on the antiseptic—the efficient antiseptic.

As the vitality of the blood is being constantly consumed by the toxins which cause the fever, this vitality must be sustained while the antiseptics are doing their part; and I know of nothing better for this purpose than whiskey or brandy, judiciously administered—just enough to supply the wasting energy, and no more. According to my experience the dose should be about half teaspoonful every three hours, and never let up until the fever entirely subsides. It may seem astonishing that such small doses could produce the desired effect, but years of experience make it a settled fact with me. Large quantities prove over stimulant, and elevate the temperature and increase the pulse rate. Even ten or fifteen drops of whiskey every two hours will do the work claimed for it.

Calomel and brandy when used as above at the *beginning* of typhoid fever will, I believe, abort it. I base my convictions upon tests often made. A patient in the beginning of the disease, whose pulse is 120 and temperature 103.5° F., by the use of the whiskey or brandy as directed, provided the small doses of calomel are also used, will, in 24 to 36 hours, have a pulse and temperature below 100, and they will remain so as long as the remedies are used. If the whiskey be left off too soon, the pulse and temperature will rise.

Treatment of a case for something else than typhoid fever is probably the cause of many

fatalities. This disease is always on the lookout for weak points, and is sure to strike the most vulnerable part—causing complications.

We are abundantly supplied by the chemist with good antiseptics. Listerine is a good one—composed of thyme, eucalyptus, baptisia, gaultheria, menthol, and benzo-boracic acid. Such remedies should be made to saturate the system just short of their own poisonous effects.

Side issues, such as enemata once a day, in lieu of cathartics, to get rid of spurious products in the lower bowel, are deserving of watchful use. Bathing the skin with sterile boracic acid water so as to keep it healthy, will help to prevent blebs and boils.

In short, treatment should be based on good practical common sense.

Typhoid bacilli were discovered by Eberth, and afterwards more fully described by Gaffsky. Their toxin is evidently the cause of typhoid fever. As a preventive, of course, their introduction into the sytem should be avoided. If water or milk, etc., are suspicious, boil them before drinking. Dr. Monser, of San Francisco, has demonstrated the bacilli of typhoid fever succumb in two minutes to the action of borolyptol—a safe, effectual and non-toxic remedy.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.

Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE I.

Theories of Disease—Humoral Theory; Phlogistic Theory; Zymotic Theory; Germ Theory— Application of Germ Theory in Medicine and Surgery—Present Practical Value and Future Possibilities.

Ever since the fall of man from his perfect state he has been liable to disease, and, being an intelligent animal, he has devoted much study to its cause in order that he might avert its effects. His earliest conceptions of disease were so clouded by ignorance and superstition that they scarcely deserve mention. The ancient Greeks and Hebrews believed that disease was a blow from an offended deity, and the early Christians thought it was a visitation from the devil. Hippocrates accepted the humoral theory, and taught that the blood was composed of four humors—blood, phlegm, black bile and yellow bile. A proper proportion of each constituted health, and an improper proportion constituted disease. This theory was held for years, but was finally succeeded by the *phlogistic theory.* The phlogistic theory was based on a supposed analogy between combustion and disease. Physicians saw pestilence strike a community as a spark strikes among straw and kindling, attack person after person as fire would leap from house to house in a city. Chemists at that time believed that combustion was due to the liberation of a fluid or essence called phlogiston, which was inherent in all matter. It was inferred that if this was so, there must be some substance in man which once put in motion acted similarly to phlogiston and spread with deadly effect. This theory was long held and even to this day remedies which are directed against inflammation or inflammatory conditions are called antiphlogistic.

The next hypothesis of importance was called the *zymotic theory,* and was based on the similarity between the processes of fermentation and disease. It was known that when yeast was added to a solution containing sugar certain changes occurred. It was observed that a very small quantity of yeast was necessary to inaugurate these changes, that the quantity of yeast was largely increased during the changes, and that the new yeast thus formed would again produce fermentative changes if added to fresh solutions. It was claimed that infectious diseases presented similar characteristics; that disease was started by the introduction into the body of a substance similar to yeast; that the quantity of the substance was increased during the morbid process, and that the substance was afterwards conveyed from the sick person to healthy individuals, reproducing the disease and rapidly diffusing it through the community. Confidence in this theory was greatly strengthened when Jenner, in 1798, began the use of vaccine virus as a preventative against smallpox. Here the physician had a substance which he could carry about as he could yeast. He could introduce it into the skin of a healthy person and after a certain period a disease would manifest itself, just as he could introduce yeast into a solution of

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

sugar and after a certain period find changes due to formation. A small amount of either was sufficient, and in each case a certain period of rest was observed before the characteristic changes were seen. Nor did the likeness stop here. It was found that intense heat destroyed the power of yeast; the same was true of vaccine virus. It was also known that when a solution of sugar had once undergone the process of fermentation further changes could not be produced by adding fresh yeast to it. An analogy was found in vaccination, for a person once vaccinated was usually rendered insusceptible to further inoculation by the virus. All these facts furnished the strongest possible proof of the analogy of the two processes, certainly in the mode of operation, however wide in the difference of results, and the theory was generally acepted.

With the advance of knowledge during the last century, the subjects of fermentation and putrefaction were earnestly studied. Learned men in all parts of the world devoted their lives to their investigation; but it remained for the great scientist, Pasteur, to announce to the world in 1858 their real nature. It had previously been supposed that fermentation and putrefaction were due to the action of oxygen, and were purely a chemical process. Pasteur proved by a series of experiments whose ingenuity and originality have rarely been equalled, that they were due to the action of a living micro-organism, and hence were a vital process. There lived at this period in Glasgow, Scotland, a surgeon named Joseph Lister, a man who, despite the demands of an active practice, found time for theoretical study. He read with interest the demonstrations of Pasteur and his fellow workers, and at once concluded that their discovery was of great practical value. He reasoned that if fermentation and putrefaction were due to germs, and could be prevented by the exclusion of germs from the test tube, certain diseases, such as suppuration, must also be due to germs, and could be prevented by the exclusion of germs from the wound. With this as a basis he began a series of experiments and soon found that an incision made through clean skin by a clean hand, with a clean knife, and protected by a clean dressing, would heal without inflammation and without pus formation. The results were elaborated and published in 1865, and were the origin of the "Germ Theory of Disease," a theory destined to revolutionize the practice of medicine and surgery.

The application of the principles of the germ theory to the practice of medicine and surgery has been of untold benefit to mankind. In surgery suffering is lessened, convalescence shortened, and the lives of thousands of patients annually saved. Regions of the body are now safely invaded which were hitherto believed to be inaccessible, and operations are now successfully performed, which if suggested before would have been considered the outcome of a diseased brain or the freak of a disordered imagination. It is difficult for those who visit the hospitals of to-day and see the comfortable patients in clean and airy wards, with wounds protected by artistic dressings and with faces free from all evidences of pain or fever, to realize the dangers which beset a patient before the antiseptic era, or to have any conception of the horrors of a metropolitan hospital of the olden times. As a type of the latter may be cited the "Hotel Dieu," of Paris—a hospital whose wards were immediately over the dead house, and whose atmosphere reeked with the odors of putrefaction; a hospital whose only heat emanated from the bodies of its wretched inmates, and whose only ventilation was derived from the accidental defects of its structure; a hospital whose walls were soiled with the expectorations from patients and whose floors were covered with blood and pus from wounds. Into this pest-house patients were packed four and six in a bed and in emergencies were placed in tiers one over the other so that some were only reached by the use of ladders. It is not surprising that gangrene and erysipelas were rife and that one out of every four patients died. Lister is the magician who has wrought the change; the germ theory the agent he employed!

In medicine as well as in surgery the results accomplished have been marvellous. Plagues are prevented; epidemics arrested and contagious diseases are cured. One of the first great discoveries in this department was Pasteur's treatment of hydrophobia by inoculation. In order to study this disease Pasteur produced it artificially in a rabbit by injecting under its skin some virus taken from the mouth of a rabid dog. When the rabbit died he made an emulsion of its spinal cord and injected it into a fresh animal, and it developed hydrophobia. He noticed that the disease in the second animal was more severe than in the first, and further experiments proved that the disease became more intense each time it was reproduced. He concluded that if the virus became more viru-

lent under certain circumstances there must be other conditions which would render it less so. Investigation at length resulted in the discovery of these conditions, and in the production of virus so attenuated that it would not produce the disease in a healthy animal but nevertheless would protect it from an attack of the disease. A patient who has been bitten by a rabid animal can now be protected from the disease by being inoculated with weakened virus, and hydrophobia, formerly the most horrible and hopeless of all diseases, has been robbed of its terrors.

The civilized world was startled not many years ago by the announcement that Koch, of Berlin, had discovered a remedy for tuberculosis, the dread disease that causes the death of one out of every seven people who die. It was a well known fact that no animal could live in its own excreta, and so by injecting the products of the bacillus of tuberculosis into the body of a patient suffering with consumption it was believed the disease would be cured. Koch's lymph or "tuberculin" has proved of little value, but it was an advance. Other investigators are now working on similar lines and we may look forward to the result of future experiments with hope and with confidence.

Cancer, the terror of its victim, the *bete noir* of the surgeon, is by some believed to be due to a germ. It has been observed that its advance is frequently checked, and in some instances cured by an accidental attack of erysipelas. Investigation has shown that there is an antagonism between the microbe of erysipelas and the undiscovered microbe of cancer, and on the principle of fighting fire with fire, erysipelas is used in desperate cases. Statistics certainly justify further investigation of the subject.

Another advance which the germ theory has accomplished is in the treatment of diphtheria, a disease which hurries to an untimely grave so many of its victims. The treatment consists in an endeavor to increase the resistance of the system to the action of the germ which produces the disease by injecting beneath the skin a substance called antitoxin. The serum is prepared by inoculating a test tube containing broth with the germs of diphtheria and allowing them to grow for ten or twelve days. At the end of that time they have saturated the media with their specific poison or toxin. The contents of the tube are then filtered through a germ-proof filter which removes the microbes but leaves the chemical poison they have produced. A young and healthy horse is taken and a few drops of the solution injected beneath his skin. It makes the animal very sick. He has high fever, loses flesh and refuses to eat. He recovers in two or three days, and at the end of a week is apparently well. He is then injected again with double the original dose. He is again made sick though not so markedly. This weekly injection of the poison is continued for about six months, the dose being gradually increased until finally the horse is found to have acquired a tolerance to its action and can take enormous doses without any effect being observed. To use a technical term, the horse has become immune. As soon as this is accomplished the horse's neck is shaved and disinfected, one of the jugular veins is opened and about two gallons of blood withdrawn. This is allowed to cool and the serum separated from the other constituents. The serum contains the antitoxin and is then carried through a process of concentration, and put in a suitable form for use. Before it is put on the market its power and strength are tested by observing its effect on guinea pigs in which diphtheria has been artificially produced. The action of this new agent on diphtheria is remarkable. Used in the early stage in commanding doses it always cures. It is only when its employment is too long delayed that it fails.

I have mentioned only a few of the many important results which the germ theory has accomplished—only enough to show you its present practical value. Earnest men in all parts of the civilized world are working day and night upon the subject, and no one can predict what the ultimate outcome will be. Perhaps the possibilities are not exaggerated by a French writer who says: "When man learned to protect himself from wild beasts he made the first step in civilization. To-day man is learning how to defend himself from microbes. It is a step of equal importance. A day will come when in Berlin, in London, in Paris, a man will not die of diphtheria, of typhoid fever, of scarlet fever, of cholera, or of tuberculosis, any more than he dies in these cities to-day of the venom of snakes or the teeth of wolves."

LECTURE II.

Bacteria—Definition, Classification and Description of Three Principal Forms; Multiplication of Bacteria, etc.

Bacteria, micro-organisms, microbes and

germs are synonymous terms applied to certain minute vegetable organisms closely allied to the algæ. For a time, these organisms—some of which possess the power of motion—were thought to belong to the animal kingdom, but it is now known that they belong to the lowest order of the vegetable kingdom, and botanists have made great progress in perfecting a scientific classification. Bacteria contain no chlorophyl, and are therefore unable to assimilate inorganic substances as do the higher plants; they depend for their food upon living or dead organic matter obtained from other plants or animals.

From a surgical standpoint bacteria may be divided for study into two classes: *Pathogenic bacteria* and *non-pathogenic bacteria*. The first embraces microbes that produce disease, and the second those which simply cause fermentation and putrefaction. As examples of pathogenic bacteria may be cited the microbes that cause suppuration and erysipelas; and as examples of the non-pathogenic those which produce decomposition.

Pathogenic bacteria are a menace to health as they may be the exciting cause of disease. Non-pathogenic bacteria are not only harmless but are frequently useful agents. They are employed in domestic economy to produce fermentation as in the manufacture of wine. They also act as scavengers and remove by putrefaction dead bodies that would otherwise encumber the earth. To use a rough simile, one may be likened to the hawk ready to strike and kill; the other to the buzzard able to feed only on the dead.

Pathogenic bacteria are those that claim our attention. They belong to the class of schizomycetes or fission fungi, and are exceedingly minute in size. Technically, they are said to be from one to four micromillimeters in diameter, but this, of course, conveys little meaning to the student. One writer speaks of them as the "infinite little"; another says they require to be magnified seven hundred times to be seen by the naked eye, and still another states that one thousand could swim abreast through the eye of a cambric needle. Bacteria are composed of a form of protoplasm called mycoprotein, which has the property of being strongly stained by the aniline dyes. They contain no nuclei but are invested with a delicate membrane which appears to be a condensation of the peripheral layers of their protoplasm.

Each bacterium represents a cell, as is made evident by its intrinsic power of germination and reproduction when surrounded by the necessary conditions for its growth. Most bacteria are colorless, but many impart to their media brilliant hues—some red, some yellow, some green and some blue. This is due to a change in protoplasm or to extrusion of granules or pigments. A considerable number of bacteria possess no power of movement. Others are motile and able to change their position. If this power is observed it is due to cilia or processes projected from different portions of their bodies, continuous, not with the protoplasm but with the cell membrane, which by a whip-like or lashing movement produce locomotion.

In examining bacteria under the microscope they may be seen singly and widely separated, or they may be seen agglutinated one to the other in a glue-like mass, technically known as a zoöglea.

PRINCIPAL FORMS OF BACTERIA.

There are three distinct forms of pathogenic bacteria: First, the round (*coccus*); second, the rod-shaped (*bacillus*), and third, the cork-screw (*spirillum*). DeBarry very appropriately compares them to the "billard ball," the "lead pencil," and the "cork-screw."

The coccus is usually spherical in shape, but sometimes is oval. When cocci occur singly they are called *monococci;* when two are joined like Siamese twins they are called *tetracocci;* when a number combine to form a plane they are called *merispomedia;* when they unite to form a cube like a bale of cotton they are called *sarcinæ;* when they group like a bunch of grapes they are called *staphylococci;* and when they adhere one to the other in a single row like links in a chain they are called *streptococci.*

The rod-shaped bacteria known as *bacilli* are usually long and straight, sometimes, however, they are short and may be mistaken for an oval coccus. Occasionally they are slightly undulating in form. In the last instance they are called *leptothrix.*

The cork-screw-shaped bacteria called *spirilla* take the shape of an arc of a circle or of a spiral; sometimes they resemble a comma. Spirilla are rarely the cause of a disease and practically the surgeon has only to deal with the coccus and the bacillus.

THEORY OF A COMMON BOTANICAL ORIGIN OF BACTERIA.

At one time all bacteria were supposed to have a common origin. It was thought that a bacterium assumed various shapes and was

possessed of various properties according to the stage of its development or the influence of its environment. In other words, it was believed that the same germ might at one time be a coccus and at another a bacillus; might under certain conditions cause suppuration and under other conditions erysipelas. This is now known to be erroneous. In propagation a coccus always produces a coccus and a bacillus a bacillus. The germ of tuberculosis begets a germ of tuberculosis, and the germ of tetanus begets a germ of tetanus. In other words, bacteria "breed true" and fulfill the law of legitimate succession of cells. Pus and other microbes have been cultivated through thirty generations without suffering any physical deviation or losing any pathogenic properties.

MULTIPLITATION OF BACTERIA.

Bacteria multiply with great rapidity when placed under natural or artificial conditions favorable to their growth. Reproduction takes place by (1) fission, (2) spore formation, or (3) by both of these methods.

Fission, or direct division of a bacterium, is the simplest and most natural way of reproduction. It consists of the elongation of a cell, the constriction of its center, and the formation of a delicate line of cleavage between the two halves. The constriction deepens until finally complete division results. The two daughter cells thus formed rapidly attain the size of the mother cell and in turn undergo the same process of division.

Spore formation, or sporulation, the second of the two methods, is analogous to the reproduction in higher plant life by the formation of seed. When this process occurs the first phenomena observed is that the protoplasm of the bacterium becomes granular; next there is the coalescence of these granules at some one point, usually in the center or end of the organism. When the coalescence is complete the spore is formed. Degeneration of the protoplasm of the cell next takes place, then rupture of its capsule and the spore is liberated. The spore is invested in a tough capsule and may lie dormant for a long while or may at once undergo development and reproduce a bacterium similar to its parent.

Cocci divide by fission and are incapable of spore production. Bacilli and spirilla usually divide by fission but sometimes multiply by spore formation. Under favorable conditions they elect the easier way of direct division, but when the life of their offspring promises to be strenuous they adopt the hardier method of sporulation. Thus certain bacilli always divide by fission in the body and by spore formation in the culture tube.

The above facts are important, as a spore owing to its thick investing membrane has much more resisting power to external influences than a bacterium. It has been demonstrated that it requires twice as much heat to kill a spore as it does to kill an adult germ. In sterilizing material infected by cocci, which as stated do not multiply by sporulation, the end can much more easily and certainly be accomplished than in attempting to sterilize the same material infected by spore-producing germs. Fortunately cocci are the most ubiquitous and the most common enemy of the surgeon. When infection with the bacillus anthracis or tetani or other spore-producing germ is suspected the method of fractional sterilization is resorted to, which consists in subjecting the same material to germicidal heat on three successive days, thus catching the bacteria as they develop from their spores in a state of embryonal vulnerability.

ESSENTIAL CONDITIONS FOR THE GROWTH OF BACTERIA.

Bacteria are plants and require for their growth and reproduction the same conditions as do other members of the vegetable kingdom. The most important are suitable food, temperature and moisture. The food must be organic, as the absence of chlorophyl makes the combination and assimilation of inorganic material impossible. The temperature required varies with the different species of micro-organisms. Some require low, some high temperatures, but most of them grow best between 86° and 140° F. Moisture is also as necessary for their development as for other plant life—inspissation stopping growth, although it does not take away the power of germination if water is again supplied. A high temperature kills germs. In fact, heat is the best known disinfectant. Some bacteria are killed at 140° F. others at 180° F. But all species perish when kept at 212° F. for any length of time. Moist heat is very much more efficacious as a germicide than dry heat. Boiling water or live steam will kill any known germ in five minutes. It is a popular opinion that extremely low temperatures will destroy microbic life but this is a fallacy. Cold will arrest the vital activity of bacteria and render them incapable of reproduction or pathogenic activity, but as soon the temperature is

raised to a certain point they become as virulent as ever. Cohn has subjected a colony of germs to 180° F. *below* zero, and as soon as the temperature was brought back to a favorable point the germs manifested their vitality. Germs grow best in alkaline and neutral media. Acids inhibit their growth and often act as germicides. Certain drugs, such as bichloride of mercury, carbolic acid, iodine, etc., are germicides and are largely used in surgery, either in watery solutions or in the form of powders. Oxygen is essential to the growth of some species of bacteria and has a prejudicial influence on others. Sunlight and the electric current have a questionable germicidal power.

DISTRIBUTION OF BACTERIA IN NATURE.

Bacteria are widely distributed in nature and, in fact, are found wherever organized life exists. They are presnt in the air, in water, in clothing, on the surface of the body and in the intestinal canal. They multiply with the most astonishing rapidity. According to good authority a bacterium divides into two in the space of an hour; into four at the end of the second hour, and into eight at the end of three hours. In twenty-four hours the number will amount to more than sixteen million. At the end of the second day the product would represent two hundred and eighteen billion, and at the end of three days to forty-seven trillion. Another writer says the bacteria issuing from a single germ would fill the ocean in five days. The above, however, is theoretical. Fortunately the conditions under which bacteria can grow do not permit practically of such increase.

CLASSIFICATION OF BACTERIA.

The study of the peculiar characteristics of different species of germs has led to certain terms being applied to certain classes. The following definitions will be all that time permits under this head:

1. Saprophytic bacteria, those that live in dead matter.

2. Parasitic bacteria, those that live in living matter.

3. Ectogenous bacteria, those that live outside of the body.

4. Endogenous bacteria, those that live inside of the body.

5. Aërobic bacteria, those that require oxygen for life.

6. Anaërobic bacteria, those that do not require oxygen.

7. Chromogenous bacteria, those that impart a color to the media in which they grow.

8. Non-chromogenous bacteria, those that do not impart a color to the media in which they grow.

9. Pyogenic bacteria, those that produce pus.

10. Non-pyogenic bacteria, those that do not produce pus.

11. Aërogenic bacteria, those that produce gas.

12. Anaërogenic bacteria, those that do not produce gas.

13. Motile bacteria, those that possess power of movement.

14. Non-motile bacteria, those that do not possess power of movement.

All the above terms are complicated by the prefix of the adjectives "obligate" and "facultative"—the first indicating that the organism absolutely fulfills the definition; the second, that under some circumstances it may not comply with it.

(To be continued.)

Analyses, Selections, Etc.

Albuminuria of Pregnancy.

Dr. H. McHatton, in a paper on this subject before the Georgia Medical Association, April, 1905, remarks that urinary examinations of pregnant women are not made as often as they should be—especially after the fifth month. It will materially influence prognosis after this period if we also examine the urine of pregnant women during the earlier months, as then we would be able to say at the later period whether it is acute or chronic albuminuria. Even where we have mere traces of albumen, which may be of no material significance, we must not forget that we cannot always foretell an uremic explosion. Combine the presence of albuminuria with signs of beginning toxemia, and we have a most grave condition to deal with.

Recognizing such a condition, put the patient at once on an almost exclusive milk diet, eliminate the poison through bowels, kidneys, liver actions, and perspiration.. If notwithstanding these, the pre-eclamptic state still exists, as shown by urinary examinations, empty the uterus by the least dangerous methods. The author's plan is to give ten or fifteen grains of calomel and soda early in the morning, fol-

lowed by magnesia sulphate in two drachm doses every two hours until ten or fifteen bowel evacuations have resulted. Then under full antiseptic precautions, introduce two or three solid bougies (those known as vermillion olive pointed are the best) up to the fundus uteri, and on different lines, if possible. When they come in contact with the placenta, partial withdrawal and re-introduction will usually overcome the difficulty. Be careful not to rupture the membranes. If the bougies become too soft during manipulation, laying them for a few minutes on ice will remedy this condition.

After the introduction of the sounds, and seeing that they are held in place, let the patient take an anodyne and secure rest for her. If no indication of labor in twelve or fifteen hours, introduce two or three more sounds in the same way. Labor will then be induced in a reasonable time. When pains are well established, remove bougies, and let the case proceed as a normal premature labor. If indications are favorable, early forceps delivery is advisable, for the longer labor is prolonged, the more liable are we to have convulsions.

If eclampsia already exists, if labor has not set in and the condition not grave, pack the lower segment of the uterus with gauze and wait a reasonable length of time. If no response, use digital dilation, then high forceps, or else resort to version and deliver. In all obstetrical work, remember that the more assistance we get from nature, the safer is our patient.

X-Ray Treatment of Epithelioma, Lupus and Keratosis with Lantern Slide Illustrations.

Dr. J. M. Martin, of Hillsboro, Texas, before the Texas State Medical Association at Houston, Texas, April 27, 1905, read a paper on this subject of which the following is a synopsis:

Five cases of *epithelioma* of the face were shown, four of which were cured. One case sixty-eight years old had four growths on face and nose, and was inoperable. He was given in all fifty-six treatments with the X-ray besides a number of static treatments, using the brush discharge from the metal point electrode. A complete cure was the result with great improvement in his general health.

A case of *lupus vulgaris* of twelve years standing was cured after ten X-ray treatments and has remained perfectly well for one year, no scar remaining to mark the location of the trouble.

The case of *keratosis follicularis,* on account of its rarity, was most interesting. Patient was a young lady of seventeen. The growth began at the age of four on the neck and for thirteen years has gradually extended downward on the back and front to the waist line. The growth was about a sixteenth of an inch thick and resembled pine bark in appearance, but was soft and velvety to the touch. She was in good health and her family history was negative. After thirty X-ray treatments she is almost well, leaving the skin soft and smooth.

The points particularly emphasized as necessary for success in X-ray work are a complete equipment, qualification of the operator and particular attention given to the general condition of the patient. In epithelioma of the skin, a surgical operation is seldom necessary, but before treatment is begun, if there is any necrotic tissue, it must be removed, all pus cavities drained and washed out with pure peroxide of hydrogen and the whole wound thoroughly irrigated with a hot solution of bichloride of mercury. Large vascular growths with much necrotic tissue should be treated with great caution, for a too rapid breaking down of the tumor with a great absorption of toxic products may rapidly prove fatal to the patient.

For skin work the vacuum of the tube must be very low. I find a great deal of difference in tubes. Some, while good for one purpose, are worthless for others. When a tube is found to be just right for treating skin diseases it should be saved for this class of work only.

Medical Legislation.

During the meeting of the Florida Medical Association at Jacksonville, April 19, 1905, Dr. J. Harris Pierpont, of Pensacola, read a paper on this subject, relating especially to the failure of passage for the last three or four sessions through the Florida Legislature of a bill fostered by the Florida Medical Association for the creation of a State Board of Medical Eaminers. Opposition was encountered from Homeopaths and Eclectics, both of whom mistakenly thought the bills were drawn to inflict hardships and injustice upon them; from Christian Scientists who feared they would be forced to comply with just laws to protect the public from such dangerous and commonly demonstrated unscientific practices; and lastly, from some members of the regular profession, and coincidently some pres-

ent members of the district examining boards, who contended that a central State Board would prove a great hardship to young graduates in the expense incident to attendance upon such a board. This district examining board law was notoriously inefficient. As chairman of the Legislative Committee of the Florida Medical Association, he addressed inquiries to each of the legislators who voted against the bill, asking for an expression of opinion as to the cause for the defeat in order that an intelligent report might be made to his Association. Not quite one-half of his letters were answered. Some regarded the bill as an attempt to exclude all methods of healing not authorized by the board formed by the proposed bill, as a sort of trust: because the bill was unpopular, and the majority of the legislators' constituents were opposed to it; that it was a concentration of power that was unnecessary; because it was construed as a piece of vicious legislation, and because a business that has any merit needs no legislation to protect it—such a bill being a virtual confession of lack of merit, etc.

The author declared that the real cause for the repeated failures to procure proper legislation was to be found with the individual medical man who evinces the greatest indifference to the welfare and elevation of his profession by staying out of his County and State Medical Societies.

Medical men as a rule cannot, or do not, appreciate the wisdom of the old fable of the man and the bundle of sticks, for he demonstrated the case with which one was broken, and the impossibility of even bending the united bundle of the twelve. The individual medical man proves as breakable as any one of the sticks, and strange as it may seem, enjoys the process. We are too willing and ready to leave our varied interests to the care and custody of some one else, and then complain bitterly if they are not properly guarded. This statement applies particularly to lax and otherwise imperfect medical laws, when a quack appears in our midst and proceeds to collect fees which would otherwise find their way into our bank account.

Every reputable doctor in a county should not only maintain the honor and dignity of the profession, but should be an important factor in all local matters of a public character, even to the extent of engaging in politics, and so aid in shaping the destinies of his people as well as the interests of his profession.

Pursuing a policy of this kind will speedily open the way for the successful passage of any measure which this association may choose to adopt.

Before closing his paper the author also referred to the inadequate compensation allowed for conducting post-mortem examinations ($10); for expert testimony ($1 per day), and lastly, the unjust license tax on physicians whom he said were taxed while rendering gratuitous service to the State, and are ridiculed by the Legislature when they attempt to improve health conditiones, and protect the people against the ignorant but plausible charlatan.

Use of Rubber Bag Cervical Dilators in Obstetrics.

In a paper read before the Medical Association of Georgia (April 19-21, 1905,) by Dr. Fred. G. Hodgson, of Atlanta, he described the various forms of bags that are in use, and exhibited Barnes' bag, Champetier de Ribes' bag, and Voorhees' modification of the latter.

Method of Use. Patient placed in the lithotomy position, vulva and vagina cleansed, catheterization if necessary, patient carefully draped with sterile towels, cervix pulled down with volsellum. Cervix is usually dilated sufficiently to admit the smallest size bag; if not, it can easily be mechanically dilated enough to admit one finger and that is sufficient. The proper size bag, having been boiled for three minutes in water and then placed in one per cent. lysol solution, is folded upon itself, grasped in sponge forceps and inserted into the cervix. The bag is then distended with one per cent. lysol solution, the end of the tube kinked upon itself and tied with tape. The tube is then folded upon itself and placed in the vagina. An anæsthetic is rarely necessary for this procedure, but a few drops of choloroform at most will suffice. Uterine contractions begin immediately, the bag is expelled in a few hours and labor continues in a normal manner. Occasionally the contractions cease, then a size larger bag is inserted in the same way as above described.

Indications. (1) Induction of labor for any cause after the fourth month of pregnancy, e. g., nephritis, heart disease, phthisis, persistant vomiting, toxæmia of pregnancy, etc.

(2) Minor degree of pelvic contracture, to induce labor before the child becomes too large for the passage.

(3) Placenta prævia. It not only stops the bleeding, but hastens the dilation of the cervix so that the child may be rapidly delivered.

(4) Prolonged labor. Especially if the membranes have ruptured and the patient is making no progress, dilation can be hastened by these bags.

(5) Prolonged pregnancy. If the patient goes for more than a week beyond the time when she is known to be due, the use of these bags will prevent the complication of the child becoming too large.

Advantages. These bags have the advantage of following most nearly the normal process of delivery; they are certain to act in a short time; and in careful hands are very safe.

Disadvantages. There is danger of infection if the proper precautions are not taken; and the largest size bag may displace the presenting part. This largest size will, however, rarely be needed.

Summary.—Nothing is more heartily to be condemned than meddlesome interference in obstetrical cases, but there often arises an imperative need for the induction of labor in the latter months of pregnancy. These bags carefully used in properly selected cases are attended with most gratifying results.

Book Notices.

Studies in the Psychology of Sex—Sexual Selection in Man. By HAVELOCK ELLIS, Philadelphia. F. A. Davis Co., Philadelphia. 1905. Cloth. 8vo. Pp. 265. $2. *Sold only by subscription to Physicians, Lawyers and Scientists.*

The publishers have properly guarded the sale of this book; for otherwise it is a book calculated to do harm if promiscuously distributed among a large element of the laity. It describes the causes of excitation of the sexual passions, which causes may operate through sight, smell, hearing or vision. In short, it is a work that treats of lust, and voluptuous thought and action from a scientific standpoint, and suggests the course to pursue to prevent such emotions. But the prurience of one bent on the satisfaction of voluptuous desire might learn from this book some of the means he might adopt to secure victim's for his lust. Properly read, however, it gives much valuable insight into the subject, and thus will prove instructive and useful. The series will probably be completed in five volumes—each volume being sold separately, and being complete in itself.

Eye, Ear, Nose and Throat Nursing. By A. EDWARD DAVIS, A. M., M. D., Professor of Diseases of the Eye, New York Post Graduate Medical School and Hospital; and BEAMAN DOUGLAS, M. D., Prof. of Diseases of Ear, Nose and Throat, New York Medical School and Hospital. *With 32 Illustrations.* Cloth. 12mo. Pp. xvi-318. Philadelphia. F. A. Davis Co. 1905. $1.25 *net.*

Dr. Davis is author of the chapters on the eye; Dr. Douglas, those on the ear, nose and throat. The book is intended simply as a guide for the intelligent care and nursing of the various diseases of the organs named, for the good results of treatment depend fully as much upon the intelligent and painstaking care of the nurse as upon the work of the physician. Hence the object of this book is to instruct the nurse as to her exact duties during and following operations upon these organs. The book is written in a plain, lucid style, and affords much valuable information for practitioners as well.

Pharmacology of the Fluid Extracts in Common Use. By JOHN S. WRIGHT. Published from the Research Department of Eli Lilly & Co., Indianapolis, Ind. 1905. Pocket size. Pp. 225.

The sentence on the title page describes the scope of this book, which has many uses in the physician's library or on the pharmacist's desk. It is "a brief account of the derivation, the most important constituents and the chief physiological effects produced by the drugs employed in their preparation, with incidental mention of their therapeutic uses." "For special reasons, a few drugs have been included which are not represented by fluid extracts." It mentions the common poisons and their antidotes. It also details the metric system of weights and measures, and contains many odds and ends of information needed by doctor and druggist.

Practical Pediatrics. By DR. E. GRAETZER, Editor "Centralblatt fur Kinderheilkunde," etc. *Authorized Translation with numerous Additions and Notes* by HERMAN B. SHEFFIELD, M. D., Instructor in Diseases of Children and Attending Pediatrist, New York Post Graduate Medical School and Hospital, etc. Crown 8vo. Pp. xii-544. Flexible cloth; round corners. F. A. Davis Co., Publishers, Philadelphia. 1905. $3 *net.*

This is an up-to-date reference book for the practitioner, familiarizing him with all subjects pertaining to diseases of children which he previously did not know or had forgotten. Instead of rehearsing descriptions only of typical course

of disease, the author lays special stress upon the numerous deviations from the type. The translator adds a number of paragraphs, notes and additions suited especially to the American practitioner. This is a book of rare value to the family physician or surgeon who has the care of the children. A number of the newer standard remedies used in the treatment of children's diseases are added in Part II, in the chapter on Materia Medica and Therapeutics, and many useful prescriptions are given.

Editorial.

Medical Association of Georgia and Re-organization.

We have been unable to lay our hands on a copy of the Constitution and By-laws of the Medical Association of Georgia, and therefore do not know the wording relating to changes in its laws; however, it is but fair to presume that it is like that of most—if not all—representative bodies in requiring a two-thirds vote for such radical action as a change of Constitution. The Congress of the United States requires such vote, and authorities on parliamentary practice invariably recommend it. On a vote on the proposed new constitution before the Georgia Association on April 20, 1905, 134 members favored the change, while 111 opposed it, whereupon the President, Dr. Wm. Perrin Nicolson, of Atlanta, ruled that the new constitution was adopted. Point was then made that a two-thirds vote was necessary for the adoption of a new basic law, which point the President overruled, and then pandemonium reigned. According to the *Atlanta Constitution*, "There were very few men in their seats, the whole audience having risen and crowded about the rostrum at the front of the hall. A large portion of those present were all trying to talk at once, shouting at the chairman and voicing their opinions most vociferously." Finally, after considerable rapping, the audience remained silent long enough to hear a motion that the chair appoint a recognized advocate and a recognized opponent of the new constitution, and that these two call in a third—a skilled parliamentarian—to decide the question, which was put and carried. Unfortunately we have not heard what decision the committee arrived at, though information at hand seems to indicate that reorganization has prevailed.

In *Article II,* of the Proposed Constitution for Reorganized Medical Societies, the purposes of the plan are stated as being—with the other objects entirely dependent upon the success of these fundamentals—"to federate and bring into one compact organization the entire medical profession" * * * "to promote friendly intercourse among physicians," etc. Where harmony exists, which is not likely where there is very strenuous objection on the part of such a large and respectable minority, when politics does not enter into the situation, and when old and useful members are not disfranchised or in any way restricted as to their rights different from other members because of their refusal to join local societies—whatever may be the reason—then, and not till then, will "re-organization" work for the good of all concerned.

The Southside Virginia Medical Association

Will hold its next meeting at the Central State Hospital, Petersburg, Va., Thursday, June 8, 1905. Many papers of scientific interest wil be read, and the members are requested to come and bring their doctor friends. Those who expect to read papers should send in the titles at once for publication in the official program. Dr. John E. White, of Wakefield, is Secretary.

The West Virginia State Medical Association

Meets at Wheeling, W. Va., May 24-26, 1905, for its thirty-eighth annual session. A good session is promised both as to its scientific and social side. Special rates for railroads and accommodation at hotels have been made and members as well as applicants for membership are expected to be present in full force.

The Delineator,

Always full of interest for the women folks of a household, sustains its usual reputation in the June issue. Among things of practical medical interest in this number, we note an article by Dr. Grace Peckham Murray, who discusses the care of the eyes and ears in a paper that will appeal particularly to young mothers, and those who have the care of children. Such articles in this kind of publication

are calculated to do much good, as they reach a class of people who otherwise receive little—if any—instruction along such lines.

New Feature Begun in this Issue.

Beginning with this issue there will be published in successive numbers of the *Virginia Medical Semi-Monthly* a series of lectures on Principles of Surgery, or more properly on Surgical Pathology. The series will comprise about fifty lectures, one leading up to the other, but each being complete in itself. The first group of lectures embrace bacteriology, regeneration, inflammation, suppuration and ulceration; the next section, certain surgical diseases, such as septicemia, pyemia, erysipelas, tetanus, hydrophobia, syphilis and tuberculosis; and the third, will be devoted to wounds, contusions, burns, scalds, asepsis, antisepsis, anesthesia and anesthetics.

Readers of medical journals of the present day are surfeited with articles dealing with unusual conditions, or recording the successful results in the experience of individual writers, hence they will welcome the opportunity to review in an easy and pleasant way the most modern theories of the underlying principles on which medicine and surgery are based. This is thought to be especially the case owing to the fact that the series of articles to be published are contributed by Dr. Stuart McGuire, whose experience as a teacher and familiarity with practical surgical work render him well qualified to do justice to the subject.

Medical Commencements in Virginia.

The Medical College of Virginia will hold its commencement exercises May 14, 15 and 16, 1905, beginning with the baccalaureate sermon by Rev. Dr. F. T. McFaden, of the First Presbyterian church, on Sunday, the 14th, followed by clinics, meeting of the alumni, and smoker by the Adjunct Faculty on the 15th, and clinics, meeting of alumni, and exercises at the Academy of Music on the 16th. Major Walter D. McCaw, Surgeon U. S. Army, will be the final orator. The Faculty will tender a reception at the Masonic Temple on the last night.

The University College of Medicine will have no baccalaureate sermon, though other exercises. the exact character of which have not yet been completed, will extend over two days—May 17 and 18, 1905. The Alumni Association meets on the morning of the first day, and will give a reception at the college building that night. The Board of Trustees will hold a session earlier in the evening. The commencement exercises proper will take place at the Academy of Music on the night of May 18th. The address to the graduating class will be made by Dr. C. Alphonso Smith, Professor of English Literature and Dean of the graduating department of the University of North Carolina. A banquet will follow these exercises at Murphy's Hotel.

Announcement with reference to the exercises at the University of Virginia during June will appear later.

Dr. Paul B. Barringer

Has withdrawn from all connection with Moore's Brook Sanitarium. He is at work organizing a new corporation to proceed at once to build an altogether up-to-date sanitarium near the University of Virginia. It is expected that the new sanitarium will be ready by next winter. Those who know his ability, influences and indomitable energy feel assured that he will make a great success of the new enterprise.

Dr. S. Walter Woodyard, Greeneville, Tenn.,

Has been elect First Vice-President of the Tennessee State Medical Association for the year beginning April, 1905.

Obituary Record.

Dr. Alexander Taliaferro Nelson,

Of Staunton, Va., while on a visit to his brother at Covington, Va., was shot and accidentally killed April 18, 1905, by a friend. Dr. Nelson was born at Rapidan, Va., October 8, 1872. He received his academic education at Woodbury Forest High School, at Orange, Va., and graduated in medicine at the Columbian University, of Washington, D. C., in 1902—the Medical Examining Board of Virginia being passed during December of the same year. He had been a member of the Medical Society of Virginia since 1903. At the time of his death he was assistant physician and pharmacist at the Western State (Va.) Hospital. Dr. Nelson's body was sent to the place of birth for burial.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 4.
Whole No. 220.

RICHMOND, VA., MAY 26, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

THE COMMISSION OF LUNACY—ITS SCOPE AND LIMITATIONS.*

By WILLIAM FRANCIS DREWRY, M. D., Petersburg, Va.
Superintendent of the Central State Hospital, etc.

In inviting me to present to this Association some remarks on the scope and limitations of the commission of lunacy, your President has conferred upon me an honor which I acknowledge and appreciate.

Dr. Isaac Ray, an eminent alienist and medico-legal expert, said that, "When a man loses his reason it becomes necessary that the reason of others, to a greater or less extent, shall supply its place." Upon the principle so concisely enunciated in that sentence hangs the whole law that guides us in our dealings with those whose minds, becoming overburdened, are shipwrecked.

In the present enlightened state of society, the individual who is deprived, more or less, of his full reasoning faculties, and of his normal volition to control his acts and language, is entitled to protection, and as a member of the body politic his interests are rightfully safeguarded by both the common law and the statutes. But, society has rights which are antecedent to those of the individual; the interest of the many is of more importance to the welfare of the community—the State—than can be the interest of the few. For these reasons, when an individual becomes a public nuisance, or a menace to the peace and safety of the community, unable to care for himself or manage his personal affairs, the State assumes control of him and thereby protects him and society in general.

The guarantee of mutual protection and benefit to the public and to the insane, is the outgrowth of an evolutionary process in civil government and of a gradual recognition that insanity is a "symptom which may be due to many different morbid conditions having this one feature in common, that they involve the organ of mind."

The State, the arbiter to which all differences must be submitted for adjustment, reserves to itself the exclusive authority to pronounce a person disqualified by reason of insanity, to remove him from society, deprive him of voting, take away his right to convey or will his own property, make contracts, marry and perpetuate his kind. But personal liberty and rights of free citizenship are not taken away from any person, sane or insane, without "due process of law" prescribed by the State. Due process of law, so far as it concerns the insane, consists in certain proceedings—an inquisition *de lunatico inquirendo*—to ascertain whether or not reason has been sufficiently impaired to make it improper or unsafe for one to remain longer in the enjoyment of all the privileges of free citizenship. The State, ever jealous of the rights and liberties of its citizens, exercises a censorship over all its unfortunates, and provides ample means, through *habeas corpus*, of preventing unjust detention.

Once the question of "arrest," "trial" and "incarceration" of the insane was solely for judicial consideration. The old vagrant act of 1714, which remained in operation for a long time, regarded "being dangerous" as the *sine qua non*, and amendments were made with painful deliberation, in spite of the persistent efforts of medical men. The act was as follows:

"Whereas, There are sometimes persons who, by lunacy or otherwise, are furiously mad, or are so far disordered in their senses that they may be dangerous to be permitted to go abroad; therefore be it enacted that it shall and may be lawful for any two or more justices of the peace to cause to be apprehended and kept safely locked up in some secure place, and if such justices shall find it necessary, to be chained, if the last place of legal settlement be in such city, or within any town within such county."

*Read before the Southside Virginia Medical Association, at Emporia, Va., March 7, 1905.

As our conception of insanity underwent change, as our understanding of its nature became broader, as our knowledge of the views and conduct of the insane became more definite, as we learned to deal with them as sick persons differing from other sick persons only to the extent to which mental action was affected by either functional or organic disease of the brain, just so soon did we begin to break away from the limitations of the old vagrant act, and to demand the enactment of statutes to conform to the advanced humane and scientific views.

The nearer the law attains to a full and unconditional recognition that the insane are simply people suffering from "certain results of brain disease or brain defects and deficiencies which invalidate mental integrity and control abnormally mental action and personal conduct," the sooner will be removed the barriers to that prompt application of proper treatment of those unfortunates, and the just consideration of the rights of the community. While we, as medical men, know that "there cannot be sanity in law which is insanity in science," yet the fact remains that the legal conception of insanity still differs somewhat from the medical; consequently the matter of adjudging one insane and committing him to the custody of others becomes medico-legal.

The present Virginia law, enacted in 1900, is a compromise and a combination, so to speak, of the two elements which stand for distinct ideas. Medicine, claiming the diagnosis of disease as its particular function, looks for symptoms; the law, guarding the liberties of the individual and protecting the rights of the community, seeks evidence of irresponsibility. The two join hands and together consider the best interest of both society and the mind-sick individual.

In framing the existing law, we sought clearness in phraseology and meaning, simplicity in operation, freedom from unnecessary public, judicial or official proceeding. Ample protection is given society and well-nigh perfect barrier to illegal detention of a sane person on the pretext of insanity, are provided. A brief analysis will, I think, suffice: First, a judge or a justice who has good reason to believe a person to be insane, or upon a *written* complaint to him of some respectable citizen—a relative, friend or other person interested—who thinks the said person to be insane, shall have him duly notified that he is so suspected. Second, the judge or the justice must summon two reputable practitioners of medicine to unite with him—the three constituting the commission—in investigating the case by *personal examination,* and by examining witnesses, with the view of ascertaining the true mental condition of the person and whether or not he should, under the law, be pronounced insane and committed to a hospital.

The two physicians, you observe, are required to make a *personal examination*—in the presence of the judge or justice, if practicable—and get all possible or necessary information from sworn witnesses bearing upon the mental condition of the alleged insane person. If the two medical examiners fail to agree in their diagnosis it is provided that a consultant shall be called in to decide the question at issue. This is in conformity to usages in ethical medical practice. In order to be satisfied about the real condition of the patient's mind the physicians should give careful study to the case, seeing it several times, if necessary, before expressing a final opinion and signing the certificate.

Third. The judge or justice, being satisfied (and as a matter of fact he naturally relies upon the opinion of the medical members of the commission), that the individual under examination is *insane* and a *suitable subject* for a hospital for the insane, issues the order of commitment and then forwards the "adjudication of insanity," *signed, under oath,* by the examining physicians and himself, together with the order, to the sheriff to be transmitted *immediately*—on the same day that the person is adjudged insane—to the superintendent of one of the hospitals, making application for admission. Such person may be temporarily put in the custody of some responsible individual for safety and care until he can be sent to an institution or until he recovers; otherwise he has, I regret to say, to be sent to jail to await removal. No insane person should ever be lodged in a jail. It would be even better to keep him temporarily at the city or county almshouse.

The commission is furthermore required to ascertain the value of the estate belonging to the insane person, legally committed, or if a minor, that of the parent; or if a wife, that of the husband as well as of her own, and to certify the amount to the hospital authorities, who have the legal right to require payment for the expenses of such person while in the hospital. According to my judgment, no in-

sane citizen of the State should be required to pay any part of his or her expenses for care and treatment in any of the State hospitals. Discussion of this subject is, however, not germane to this paper.

Upon the suggestion of medicine certain questions are propounded, the truthful answers to which give all the essential data upon which to base a diagnosis and an order of commitment. If these interrogatories are closely and intelligently studied and conscientiously answered, the commission cannot, it seems to me, easily commit an error. The prescribed questions seek to bring out all essential information bearing, first, on the medical history of the person's family or near relatives, particularly regarding any neurotic tendency; second, the past history of the individual, for the purpose of ascertaining if he has shown any evidences of a nervous diathesis; third, his habits in the improper use of drugs or intoxicating spirits, and in immoral practices; fourth, any injury to the brain which might possibly produce mental change; fifth, any previous illness in which unconsciousness occurred, any convulsions; sixth, any prior attack of mental aberration; seventh, any changes in the patient's normal behavior, including the first symptoms observed; eighth, the present symptoms of insanity, such as morbid depression, unusual excitement, violence, destructiveness, suicidal or homicidal tendencies; ninth, any other symptoms indicating insanity, meaning such as incoherence of speech, loss of memory, and reasoning power, peculiar conduct, expression of face, existence of insane delusions—the answers giving opportunity to complete the clinical picture; tenth and finally, the *opinion* of the *medical examiners* as to the mental condition of the individual and whether he should be placed in a hospital for the *care and treatment of the insane.*

Unless the physicians certify, *under oath,* that they believe the person, under examination, is *insane,* such person cannot be legally so adjudged; hence the *order* of *commitment* must be based, as it should be, upon *medical opinion.*

Bear in mind that great tact is frequently necessary to get at the real status of the patient's mind. You may be reasonably satisfied that he is insane, still he may exercise sufficient self-control for the time being to conceal his real condition. A knowledge of the history of the case, and intelligent stratagem will materially aid in arriving at the correct opinion.

The physician, or the representative of medicine, examines a person thought or alleged to be insane, with a view of ascertaining whether or not *disease* affecting the mind exists, and the deprivation of liberty is only an incident in the treatment. The judge or justice, on the other hand, makes examination with the view of ascertaining, not whether disease exists, but whether or not the abnormal conduct of the individual is such as to unfit him longer for the full enjoyment of liberty. Hence the matter resolves itself into a medico-legal consultation or conference. The individual may become a patient and a ward of the State, the diagnosis having been made by medicine and the treatment and care, so to speak, ordered by the law. So, in its practical application, the law of Virginia meets both the medical requirement and the legal protection of the insane.

The commission performs educational functions of importance in that the nature of its proceedings, the method of its investigation, and the character of the formal interrogatories, give the public lessons in the correct view to take of insanity, tend to impress upon the professional as well as the non-professional mind, the true scientific interpretation of the word insanity, and the proper relationship between the family, the community, the insane and the hospital. The opportunity, furthermore, is offered to dispel ignorance of the value of prompt and appropriate treatment, to impress upon friends the danger of suicide or homicide, and to lessen the stigma which is sometimes supposed to rest upon one adjudged insane.

The commission should not permit itself to be influenced by exaggerated statements of those who may be over-anxious, for one reason or another, to have the individual committed; and it should likewise consider well the statements of those who may endeavor to disprove the existence of insanity. Frequently conflicting elements present themselves, calling for the utmost care and judgment on the part of the commission.

Is the patient sufficiently wrong mentally to make it advisable to pronounce him insane and order his detention? In the decision of that question the examining physicians and the justice have grave responsibilities resting upon them individually and collectively. The law certainly does not contemplate that all persons whose minds are not exactly normal, in the common acceptation of the term, should be legally certified as insane, nor does medicine

take such a broad view that it would diagnose all such as insane and certify them fit subjects for an asylum or hospital.

The commission has indeed important responsibilities resting upon it, has a serious duty to perform, and should, therefore, proceed very cautiously, lest an injustice be done, not only to the individual but relatives and descendants. The question, and the only question involved, is this: Is the person insane and a proper subject to be detained under care and treatment? As Clouston says, "Many persons are insane in a medical and even in a legal sense, yet have so much self-control left, or their mental peculiarities are so slight and harmless, that they are not proper persons to be detained under care and treatment."

There is no law granting reciprocity privileges between the States in matters of commitment and detention. There is, however, a common law which gives to friends of a person thought to be insane, the right to take such person to another State and there have him examined, and if pronounced insane, legally committed to an institution in that State. This is frequently done in the case of patients whom it is desired to send to private hospitals away from home. A person whose mind is deranged, and for that reason not competent to think for himself, may be controlled and treated by his friends for his own good. Judge Cooley says: "An insane person, without any adjudication, may also lawfully be restrained of his liberty, for his own benefit, either because it is necessary to protect him against a tendency to suicide or to stray away from those who would care for him, or because proper medical treatment requires it."

The general practitioner sometimes has thrust upon him difficult problems, grave responsibilities and delicate duties, involving the medical, medico-legal and social status of his patient. But under all circumstances it is advisable for him to studiously avoid any undue zealousness or complicity in efforts to have one declared insane by a legally constituted commission, lest he voluntarily incur the ill-will of many, for insanity is a condition about which most people are secretive and sensitive. As attending physician the family doctor would do well, seems to me, to confine himself to the medical phase of his patient, leaving to others the arrangements of all the legal steps looking to commitment and detention; but, as a member of the commission it becomes at once his duty to his patient and to the family and the State to bring out all necessary facts indicating insanity.

Happily it is not necessary to subject all insane persons to examination by a commission of lunacy. Some acute cases and some of a mild type, may, under some circumstances, be successfully treated at home or in a general hospital. Every practitioner is called upon, from time to time, to treat cases of brief mental aberration traceable to the toxic influences or effects of certain febrile conditions, the puerperal state, drugs or alcohol, or the effects of sudden mental shock, etc. Many cases may recover more or less rapidly if proper treatment is instituted before the cerebral cells have undergone pathological changes. Then, too, on account of the opprobrium which, to the minds of many, still attaches to an asylum and to insanity, or for fear of injuring one's future standing in business or in society, or perhaps to the dread of the publicity given to a probable transmitted heredity, legal action is often deferred, to the detriment of the patient.

I am, of course, a strong advocate of the earliest possible special treatment of all cases of insanity, and believe that most cases can be better and more successfully treated in a suitable hospital than is possible in their own homes, and for these and other reasons, I favor treatment of many cases, in the incipient stages, in special wards of general hospitals, or in the so-called psycho-pathic hospitals; but we are considering the conditions on which detention and treatment should be legally brought about.

It usually becomes necessary, sooner or later, to send most insane persons to a special hospital, generally to a public hospital for the reason, as Dr. E. N. Brush, of Maryland, says: "That no condition so decidedly demands care and special means for applying that care, and no condition resulting from disease, is so crippling to the wage-earning capacity, and consequently more pauperizing."

An important phase of our subject is the consideration of what degree of mental aberration should exist to justify the commission in assuming jurisdiction. This is sometimes a delicate question, and one which should be pondered well before a final decision is reached. It is not easy to draw the line sharply between mental soundness and unsoundness—to say where sanity ends or where insanity begins. As Dr. H. P. Stearns, of Connecticut, says: "Insanity in its widest significance cannot be defined any more clearly than can the term lameness, for there may be varying degrees of de-

parture from mental health, as there are varying degrees of lameness."

In the more modern scientific view and usages, the word insanity is being replaced by "psychoses"—from the Greek word meaning mind—to embrace all phases and types of abnormal mental states due to disease, for the reason, it is thought, that thereby much of the existing confusion and ambiguity in medical practice may be avoided. It would not be proper to consider all persons suffering from some simple form of psychosis, such as neurasthenia, hysteria, morphinism, delirium, or traumatic neuroses, proper subjects for investigation by a commission of lunacy.

"The term insanity," says Dr. J. T. Searcy, of Alabama, "is left for popular use, to designate the graver forms of mental deficiency or defectiveness, such as bring the person within the jurisdiction of the law.' This seems to meet the difficulty and to define the scope of the commission of lunacy.

To perform properly the duties of a medical member of a commission of lunacy does not require a technical knowledge of the newer psychiatry nor familiarity with the latest classification of Kraepelin, or some other recognized modern authority. General practitioners cannot expect to be skilled alienists, but every practitioner should have enough practical knowledge of the clinical manifestations of insanity to differentiate the ordinary forms and to give a fairly correct opinion respecting the prognosis, keeping in mind the fact that its pathology may be of a functional character which may give promise of recovery, or of organic origin which precludes recovery.

If the physician will have clearly fixed in mind the characteristic symptoms of insanity in general and of the more common types, known as the melancholias, the manias, the dementias, epileptic insanity, paresis, paranoia, etc., it will avoid confusion of any form with idiocy, imbecility or weakmindedness, ordinary mental decay and inertia incident to old age, temporary delirium or confusion, and look upon insanity as a more or less prolonged "incapacitating derangement or enfeeblement of mind caused by *disease,*" he will generally make a correct diagnosis and measure fully up to the requirements of medicine and the law in his professional and official dealings with the insane.

Duty performed makes others easier.

ORIGIN OF TUBERCULOSIS IN CHILDREN.*

By ROBERT W. HYNDS, M. D., Atlanta, Ga.

The questions considered in the following paper have been so thoroughly discussed that it would seem to be useless to call attention to them again, yet the vital importance of the subject and the fact that little organized effort has been made in Georgia to prevent infantile tuberculosis, I believe warrants me in presenting a brief review of some of its phases.

PREVALENCE.

Tuberculosis in children is a more frequent occurrence than is commonly supposed. Cornet, Simons, Schwer and Bolz, in 2,447 autopsies in children under ten years of age, found tubercular lesions in 23.93 per cent.; Mueller, out of 426 autopsies, found tuberculosis in 23.36 per cent.; Jacobi, out of 1,045, found 14 per cent. tuberculous; Bollinger, out of 500 autopsies in children under fourteen, discovered tuberculous lesions in 218; Still, in 796 autopsies, found tuberculosis to be the cause of death in 32.8 per cent. Fisher says that one-third of the deaths in childhood are due to tuberculosis in one form or another. The disease is most frequent in children under four years of age. The bones, joints and lymph glands, are the parts most frequently effected. The mortality from infantile tuberculosis in the South is very high, owing to the large negro population; the majority of negroes dying under five years of age show tuberculous lesions. Botz, in 2,576 autopsies on children, found that 27.8 per cent. under one year of age had died with tuberculosis.

The assertion of Fisher that it is a rarity to find primary intestinal tuberculosis in children, is not susceptible of proof; in fact, the opposite is nearer the truth. Wagener found primary tuberculosis of the intestine and mesenteric glands in 12½ per cent. of 600 autopsies. Hoff found primary tuberculosis of the digestive tract in 16.6 per cent. of 15,000 autopsies, in which there was no involvement of the lungs. Raw states that it is rare to find phthisis pulmonalis as a primary affection under ten years of age. Branson, in a large series of autopsies in children, found that 20.9 per cent. died of abdominal tuberculosis. Price Jones' findings were 28.5 per cent.

The percentage of tuberculosis in children varies widely in different localities. Its great prevalence in children during the milk drinking

*Read before the session of the Georgia State Medical Association, at Atlanta, April 19-21, 1905.

age, and the predominance of other types than the pulmonary, seem to indicate a bovine origin. Out of three hundred cases of tabes mesenterica observed by Raw, not one was in a child fed entirely upon breast milk, but all of them wholly or in part had been given cow's milk. In communities where the milk was fed boiled or pasteurized, the percentage of intestinal tuberculosis is less than in those where it is fed raw. Helle cites an instance of this in the greater prevalence of tuberculosis around Keil than in Berlin.

TRANSMISSIBILITY.

The sweeping assertion of Koch that human and bovine tuberculosis were so different in their nature that infection of human origin could not be transmitted to cattle, and that man had small reason to fear infection from cattle, was so contrary to the conclusions of many experimenters that opposition was immediately aroused and investigation of the subject taken up with renewed activity.

The theory of Klencke in the early forties, and of Villemin in 1865, as to the unity of human tuberculosis and that in the lower animals, was strengthened in 1868 by the demonstration of Chaveau that cattle could be infected by tuberculous material from man. The work of Chaveau was substantiated in 1879 by Bollinger. The experiments of other investigators led to the same results, and the discovery of the bacillus tuberculosis by Koch in 1882, gave force to their conclusions.

Since the publication of Koch's paper in 1901, the investigation of the subject has been carried on by Nocard, Arloing, Fibiger and Jensen, Max Wolff, Hamilton and Young, Kossel, Theobold Smith, Ravenal, Behring and others, all of whom succeeded in transmitting human tuberculosis to cattle. This phase of the question is capable of direct experimental proof. Out of nineteen calves inoculated by Hamilton and Young with tuberculosis material from man, fifteen developed the disease. The Imperial Sanitary Office of Germany reported the inoculation of sixteen calves, of which number four developed tuberculosis. Many successful results have also been obtained in this country in the Bureau of Animal Industry, by Mohler and DeSchweintz.

Fibiger, in a review of the work that had been done on this phase of the subject, reported sixty-one attempts at inoculating cattle with human tubercle bacilli; forty-one of these were successful. Out of eighty-one animals experimented on, a positive result was obtained in fifty-one. His own extensive experiments were confirmatory of the results obtained by others.

The transmissibility of bovine tuberculosis to man cannot be established by direct experimentation, but a sufficient number of cases of accidental inoculation have taken place to prove this beyond a doubt. Ravenal reports four cases occurring in the laboratory of the State Live Stock Sanitary Board of Pennsylvania; and as to the infection from the intestine, we have nearly two score instances reported by such reliable observers as Staud, Gosse, Von Ruck, Ollivier; Law, Ebers, Bang and Rivel. In addition to the above, the post-mortem evidence is admissible on this point. Theobold Smith first pronounced a case of intestinal tuberculosis in a child to have been produced by the bovine type of bacilli; DeShweinitz reported two cases; Fibiger and Jensen three; and the Imperial Sanitary Office of Germany several cases.

Tscherning, Pfeiffer and Law, each reported cases of veterinary surgeons who were inoculated directly from tuberculous cows. Gosse, Demine and Bouardel, reported numerous cases of children who were undoubtedly infected by drinking milk from tuberculous cows. Lassar described several cases of persons who came in contact with tuberculous cows, contracting superficial tubercular lesions.

The British Commission appointed to investigate human and animal tuberculosis, found, after a careful investigation, that the tuberculosis produced in cattle by material from human and bovine sources, was identical in its genral effect and in detail. Wolbach and Ernst, experimenting with tuberculins, came to the conclusion that there was no difference in the specificity betwen tuberculins made from human and bovine bacilli, and that there was no essential difference in the disease processes caused by bacilli from these sources. Not only has the communicability of tuberculosis between various species of mammals been demonstrated, but fish, frogs, and other cold blooded animals have been infected with material from both human and bovine sources. Not all of the above attempts to inoculate an individual of one species with bacilli derived from another, or even between individuals of the same species have been successful, owing to the difference in the virulence of bacilli derived from various sources and the wide variation in the resisting power of the individuals and species.

TYPES OF BACILLI.

The study of the difference in cultures of the tubercle bacilli of bovine and human origin has been exhaustively conducted by Theobold Smith. They differ in the appearance of the growth on culture media, the rapidity of growth and in their staining characteristics; but most of all they differ in their virulence. The virulence of the tubercle bacilli of bovine origin is much greater than that of the human bacillus.

These differences would tend to throw some doubt on the transmissibility of the disease had it not been demonstrated that the morphology of the tubercle bacilli underwent marked changes with the change in the culture media. If these could occur in cultures they would probably also occur if introduced into the bodies of animals of different species.

Pearson and Ravenal, and Hamilton and Young, succeeded in greatly increasing the virulence of human tubercle bacilli by successive passages through calves. Mohler succeeded in increasing the virulence of human bacilli for cattle by passing them through a series of rabbits. By passing tubercle bacilli through a series of cats he found that in addition to being more virulent, their morphological appearance was also changed. Not only does the virulence of tubercle bacilli from different species show great variation, but the virulence of cultures from the same species is not constant. The German Tuberculosis Commission found four degrees of virulence in thirty-nine cultures from human sources. We may, therefore, consider it established that neither the morphological and cultural characteristics or the virulence of the tubercle bacillus are fixed, but depend largely upon their environment.

It is probable that bacilli of bovine origin when introduced into the human body in the course of time undergoes metamorphosis and presnts a characteristic of human bacilli. In four cases of generalized tuberculosis in infants, DeSchweinitz found two cultures identical with bovine bacilli. The constant introduction of bacilli of the bovine origin possessing a high degree of virulence into the human body is thought by Salmon to be the means of keeping up the disease in the human species, for the human organism seems to have the power of attenuating tubercle bacilli.

SOURCE OF INFECTION.

The part that the various routes of infection play in children is a subject on which there is a wide difference of opinion and one not capable of exact determination. Raw believes that primary intestinal tuberculosis and tabes mesenterica are of bovine origin and are conveyed by milk; Osler considers the respiratory as a most frequent point of infection in infants; Woodhead believes that milk is the usual vehicle of infection in intestinal and mesenteric tuberculosis; Stil thinks that tuberculosis of the intestine is often secondary and is caused by the swallowing of sputum. In 127 cases of tuberculosis in children he found tubercular ulceration of intestines in forty-three; and in one hundred cases the glands connected with the intestinal tract were tuberculous. Delipine states that the most frequent mode of infection is through the intestines. In England the general average of primary intestinal tuberculosis is about twenty-five per cent. In Germany, according to Henppe, from twenty-five to thirty per cent. and spread from the mesenteric gland upward.

Aufrecht believes that the lung tissue is never infected by the penetration of a mucous membrane of the respiratory tract, but that the main portal of entry is the mucous membrane of the digestive tract.

Behring argues against primary infection by way of the respiratory organs, and asserts that in order to have pulmonary tuberculosis to follow infection with inspired tubercle bacilli, it is necessary to have constitutional changes in the organism due to previous infection. Behring states his conclusions as regards consumption in the following words: "The milk fed to infants is the chief cause of consumption." In experiments on guinea pigs he found that very young animals became tuberculous after a single feeding with the bacilli, and from this he concluded that the young of all mammals were very susceptible to infection through the intestine because of a lack of protective agencies in the alimentary system which are developed later in life. In this connection it might be well to mention the statement of Welch that one of the functions of the mother's milk was in transferring proper antibodies to the child, increasing the resisting power of the infant to infection. Behring investigated the intestinal mucous membrane of the young in order to discover why so little resistence was offered to the passage of bacteria. He found that the mucous membrane in infants possessed no continuous epithelial covering, and that the gland tubes of the ferment producing glands are little if at all developed. He states that, although phthisis pulmonalis may not de-

velop until adult life, the real beginning of the infection dates back to infancy when the disease germs were first introduced into the body. He does not state that milk is the only source of infection, but that the bacilli laden particles of sputum scattered in coughing gain entrance to the nose and mouth of infants, and from there reach the intestinal mucous membrane. His main conclusion is "that an infantile tuberculous infection predisposes to pulmonary consumption."

The old assertion that the lungs are the primary seat of tuberculosis in man, the infection being conveyed by inhalation, is not susceptible of proof, and is no more probable than the assertion of those who have gone to the other extreme and attributed tuberculosis mainly to the ingestion of infected food. In considering this question, we are at present wondering in the vague domain of theory, but it seems, in the light of our present knowledge, that the digestive tract is the most frequent route of infection, the two main ports of entry being the tonsils and the intestines. We have also underestimated the importance of glandular tuberculosis contracted in childhood to pulmonary tuberculosis in later life. Baumgarten holds that the tubercle bacilli can remain latent in the tissue for a long period of time, until, for some reason, the resistence is lowered and tuberculosis results. The cells of the lungs lending themselves most readily to influences of a trophic, toxic or traumatic character, become the seat of a secondary infection. The portions of the lungs which are first affected are much more readily entered by the bacilli through the blood stream than through the air current.

The evidence as to the communicability of bovine tuberculosis to infants is so conslusive that there is no longer any room for doubt. The only point in question is as to the comparative frequency of this mode of infection. This source of infection is much more frequent than has been generally supposed. Certainly, we have underestimated the frequency of abdominal tuberculosis in children. It is our duty to guard against tuberculous infection in every way possible, and to insist on milk absolutely free from tubercle bacilli for infant feeding. The cows should be tested with tuberculin, and those which react positively, should be separated from the herd. The statement that only milk from cows suffering from tuberculosis of the udder is infectious, according to the investigations of Mohler, is correct. Twelve out of the fifty-six cows examined by him which showed no sign of tuberculosis of the udder gave milk containing tubercle bacilli.

It is to be hoped that the immunizing procedure of Behring, i. e., the prevention of tuberculosis in cattle by the inoculation of a protective virus which is now being extensively tried in Europe, will prove a success, and we can remove this source of infection. Tuberculosis amongst the negro children in the South can be diminished to a large extent by improving the sanitary conditions of their surroundings.

ECZEMA, ITS SYMPTOMATOLOGY. ETIOLOGY AND DIAGNOSIS.*

By THOMAS W. MURRELL, M. D., Richmond, Va.
Lecturer on Dermatology, University College of Medicine.

To arrive at a proper conception of this, one of the most important of all the affections of the skin, we must always keep this one thought in mind, viz., eczema is not a disease but a symptom. This symptom, however, having a definite pathology, and at times being so grave in its effects upon the general health, we, for convenience sake, refer to it as a distinct disease. But because of this, arise the badly treated cases, the lost faith in medical skill and with it all joy of living. Even worse than these, the skeptical doctor dismisses the cases as incurable, thereby relieving himself but, sad to say, in no way relieving the patient.

Symptomatology.—When in the mythological ages, the old Greek God Proteus, amusing himself changing himself in many different shapes, he little knew what a benefit he was conferring on dermatology. The word protean describes as none other can how eczema changing its outward form, whether it be macular or pustular, is yet eczema and nothing else. The great subjective symptom of eczema is itching, varying in intensity from a simple annoyance to a mind-unbalancing terror; itching that causes patients to mutilate themselves in a frenzy to obtain relief. This is the great symptom, and while it is dangerous to rely upon any one statement, we may well say where there is no itching, there is no eczema.

There are five symptoms that have been called

* Read before the Richmond Academy of Medicine, and Surgery, April 25, 1905.

the cardinal symptoms because every case of eczema, in the course of the disease, will present one or more of them if not all. They are—1, redness; 2, itching; 3, a tendency to moisture or weeping; 4, infiltration; 5, desquamation. There are other symptoms that are sometimes included with these, viz., fissuring and crusting, but these are secondary, entirely dependent upon the presence of those first named.

In regard to the lesions themselves, we divide them into four classes, designated by the predominant type: Macular, papular, vesicular or pustular.

The *macular* type, usually spoken of as eczema erythematosum, and the papular are the forms in which itching is the most intense, with which adults are the most affected and which are the kinds likely to become chronic. The vesicular and pustular are the types most severe in their onset, apt to attack children and likely to run an acute course. Now right here let me draw the distinction between an acute and a chronic eczema. Acuteness or chronicity is not measured by the time it has existed, but by the severity or character of symptoms presented. An eczema of twelve months' standing may be acute, and one of three be chronic.

Eczema erythematosum is most frequently seen on those whose vocation causes much exposure—sailors, engineers, night watchmen being frequently affected. The face, the part usually affected, is swollen; the skin a deep red and looks as if it were sprinkled with bran; the eyes may be almost closed; the lines of the face smoothed out, the eyes appearing sometimes as rounded holes. This form is most liable to become chronic because of the continuous presence of the exciting cause; it itches intensely and passes into the scaly forms.

Eczema papulosum is that form in which itching is most generally present. It occurs as individual papules closely aggregated. These may occur in disseminated patches, and in this form it is that this kind of eczema is most likely to attack the extensor surfaces.

Eczema vesiculosum, by old writers supposed to be the only form of eczema, prefers the flexor surfaces and the flexures of the joints, the points of heat, moisture and irritation. The vesicles are small, closely packed together and breaking down early, pour forth great quantities of a yellow sticky serum. This serum has the property of stiffening linen when dried, and this is a diagnostic sign of value. The itching here is not so intense—the profuse weeping seeming to relieve to some extent.

Eczema pustulosum affects strumous subjects, particularly children. It is an infective, vesicular variety, and its sites of selection are the face and scalp. The itching here is never so intense as in the other varieties.

Eczema squamosum, rubrum and fissum are those secondary forms in which there are, in the first, scaling; the second, entire absence of the upper layers of the epidermis; and the third, when bending of the indurated surfaces has caused fissures.

Etiology.—Eczema can be due to causes wholly internal or wholly external, yet he who is wise had best go on the assumption that in cases due to external irritation there was necessarily a defect somewhere that made the skin sensible to such irritation. Suppose for instance, that a surgeon after cleaning his hands with green soap, finds them showing all the signs of a severe eczema. We readily admit that the soap was the exciting cause, and by discontinuing its use there will be a cure. But the point is this: The surgeon has been using the soap for many years constantly. Why did he not have an eczema before? And we are forced to the conclusion that some other agent has so lessened the resistant power of the skin that the irritant becomes the final straw.

Anything that will irritate the skin will cause an eczema. Under this head come the trade eczema. They are very numerous, and we may leave them with the statement that any trade that makes use of any material peculiar to itself that can irritate the skin will have its distinctive eczema.

When we come to consider the internal or predisposing causes, we plunge headlong into the practice of medicine, and were the question what does not predispose, the answer would be easier. Anything that lowers the resistant power of the body will certainly have its effect. Digestive disturbances, rheumatism, errors in diet and nutrition, constipation, gout, nephritis, diabetes, all are prevalent causes. Nature does not display the red flag of danger for no cause. She never "sayeth peace, peace, when there is no peace," and when she does say trouble, trouble, it behooves us to search for trouble. Not long ago, this was strongly impressed upon me when, in three cases within six weeks, on examination of the urine, there were found indications of incipient nephritis.

Diagnosis.—There should be no trouble in diagnosing a typical case of eczema; but as it possesses symptoms in common with some other diseases, we will take up those for which it is most likely to be mistaken.

Erysipelas.—In erysipelas, the constitutional symptoms are most marked—high fever with great malaise and intense burning. There are no constitutional symptoms in eczema and there is itching, not burning. The skin in erysipelas is tense and shining, the discoloration being sharply defined. In eczema, it is a dull red and fades gradually into the surrounding skin.

Seborrhea sometimes simulates eczema closely. Here, however, there is not the characteristic induration and thickening of the skin, and the sites of selection, the chest and back, are not the places where eczema is most likely to occur. The scales in seborrhea are greasy and friable, while in color they are not yellow like those of eczema, being more of a dirty white. The itching, too, is never so intense.

In *hyphogenous* sycosis, or tinea barbæ, the hairs presnt the "burnt stubble" appearance, and in this, as in all other forms of tinea, the microscope, by the finding of the fungus, readily clears away all difficulty. In *sycosis vulgaris,* we remember that this is a disease of the hair follicles, and while eczema does occur in hairy regions, it is not so sharply limited. There will be clean patches in a sycosis; while in eczema, the redness is continuous.

Impetigo is a pustular disease per se. The pustules are not closely aggregated, not on an indurated base and the disease is one of short duration. The crusts appear to be stuck on the skin, and are not thick and greenish as in eczema.

Squamous eczema may resemble *psoriasis,* but in this disease the scales are pearly white, imbricated and sharply defined, preferring extensor surfaces, the elbows and knees. These symptoms are not characteristic of eczema. Moreover, in forcibly removing the scale of psoriasis, we notice the exuding droplets of blood which is a sign almost pathognomonic.

The *squamous syphilide* may at times be very much like squamous eczema, but here we have a scale most frequently on the palms, sharply limited and without an inflammatory base. Of course, the history of the case is most important.

In *scabies* we usually have an eczema, but here the point is to recognize the scabies as the causative factor—not in recognizing the presence of the eczema itself.

Because of the complexity of this disease, its almost limitless etiology, and its many varied symptoms, we have sometimes to search untiringly for its cause. But it can be found, it must be found, and the motto of any man who would treat eczema might well be:

"Still achieving, still pursuing,
Learn to labor and to wait."

16½ *South First Street.*

TREATMENT OF ECZEMA.*

By F. H. BEADLES, M. D., Richmond, Va.
Lecturer on Diseases of the Skin, Medical College of Virginia.

To attempt to present a complete paper on the treatment of eczema would be an imposition on you as well as a task too difficult for me in the time at my disposal. It would require a review of the subjects of internal medicine, therapeutics, materia medica and hygiene. Therefore, it is not my purpose to enumerate the host of medicinal substances which have been used in this disease, but to direct your attention to certain principles, which, when carefully observed, are usually productive of most gratifying results.

Eczema is a disease which occurs among all classes of people, in constitutional vigor or debility, and in connection with almost any disease, yet it is an entirely curable one. But it presents so many phases in regard to its lesions that it would be useless to expect any one plan of treatment to insure success, for such an expectation would be at variance with the laws of pathology and with universal experience.

The early French theory that the disease demands mainly constitutional treatment, and the Vienna belief that it is essentially external in character, must give way to English and American belief that it is a derangement both constitutional and local, and as such requires treatment both constitutional and external. The best chances for success in the treatment of eczema depend upon the comprehension of every detail connected with the causation and continuance of the eruption, coupled with a knowledge of the

*Read before the Richmond Academy of Medicine and Surgery, April 25, 1905.

therapeutic agencies which have proven most effective.

A careful study of the patient's temperament, habits of eating, drinking and bathing will often reveal the cause of the disease and give a clue to the method of treatment to be pursued. In some cases, the disease will respond readily to local treatment alone; in others proper attention to the function of the intestinal tract and kidneys is sufficient; while in more severe cases, it is often necessary to correct diseases of other organs before the eruption will subside.

The most important factors in the constitutional treatment of eczema are diet, digestion and elimination.

No absolute rule can be laid down regarding the diet of eczematous patients. Each individual should be given the quantity and quality of food that will best nourish his body without interfering with digestion and elimination. While it is not possible to say that any special articles of diet directly induce eczematous conditions, still there are certain foods difficult of digestion which should be avoided. The diet in eczema should be plain but nutritious, and the meals taken at regular hours. The gouty and rheumatic patients should avoid any excessive use of meat and be restricted to the simplest diet consistent with health; while the anæmic, strumous and poorly nourished subject should be given plenty of nutritious food. Excessive tea or coffee drinking and unlimited indulgence in tobacco and alcoholic stimulants should be prohibited. Only to the old and feeble who really need its support should the use of alcohol be allowed, and then only in moderate quantities. In some cases, the only constitutional treatment is systematic exercise, plenty of fresh air and sunlight, the daily or occasional administering of a laxative, and last but not least, the free use of a good eliminant. Water has long been recognized as nature's best solvent and no better means for elimination of effete materials can be found than the free drinking of water.

In considering the medicinal treatment we must remember that there is no specific for eczema. There is no one medicine which administered internally or externally, can confidently be expected to effect a cure. The drugs against which this sentence is mainly directed are arsenic and zinc ointment, regarding which a far too popular tradition still remains that they only are the treatment for all kinds and conditions of this disease. In fact, there are physicians who use arsenic in the treatment of eczema as freely as Mrs. Squeers administered her brimstone and treacle. The number of cases aggravated by the use of arsenic or by the reckless swallowing of so-called blood specifics and alteratives is incredibly large, while the improvement noted after the discontinuance of such medicines is amazing to both patient and doctor.

Local treatment of eczema is of great value, and in some cases is alone necessary to effect a cure. The common error lies in the frequency with which, in a difficult case, a succession of new remedies is tried, instead of studying more carefully the proper use of a few familiar remedies. The essentials in the local treatment of eczema are exclusion of all sources of irritation; relief from pruritus and all morbid sensations; antiseptic dressing; reduction of local congestion in acute, and destruction of the thickened and abnormally horny layer in chronic forms of the disease.

Exclusion of all sources of irritation is the most important and often the most difficult problem. Only carelessness or ignorance will overlook the fact that the inflamed skin, like the inflamed bone or eye, calls imperatively for rest. The prevalent idea seems to be that the patient with the inflamed joint must retire to bed, while it is only necessary for the eczematous patient to consult his physician, swallow a dose of medicine, anoint his eczema and return to his vocation. The medicament is soon rubbed off, the skin again subjected to harmful influences, and the patient wonders that the treatment is not more beneficial. The great importance of rest and freedom in all forms of eczema is well illustrated in the new born infant whose sensitive skin responds to its first harsh acquaintance with the world by an explosion of eczema. While the infant is frequently ushered into the world afflicted with various other dermatoses, it is a noteworthy fact that no child is born eczematous. Therefore, the difference in regard to eczema between the child unborn and the child born is the difference between skin protection and skin irritation. Fixed dressings are of advantage in preventing irritation from scratching, excessive bathing, etc. Often, the necessity of relief from itching is so imperious that the patient seems possessed of a fury which does not subside until he has drawn blood from the affected parts. A few minutes scratching or an untimely washing of the inflamed surface may undo all that has been gained by days of patient and successful treatment. In acute cases, soap

and water are rarely admissible, cleansing usually being effected by wiping with olive oil or cold cream. The morbid sensations are usually allayed by the complete protection of the skin from irritation. Antipruritics, however, are frequently desirable and necessary.

Some cases of eczema are undoubtedly prolonged and complicated by action of various microorganisms which come in contact with the skin. Therefore, it is well to prevent the activity of these bacteria by prompt attention to the raw surface which, like so many open doors, stands ready to receive infection. Simple protection does much to accomplish this, and most of the antipruritics are also antiparasitic.

Congestion is best relieved by compression, while the repair of the denuded epidermis is materially aided by the use of mild, soothing applications. In the reduction of the abnormally thickened epidermis in chronic cases, the use of salicylic acid is very valuable. I believe that the great secret in the local treatment of eczema is not what particular drug or formula is good for the disease, but a knowledge of this great principle, that acute diseases need soothing applications, while subacute and chronic cases need stimulation. When you have mastered this simple truth, you have the key to two-thirds of the dermatoses to which man is heir.

219 *East Grace Street.*

SYMPTOMS AND TREATMENT OF LOBAR PNEUMONIA.*

By T. H. WOOLSEY, B. S., M. D., Greeneville, Tenn.

Member Greene County (Tenn.) Medical Society, Tennessee State Medical Association, etc.

Lobar pneumonia usually follows a systematic and regular course in its symptoms and physical signs more often than any other specific fever; notwithstanding this fact there are many variations. The first symptom in a majority of cases is a prolonged and distinct chill, coming usually at night and lasting from one-half to an hour. This is true in adults; in children it is rarely ever the case, they having nervous symptoms followed by stupor or convulsions. Sometimes we have prodromal symptoms for several days, severe headache, loss of appetite, general muscular pains, etc., before the regular symptoms. In old people and inebriates we rarely have a chill, usually great exhaustion, general nervousness and often delirium. The symptoms, by and by, become characteristic. High fever follows these symptoms, associated with pain, a full bounding pulse, hot dry skin, with a dark red flush on the cheek, generally on the side of the affected lung, with a white thick coat upon the tongue, great prostration and complete loss of appetite. The urine is scanty and high colored and the bowels are usually constipated. The breathing is very much accelerated, more so in children than in adults, and is panting not catching in character. The dyspnœa, though frequent, is not always constant but is often so great the patient cannot lie down; it seldom occurs in old age. A very prominent symptom in children is the expiratory "grunt" and widely dilated nares. Pain usually follows and sometimes precedes the chill and is generally situated under the nipple of the affected side, but may be in the abdomen, back or shoulders. It is sharp and stabbing in character and is increased by coughing, sneezing and deep inspirations. In old age pain is never severe. The fever rises rapidly after the chill and reaches its maximum heigth, usually 104° to 105° in 24 to 36 hours and runs a high course, with slight remissions until the crisis, which generally occurs on the fifth or seventh day, when the temperature drops to normal by one of three ways, viz.: the most common (1) by a profuse sweat, (2) by a serous diarrhœa, and (3) by the passage of a large quantity of urine. When the fever declines gradually (lysis) the normal is reached by the ninth day and sometimes not until the twelfth day, and even later. Neither the height of the fevor nor the amount of lung tissue involved influences the day of crisis. We sometimes have a second rise of fever after a pseudo-crisis. Herpes is especially noticeable in children on the lips and around the nostrils, and very often the lips are swollen. Cough is present in the majority of cases, usually coming on about the second day but may come with the first symptoms. It is at first dry and hacking in character. It may entirely cease before a fatal issue. It is more constant in children than in adults and is often absent in old people, or is so slight as not to be noticed by patient or physician. This dry cough soon brings up a sputum which is characteristic. It is at first a white frothy mucus, then becomes viscid, sticky and jelly-like and

*Read before the Greene County (Tenn) Medical Society, May 1, 1905.

often has brick dust or rusty portions in it. It may vary from an orange red to a prune juice color. Just a small speck of this color may appear or it may be seen in large quantities. As death approaches the sputa may become scanty and of a greenish color. The sputum is usually swallowed in children but may be seen in the vomited matter. The sputa contains the microorganisms. The pulse, which is an infallible index to the condition of the human system is a great guide in pneumonia. In mild cases in the adult it ranges from 90 to 120; if it continues above this the case is severe. It is usually soft and full at first, but it becomes small and feeble. A rapid pulse is associated with a high fever and *vice versa*. The pulse may become dicrotic about the third or fourth day, and may be intermittent and jerky in character. Heart failure may occur at the beginning of the disease. In children the pulse rate may reach 200 per minute. Loomis says, "In all cases of senile pneumonia the pulse should be counted at the heart."

The brain symptoms are not very prominent except in the debilitated and in those of dissipated habits. In these delirium and convulsions are likely to occur; this is often followed by subsultus tendinum, insomnia, frightful hallucinations and even coma vigil. Delirium in the weak and feeble is generally of a low muttering type and when occurring late is usually fatal. The brain symptoms often resemble acute meningitis.

We should be perfectly familiar with the physical signs and practice them continuously throughout the disease. Inspection is of prime importance; look your patient over, face, chest and extremities. In the first stage you will have an anxious expression, face flushed or the mahogany spot on the cheek of the affected side. On account of great vaso-motor disturbance the lips are cyanosed, especially in children, the rest of the face being very pale. Sometimes in the aged the face assumes a dusky, sallow hue. The patient in seeking comfort may be first lying on the back, then on the side with the thighs flexed. The movements of the affeced side are more or less restricted while the unaffected side moves as in health or may be slightly exaggerated. In double pneumonia the costal type of respiration and abdominal breathing predominates. There may be entire loss of motion over the affected lung. After crisis the expansion of the affected side will return. Palpation shows a more or less marked increase of vocal fremitus over the affected lung, corresponding to the extent of the congestion. In the second stage we usually have considerable increase in vocal fremitus, while in some cases it is so slight that no difference can be detected, sometimes being less than on the normal side. The cardiac impulse may be transmitted through the sollidified lung. In the third stage vocal fremitus gradually diminishes. Pleuritic effusions frequently conceal the signs.

Percussion in the first stage will give slight dullness over the affected portion of the lung. Sometimes the dullness is not well marked and we may find at the end of this stage a slight tympanitic sound; we rarely find absolute dullness in this stage. In the second stage there is marked dullness over the affected area, and exaggerated resonance over the unaffected, and there is a feeling of resistance accompanying the percussion—more so than in any other pulmonary trouble. By this means the exact outlines can be defined. We sometimes find the cracked-pot sound over the relaxed parts of the lung near the consolidation. This is the last sound to disappear. In the third stage dullness becomes less marked and clears up in patches.

Auscultation is the best way to determine the condition of the pneumonic lung, and should be persistently practiced. In the first or dry stage we have a feeble and unnatural respiratory murmur. This is sometimes harsh and sometimes weak, losing the "breezy" rustling sound of normal breathing. Over the unaffected portion the breathing is exaggerated. Very early in the disease fine crackling sounds at the end of inspiration, the *crepitant rales*, which are considered typical signs of this stage. They resemble the sound produced by throwing salt on hot coals, or rubbing the hair between the fingers, and may be heard during the first twenty-four hours and very often are not heard at all. It may be heard in children after a spell of fretting.

In old age the physical signs are very much modified. In the second stage the air cells are filled with the exudation; the crepitant rales cease and bronchial or tubular breathing is heard over the solidified lung. Sometimes this sound cannot be heard on account of the bronchus being filled with mucus. It follows expiration but it may accompany both inspiration and expiration. Pleuritic effusion may conceal the auscultatory signs. The voice sounds are increased and bronchophony is heard over the whole of the affected lung. Pectoriloquy may be heard when there is fluid in the pleural cav-

ity. Aegophony is sometimes heard. The heart sounds are abnormal. Small gurgling sounds or mucous rales are heard during this stage. Tubular breathing may be heard in the aged in connection with the cough if violent. In the third stage bronchial breathing gives place to broncho-vesicular breathing which soon becomes blowing, then indeterminate and finally normal. The crepitant rale returns, which is called the "rale redux." The physical signs of this stage disappear in the opposite order to that in which they appeared.

Treatment.—Pneumonia is a dangerous disease; it is a great struggle for life, hence the most favorable surroundings should be provided, viz.: plenty of fresh air, good nursing, careful nourishment. Depressing drugs should be avoided. We must, if possible, maintain the power of the heart, for there, in my mind, lies the secret in the treatment of this disease. We have no specifics. No drug should be used unless there is a positive indication for its use. The stomach should be carefully guarded, and if any medicine disturb the stomach it should be immediately withdrawn. In the beginning I usually give calomel, followed by a saline to stimulate elimination and to lower pressure. Many so-called specifics have been used, viz.: creosote, thiocol, collargol, turpentine, carbolized iodine, etc. I have used the latter and think it only valuable as a stomachic. I don't think you could saturate the system sufficiently with these antiseptics to overcome the toxæmia without producing an untoward effect. The pain is very often so severe at the outset that it can only be relieved by a full hypodermic dose of morphine, and I think that is the ideal thing to do; but toward the crisis, if the breathing is difficult and the heart weak, opium is dangerous, and if used at all, should be used in very small doses. Generally the cough should not be interfered with, but an occasional dose of Dover's powder is quite beneficial; also the chloride of ammonia in full doses every three hours where the bronchial secretion is abundant, but be careful and not disturb the stomach with this drug. Insomnia is often a very distressing symptom and great attention should be had for its relief; sometimes to sponge the patient with tepid water will produce sleep. If nervous give some of the bromides; if this will not do combine with chloral and give small doses of morphine hypodermically. I usually control the high fever with quinine and sponge baths. Maintain the power of the heart with whiskey and strychnine; when there are signs of heart failure the patient should be kept in the recumbent position and normal saline solution used under the skin; oxygen has been used with brilliant results.

There are malignant cases that will not yield to any treatment; success in the treatment of this disease will be to the vigilant and painstaking physician.

SOME POINTS OUT OF MY OWN EXPERIENCE IN REFRACTION AND THE FITTING OF GLASSES.*

By ROSS P. COX, M. D., Rome, Georgia.

President of Floyd County Medical Society; Oculist and Aurist to Georgia School for the Deaf; Members of Georgia Medical, and American Medical Associations; Oculist, Aurist and Laryngologist to U. S. Pension Bureau.

The important role that glasses play in the care of eye troubles is illustrated by the fact that 60 to 80 per cent. of all eye patients require the fitting of proper lesenses. When we recall that the wearing of glasses is an incident certain to befall every individual that lives beyond middle life, their timely and proper adjustment becomes a subject of special interest and importance.

It is my faith that no case should receive any glass at all unless the need is sufficient to warrant the best lens, fitted in the best possible manner. The loose and hasty prescribing of "resting glasses," "strengthening glasses" and the like, on vague and insufficient grounds is unscientific. The vast output of bad refraction is harmful not only by entailing bootless expense, but also, in addition to direct injury it may do, it is apt to block the way to good work and relief.

Inexact refraction is much commoner in Europe than in our own country. Prof. Fuchs, of Vienna, once stated to me that, in his opinion, the benefit of the fine refracting, so much practised in America, was due chiefly to suggestion. My understanding was that he considered most lenses of less than three-quarters of a diopter a refinement of doubtful utility. Certain it is that much of the refraction of continental Europe done, often, upon children, without the aid of any cycloplegic, would be considered crude and imperfect by many American refractionists, and particularly so by the Phila-

* Read before the Georgia State Medical Association, during its session at Atlanta, April 19-21, 1905.

delphia school, which, I think, pre-eminently cultivates a nice precision in these matters.

The pith of the matter, it seems, is a fine discrimination as to the kind of work an eye must do. Imperfections that are negligible in an ox-cart wheel would mean swift destruction if allowed in the wheel of an express engine.

The last thousand consecutive cases for whom I have prescribed glasses, form the basis of this paper. The ages of these patients range from 4 to 90 years. The average age is 33.1 years. Forty-four per cent. of these cases were refracted under atropine; homatropine was used for 15 per cent., and no cycloplegic was used for the remaining 41 per cent.

As to the use of cycloplegics, it has been my rule, practically without exceptions, to refuse to give glasses to children under 15 years of age, unless I was first allowed to place the eyes under the full effect of atropine. From the age of 15 to 40 I still prefer atropine in all difficult or complicated cases, but am content with homatropine in the great majority of cases. Within this last limit, especially if the patient is above 35 years of age and there are no evident complications, after using all available helps, and, often, after tests repeated on different days, I sometimes consent to dispense with a cycloplegic, but usually under protest and after disclaiming all responsibility for results.

From the age of 40 to 50 I still urge the use of homatropine in selected cases, and the results have been so satisfactory that I am strongly encouraged to extend the use of homatropine at this rather advanced age. I follow those who conclude these cases with a weak solution of eserine. Occasionally I have to resort to atropine after having failed with homatropine, but never in persons over 40 years of age.

By far the most frequent error, slightly exceeding 53 per cent. of all the cases, was compound hypermetropic astigmatism. One-fourth of these had astigmatism in one eye only. Next, in point of frequency, came simple hypermetropia, with 21 per cent. Included with these is the, to me, astonishingly small number of cases of uncomplicated presbyopia. These amounted to about one-quarter of one per cent., being only 28 in the 1,000. Next came simple far-sighted astigmatism, with 9.4 per cent. This makes 84 per cent. in which the sole error was some kind of hypermetropia. Five per cent. had mixed astigmatism. One and seven-tenths per cent. were far-sighted in one eye and near-sighted in the other. Thus, we find that hypermetropia was a factor in over 900 of the cases. Simple myopia was the error in only one per cent., compound hyopic astigmatism in 6.15 per cent. and simple hyopic astigmatism in just 2 per cent. of the cases.

There were more than nine times as many far-sighted as there were near-sighted cases. This is a much smaller proportion of myopia than I have ever seen in any table of comparison. In many parts of Europe, as, for instance, at Copenhagen, 8 per cent. or more of the entire population are near-sighted. (Noyes.) In Germany 40 to 60 per cent. of the pupils in many of the upper grades are myopic. Randall gives a table of 72,565 ametropes, of which 44 per cent. are myopic and 50 per cent. are hypermetropic. In contrast to his 44 to 50, my results show 5½ to 50. The myopia cases, however, obey the usual age rule. Taking the age periods of 8 years and under, from 8 to 12 years, from 12 to 16 years, and from 16 to 20 years, the number of myopes were respectively 2, 6, 9 and 25.

The number of pupils with myopia in the nine grades of the Rome public schools is at least less than 15 per cent., and I believe considerably less.

Now we know that wild and domestic animals, savages, half-civilized people and babies are far-sighted, while highly civilized communities are supposed to yield a high per cent. of myopia.

A professor in Vienna who had three diopters of near-sight assured me that he considered this a great advantage. He could work indefinitely without strain to his accommodation, got finer images and was freed from the necessity of presbyopic glasses. On the other hand, he must use lenses all his life to secure any of the manifold practical advantages of farsight, not to mention the enchantment that distance lends to the view.

Moreover, Donders, who ought to know, says that the myopic eye is a sick eye, nor must we lose sight of that tendency it has to get progressively sicker. However advantagious it may be in some communities to limit the view to the end of one's nose, the conditions are quite different in homes that nestle among the foot hills of the Blue Ridge, on the banks of the "beautiful winding Etowah."

There is also a growing impression that near-sight stands more for children that go to school without breakfast or lead the unwholesome life of large cities and also, for the broad, flat German face than it does for culture.

My own community, which shows farsight to

be the sole factor in 84 per cent. and a factor in 90 per cent. of a thousand consecutive cases of ametropia, is especially well equipped with high graded public schools, high schools and colleges. It must be the wise administration of these and the superior conditions for health generally that has so effectually kept down the development of myopia. Sventy-seven per cent. of the 1,000 patients had astigmatism in one or both eyes that required correction. Just another 77 per cent. took a lens in one eye that differed in strength or axis from that of the other eye. While 240 of the cases were 45 years of age or over, only 28 had uncomplicated presbyopia.

These last three statements show the utter stupidity and folly of allowing ignorant, rule of thumb refractionists, whether they be strolling spectacle venders, druggists or jewellers, to abuse the most delicate, complicated and important of all the special sense organs.

Let us consider well the actual state of things. Here are 1,000 consecutive cases that require the help of lenses. Their average age is 33.10 years, an age when the accommodation has yet a range of six full diopters: 77 in every 100 have astigmatism that needs correction; 77 in every 1,000 must have a lens in the right eye that differs from the one in the left; all but 28 out of 240 presbyopes have their presbyopia complicated with some other error of refraction. What chance has even a three-months graduate in refraction to do justice to such an array of complications? What equipment fits one for this work?

The task of refracting properly is so intimately and inseparably bound up with such a variety of medical and surgical problems that, as the days go by, I am more and more convinced that none but physicians should undertake this work and the more physician a man is the better refractionist he will be.

How often it happens to the oculist to make the first diagnosis of Bright's disease, diabetes, syphilis, scleroses, brain lesions, glaucoma, cataract and numerous other local and general diseases.

Eye-strain itself, with its protean symptomatology, is just beginning to be properly studied and appreciated. Ranney, Gould and their followers may be extremists, but a powerfully active radicalism is needed to move a heavy, often stupid conservatism toward the golden mean of truth.

There is a point in refraction that I feel sure has not received the attention that it merits. In connection with the treatment of astigmatism against the rule, I noticed it and practiced it for nearly 10 years before I ever saw or heard of any refernce to it by another, when I saw some discussion of it last year by Dr. Steele, of Chattanooga, in a local journal. The point is that light, passing obliquely through a spherical lens, is acted upon as if a sylindrical lens of the same variety as the spherical had been added, with its axis parallel to the axis on which the spherical is tilted, the cylindrical effect, of course, varying in degree according to the strength of the spherical and the amount of tilting. The practical effect is, for instance, that a presbyope who has normal distant vision with S plus 1.00 D on C plus 1.00 D ax 180°, will, in the ordinary bifocal lens, reject part or all of this cylinder for near work, according to the strength and obliquity of the reading lens. He will accept all of the cylinder only when the axis of vision is perpendicular to the plane of the lens. As this is rarely the case in the ordinary bifocal glasses, it becomes a point of great practical importance.

Of course it makes no difference whether there is astigmatism against the rule or not. We must get the axis of vision perpendicular to the plane of the lens, in any case, or make allowance for the cylindrical effect of the tilted lens.

The deep periscopic lens is very nearly a solution of the mechanical difficulties of these cases. Unfortunately, however, as my optician informs me, the deep periscopical bifocal is practical only with the cemented segment, which, during the hot summers of this latitude, is very apt to cloud or scale off.

Another practical point that I have never seen mentioned in a text-book or journal, is that a cylindrical lens, set in a test frame, in front or behind a strong spherical, such as is used in aphakia, gives a result that is respectively too strong or too weak, when the identical cylindrical is ground in the same lens with the spherical. In ordinary cases of aphakia, if the test is made with the cylinder in front of the spherical, the cylinder of the finished lens will be from .50 D to 1.00 D too strong.

In other words, when dealing with strong lenses, where a cylinder is combined with a sphere, the distance betwen the two lenses in the test frame is not a negligible quantity.

I have thought to solve this difficulty by placing the sphere in the place where it is to be worn and then testing with the cylinders, first

in front of and then behind the sphere, finding the sum of the cylinders giving best vision in the two positions, dividing this by two and ordering the quotient as the approximately correct cylinder.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE III.

Ptomains and Toxins—Entrance of Bacteria into the Body—Sources of Infection and Circumstances Influencing Results—Action of Bacteria on Tissues of the Body—Law of Positive and Negative Chemotaxis.

Bacteria during their growth and metabolism on organic material, either in the body or in the test tube, produce a chemical poison called a toxin or ptomaine. The exact method by which toxins and ptomaines are formed is not understood. One theory is that the germs form them as a specific secretion or excretion. Another that the germs break up the complex molecules of the organic substance in which they grow, utilize some of the atoms for food, and leave the remaining atoms in a state of unsatisfied equilibrium. These atoms satisfy their affinity by combining in new molecules and result in the formation of a toxin or ptomaine.

Leaving the theoretical discussion of the manner of formation of toxins or ptomaines we take up the practical consideration of their properties. Toxins are chemical compounds and are not affected, as are bacteria, by either heat or germicidal drugs. They produce a poisonous effect on the system in direct proportion to the amount of the dose absorbed, and being a non-vital product are incapable under any circumstances of self-increase as are bacteria. They closely resemble in their action on the economy the vegetable alkaloids strychnine, morphine and atropine. The toxins of different germs produce different symptoms, just as the active principles of different plants have each their peculiar therapeutical action. The toxin of the germ of tetanus acts principally upon the central nervous system causing characteristic tonic and clonic spasms of definite groups of muscles. The toxin of the germ of suppuration causes high fever, rapid pulse and a cadaveric appearance of the skin. The toxin of diphtheria—among other effects—produces paralysis. They also have a definite local effect. Thus the toxins of pus microbes transform the leucocytes and embryonal cells into pus corpuscles, and the toxin of progressive gangrene destroys the protoplasm of the cell body directly. Toxins are produced in the tissues of the body at the point the bacteria have effected localization. Owing to their solubility, they are usually rapidly absorbed by the fluids of the body and diffused throughout the system. Nearly all of them act on the higher thermic centres to cause fever.

ENTRANCE OF BACTERIA INTO THE BODY.

Most bacteria are ectogenous, that is, exist and, under favorable circumstances, multiply outside of the body. Auto-infection is a misapplied term, as practically all infective diseases are caused by the introduction into the body of pathogenic germs from without. Some microbes exist in the soil and owing to sporulation may remain in an active condition for an indefinite time and when an opportunity is offered give rise to endemics of infective diseases. Other bacteria are diffused over wide areas through water courses, as the bacillus of typhoid fever or cholera. Still other microbes, like the pus germ, appear to be everywhere. At one time it was thought that bacteria were conveyed to the body through the medium of the atmosphere and surgeons carefully sterilized the air of the operating room by means of antiseptic sprays. The danger of this source of infection has now been proven to be small, and the real danger has been shown to come from contact with dirty hands, instruments and dressings. So strong was the conviction of a noted surgeon on this point that he recently said, "I would be willing to operate in a water-closet if my hands were only clean."

It has also been demonstrated that bacteria cannot pass through the unbroken skin, mucous membrane or granulating surface. They act as an effective barrier, an impenetrable armor, and unless there is an abrasion or missing link, the germs cannot gain access to the underlying tissues. When an *infection atrium* exists, however, the bacteria find an open gateway to the unprotected cells, and they at once pass in and endeavor to assert their pathogenic properties.

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

The character of the reaction that follows infection bears no relationship to the size of the infection atrium but depends on the virulency of the germ and the susceptibility of the tissue. An atrium caused by the prick of a needle may be the starting point of an inflammatory condition more grave than that which would follow the infection of a large wound by germs of milder pathogenic powers. After bacteria have entered the body through the broken skin or mucous membrane, the existence of other factors are necessary before they can produce disease. The germs may retain their vitality and circulate in the blood but they cannot exert their specific pathogenic action until they effect localization.

The tissues of the body are not inanimate like an artificial culture medium, but offer a vigorous resistance to the attack of a hostile invader. It is a well known fact that all cases of infection are not followed by pathogenic reaction, due to the ability of the cells to protect themselves against the action of micro-organisms. If, however, from injury or pre-existing disease, the tissues are altered and their vitality impaired so that normal resistance is lessened or abolished, the bacteria can readily effect localization. The existence of a point of lowered resistance in tissue, technically termed a *"locus minoris resistentiæ,"* is therefore an important point in the issue of the result of bacterial invasion. Numerous experiments have been made which prove the above statement. One consisted in taking two lambs and injecting them with a mild culture of staphylococci. One lamb had his testicles crushed, the other was left uninjured. The lamb with the trauma had local suppurative inflammation to develop, the other escaped. Another experiment consisted in painting one ear of a rabbit with croton oil and leaving the other ear unirritated. Injection of a culture of pyogenic germs at the base of its tail produced characteristic changes in the ear whose resistance had been lowered, while the sound ear remained normal. Remember then, for a germ to gain entrance to the body and produce disease there must be:

1. Infection by contact;
2. Entrance through infection atrium;
3. Localization at a point of lowered vitality.

SOURCES OF BACTERIAL INFECTION.

It is important that the practitioner know the localities in the body that most frequently harbor germs in order that their invasion may be anticipated and if possible prevented.

1. *The skin and mucous membrane* are perhaps the most fertile sources of infection. Owing to their constant exposure to the air and contact with infected substances, bacteria are always found on their surfaces. The skin is especially a source of danger as germs not only lodge and are difficult to remove in recesses such as the folds of the nates or the crevices around the nails, but germs also penetrate the structure of the skin by means of sweat glands, hair follicles and sebaceous glands. The mucous membranes are constantly bathed with infected fluids, but are protected to some extent by the mechanical and chemical cleansing properties of their normal secretions.

2. *The upper respiratory tract* is also a harbor for bacteria. The mouth, nose, tonsils and pharynx are never free from germs. Abscess of the brain has frequently been directly traced to caries of the teeth. The pneumococcus is commonly present in the saliva. Tuberculosis of the glands of the neck is usually due to invasion through the tonsil.

3. *The alimentary canal* admits of more bacterial infection than any other avenue to the body. Fortunately the acidity of the gastric juices and the relative absence of oxygen in the intestines inhibits the growth of most forms of microbic life. The bacillus coli communis is a usual inhabitant of the bowels in man, and the bacillus of tetanus and of malignant edema can be demonstrated in the alvine contents of herbivora.

4. *The genito-urinary tract* is frequently a source of danger. The healthy urethra and vagina always contain bacteria despite the fact that normal urine is sterile and that normal vaginal secretion has undoubted germicidal properties.

5. *Milk in the lacteal ducts* is usually sterile but may readily become contaminated at its exit from the nipple. It has also been noted that milk may be infected while in the breast by extension of inflammatory process from the skin.

CIRCUMSTANCES INFLUENCING THE RESULT OF INFECTION.

1. *The virulency and the number of germs introduced.* With certain bacteria it is enough to infect an animal with a single organism in order to produce death. This indicates that the bacteria is extremely virulent and the animal very susceptible. Again, inoculation of an animal with a small number of certain bacteria may be harmless; inoculation with a larger number may only cause local disturbances,

while inoculation with still larger dosage may cause fatal results.

2. *Infection with a single species of bacteria or with an association of two or more varieties.* Certain bacteria which alone are extremely dangerous, lose their power when combined with other organisms; while again some have their virulency increased by such affiliation.

3. *Hereditary influences* may modify the usual action of germs. There is undoubtedly the transmission from parent to offspring of immunity to certain infectious diseases, and predisposition to others.

4. *The condition of the part inoculated* must be considered. If there is lowered vitality from hyperemia, anemia, the presence of a foreign body, the withdrawal of trophic nerve influence, on other conditions causing local predisposition, the result of infection will be different from infection with the same species in healthy tissue.

5. *Pre-existing diseases and anatomical conditions due to* age must be considered in estimating the result of microbic infection. Syphilis, gout, scurvy, diabetes and other constitutional diseases exercise a decided influence on the action of microbes. The post-puerperal state, typhoid fever and other acute wasting diseases lessen the patient's resistance. Finally anatomical peculiarities of different ages, such as th enlarged and tortuous blood vessels at the juncture of the diaphyses with the epiphyses in the bones of growing children, and the senile changes in the heart and blood vessels of the aged, all offer unusual conditions which are followed by unlooked for results.

6. *The personal habits and environment* of the infected animal or individual must be considered. Diet has much to do with tissue resistance. Rats fed on bread are more susceptible to anthrax than those fed on meat, and artificial immunity produced in other animals is rapidly lost by starvation. Certain drugs which destroy red corpuscles increase susceptibility, and water injected into the circulation lessens the germicidal power of the blood. Extremely hot weather increases the probability of suppuration and dark, damp, poorly ventilated houses notoriously predispose to infection. Certain occupations, such as working in match factories, render the individual liable to certain microbic diseases.

7. *In a limited number of cases infection can be transmitted from mother to fetus,* and this must be borne in mind as an explanation of otherwise inexplicable developments. The placenta is usually regarded as a perfect filter, nevertheless, it is occasionally an ineffectual barrier against micro-organisms. Cases are known where the bacillus of anthrax and pyogenic cocci have passed from the maternal to the fetal blood.

ACTION OF BACTERIA ON THE TISSUES OF THE BODY.

The action of pathogenic bacteria on the system after they effect localization is both local and general. Locally they produce irritation or inflammation, and constitutionally they cause fever and other symptoms classified under the terms septic intoxication or septic infection. It is not definitely settled how these results are produced. It is probable that they are effected in three ways: First, bacteria by their presence in the organs or tissues of the body act mechanically and impair their functions. As an example of this may be cited the disease of anthrax in which the capillaries are often found so full of the specific bacilli that the blood cannot circulate. Secondly, bacteria abstract from the body a part of its essential constituents; for example, albuminous substances carbo-hydrates, etc. These are not only taken from the fluids of the body, as the blood and lymph but also directly from the protoplasm of the cells. Thirdly, bacteria act by the development of the chemical poisons or toxins previously described, which are rapidly absorbed and diffused throughout the system. By virtue of their ferment-like action they greatly increase tissue-metamorphosis, and acting on the thermic centres cause fever and other constitutional disturbances.

CHEMOTAXIS.

It is a well proven fact that when bacteria infect a part there is an increase in the number of leucocytes in the part. This is due to the attraction microbes exert on the white blood cells, causing them to leave certain localities and accumulate in others. This phenomenon is explained by chemotaxis, or the mutual attraction or repulsion possessed by animal cells or vegetable cells for each other or as in the present case by an animal cell for a vegetable cell. When an attraction exists between two cells it is called positive chemotaxis. When a repulsion is evinced it is called negative chemotaxis. The simplest and best understood type of chemotaxis is that exhibited in the sporulation of ferns.

Analyses, Selections, Etc.

Non-Operative Treatment of Retro-Displacement of the Uterus.

This is the title of a paper presented to the Medical Association of Alabama (April 19, 1905,) by Dr. W. P. McAdory, of Birmingham. In the matter of preventive treatment, he emphasized the importance of the physician giving instruction to mothers as to the proper hygienic condition and care of bowels and bladder, clothing and exercise, in order to prevent the beginning displacement in growing girls. The importance of the proper care of the lying-in woman at the time and after labor as important in preventing the condition were mentioned, as well as the proper care of perineum and cervix at the time of tear. All cases should be examined before they are allowed to get up, and if the uterus is not undergoing involution properly, glycerine tampons are indicated while the woman is in the knee-chest position. Hot douches, lying on the side, etc., as aiding involution of the uterus by removing the weight of the womb from the supports, thus allowing them to undergo involution, are to be advised, and are important in preventing the condition and in even relieving it if it already exists.

As to curative treatment, those acute cases where the uterus can be replaced should have this done with the woman in the knee-chest position; the posterior wall of the vagina is retracted, and the vagina tamponed, the uterus being held in position—keeping this up for several weeks, with instructions as to lying-in, Sims and knee-chest position. Determine the true condition when acute displacement is suspected, and apply the treatment at once.

The chronic cases of retro-displacement should always have the complications relieved, and then the above method of treatment should be carried out for at least ten days, for the purpose of relieving congestion, etc., before special operation for the displacement is done.

In all chronic cases, the non-operative treatment will simply tide the patient over until an operation can be done, though by proper care after pregnancy the condition may be relieved.

It is better to grow into a place of power than to be blown into one of popularity.

Book Notice.

The Johns Hopkins Hospital Report. Vol. XII. Baltimore. 1904. Paper. 4-to. Pp. 549.

This volume is like its predecessors—full of scientific research and experimental observations. Article I is a fully illustrated one on "The Connective Tissue of the Salivary Glands and Pancreas, with its Development in the Glandula Submaxillaries," by Dr. Joseph Marshall Flint. Dr. Joseph Erlanger describes a "New Instrument for Determining the Minimum and Maximum Blood Pressure in Man." He and Donald R. Hooker, A. B., M. S., also report an "Experimental Study of Blood Pressure and of Pulse Pressure in Man"—these two articles covering about 240 pages. Dr. J. Morris Slemons writes on "Metabolism during Pregnancy, Labor and the Puerperium." Dr. Rufus I. Cole contributes an article on "Typhoid Meningitis." Dr. Wm. G. MacCallum reports on the "Pathological Anatomy of Meningitis due to Bacillus Typhosus." Dr. Theodore F. Riggs gives a "Comparative Study of White and Negro Pelves, with a Consideration of the Size of the Child, and its Relation to Presentation and Character of Labor in the Two Races." Dr. George Walker's article on "Renal Tuberculosis" concludes the volume. Each of these papers is worthy of full synopsis, but want of space forbids.

Editorial.

The Medical College of Virginia

Brought its sixty-seventh annual session to a close on the night of May 16, 1905, by exercises at the Academy of Music, after which a reception and dance was tendered by the Faculty to the graduating classes at the Masonic Temple.

The exercises at the Academy were opened with prayer by Rev. Benj. H. Melton, of Richmond, after which the dean, Dr. Christopher Tompkins, spoke briefly concerning the successful work of the year just ending.

The degree of graduate in pharmacy was then conferred on the following: Sidney Elsom Bray, West Point, Va.; Patrick Henry Burruss, Richmond, Va.; Clyde Cecil Hall, Hickory, Va.:

Loring Hammer, Luray, Va.; Cecil Riddick, Hickory, Va.; Leigh Festus Watson, Philippi, W. Va.—6.

The degree of doctor of dental surgery was conferred on the following: Henry Richard Cromartie, Clarkton, N. C.; Oscar Hooks, Fremont, N. C.; Thomas Alpheus Jones Jr., Saluda, Va.; Rex Hale Phipps, Long's Gap, Va.; James Albert Reese, Davis Mills, Va.; William Henry Street, Jr., Center Cross, Va.—6.

The degree of doctor of medicine was then conferred on Francis Arthur Bell, Methuen, Mass.; Hiram Franklin Bigony, Baltimore, Ohio; James Moncure Bland, Shacklefords, Va.; Kemp Plummer Battle Bonner, Aurora, N. C.; Samuel Cecil Bowen, Ruskin, Va.; Dexter Peter Cannaday, Floyd, Va.; William Haller Cassell, Wytheville, Va.; Buxton Williams Dameron, Warrenton, N. C.; Robert Benton Davis, Holdcroft, Va.; Warren Maynard Davis, Grafton, W. Va.; Isaac Tripp Gorsline, New York City; Alexander Russell Gray, Richmond, Va.; George Green Galt, Ontario, Canada; Percy Harris, Radford, Va.; Wallace Duncan Jefferson, Petersburg, Va.; Ulpian Henry Johnson, Lightfoot Va.; Edwin Lawrence Kendig Lewiston, Va.; Walter Dennis Kendig, Lewiston, Va.; Joseph Barkley Lacy, Alchie, Va.; Monsey Edgar Mease, Sandy Level, Va.; Alexander Eston Murray, Graham, N. C.; William Reed McCall, Lodi, Va.; Edgar Cooper Person, Pikeville, N. C.; Samuel Davies Rice, Montvale, Va.; Charles Fordice Ross, Morgantown, W. Va.; Daniel James Rudasill, Oak Park, Va.; Edward Marshall Sandidge, Amherst Courthouse, Va.; Max Schoenbaum, New York city; Jessee Urban Sickenberger, Mitchell's Mills, Pa.; Joseph Dandridge Terry, Pamplin City, Va.; Beverly Randolph Tucker, Norfolk, Va.; David Nicoll Twyman, Charlottesville, Va.; Foy Vann, Union, N. C.; James Walker Walters, Madison Mills, Va.; Randall Jackson Weber, Norristown, Pa.; John Walter Witten, Tazewell, Va. Messrs. Stuart Leslie Craig, Richmond, Va., and James Montgomery Northington, LaCrosse, Va., also passed the examinations required for graduation, but their diplomas connot be delivered until they reach the age of 21—38.

The hospital appointments announced were: To the Orthopedic Hospital and Infirmary for Nervous Diseases, Philadelphia, Pa., Dr. Beverly Randolph Tucker; To the Memorial Hospital, Richmond, Va., Dr. Samuel Cecil Bowen, Dr. Stewart Lessley Craig, Dr. Joseph Barkley Lacy, Dr. James Montgomery Northington, Dr. Samuel Davies Rice, Dr. James Walker Walters; To the Retreat for the Sick, Richmond, Va., Dr. Edwin Lawrence Kendig; To the City Almshouse Hospital, Richmond, Va., Dr. John Walter Witten; To St. Vincent's Hospital, Norfolk, Va., Dr. George Green; To the Protestant Hospital, Norfolk, Va., Dr. Francis Arthur Bell and Dr. Foy Vann; To the Newport News Hospital, Newport News, Va., Dr. Daniel James Rudasill; To the Sheltering Arms Hospital, Richmond, Va., Dr. Benjamin Joseph Willingham.

The address of the evening was delivered by Major Walter D. McCaw, Surgeon in the United States Army, who was introduced by Dr. George Ben Johnston. The speech was timely, and was well received by an appreciative audience.

In this connection it may be stated that at the annual meeting of the Board of Visitors held at the college building earlier the same evening Dr. Clifton M. Miller, of Richmond, Va., was elected Professor of General and Special Anatomy, while Dr. Wm. P. Mathews, also of Richmond, was elected to the newly created chair of Orthopedic Surgery.

The University College of Medicine

Held its twelfth commencement exercises at the Academy of Music, May 18, 1905. Rev. W. E. Evans, D. D., of Richmond, offered the opening prayer. Dr. J. Allison Hodges, President of the institution, then made some remarks on the past year's record, referring to the excellent standard at the college of the classes about to graduate, and mentioned the fact that the attendance for the session just closing had reached the high water mark with 316 students in attedance. There were, he said, seventy-four teachers in the combined faculties of medicine, dentistry and pharmacy. Dr. C. Alphonso Smith, Professor of English Literature and Dean of the graduating department at the University of North Carolina, was then introduced, and spoke on "Some Aspects of Southern Literature." His address was masterly, to some extent historical, and easily merited the hearty reception that was given it.

Degrees were then conferred on the following:

Degree of Doctor of Medicine: Fielding Lewis Ashton, Hooes, Va.; Coleman D. Bennett, Jr., Toshes, Va.; John Otto Boyd, Win-

chester, Va.; John Garnett Broaddus, Bowling Green, Va.; Joseph Haskell Chiles, Fort White, Fla.; Joseph Dorsey, Piedmont, W. Va.; E. Hale Connelly, Walthall Store, Va.; George Marion Cooper, Clinton, N. C.; James Harvey Craft, Bramwell, W. Va.; Harry M. Crowe, Berryville, Va.; John Williamson Daugherty, Jr., Richmond, Va.; William Dalton Deshazo, Spencer, Va.; Ernest Egbert Epperson, Naruna, Va.; Robert Scott Fitzgerald, Richmond, Va.; Rawley H. Fuller, Danville, Va.; Alfred Ludwell Hammer, Elkton, Va.; Delos D. Hooper, Tuckaseigee, N. C.; Frank Ernest Irons, Pickaway, W. Va.; James Warren Knepp, Roanoke, Va.; Wiley Wilson Koontz, Broadway, Va.; Jefferson Franklin Landen, Chinquapin, N. C.; George Price McCoy, Franklin, W. Va.; Samuel Austin McFerrin, Friar's Hill, W. Va.; Richard H. Manson, Warfield, Va.; Moir S. Martin, Stuart, Va.; D. C. Mayers, Stony Creek, Va.; Henry Taylor Miller, Washington, Va.; Ben James Montgomery, La Crosse Va.; Clarence V. Montgomery, La Crosse, Va.; Schuyler Barclay Moon, Richmond, Va.; E. Ackley Moore, Castleman's Ferry, Va.; Heber P. Newman, Fort White, Fla.; Cullen S. Pitt, Barton Heights, Va.; Oscar Lee Ramsey, Sandy Level, Va.; William Sterling Robertson, Richmond, Va.; Robert Douglas Roller, Charleston, W. Va.; Clyde Fenton Ross, The Trappe, Va.; Joseph Hubbard Saunders, Washington, N. C.; Fred L. Smith, Lawton, W. Va.; Sheldon Stringer, Brooksville, Fla.; Geo. Fugett Turman, Willis, Va.; William L. Watts, Monitor, Va.; William Lee Weadon, Bluemont, Va.; Robert Camden Whitehead, Lynchburg, Va.; Roy Folsom Williams, Sowers, Va.; William Franklin Williamson, Alexandria, Va.; Wade Hampton Young, Zackville, W. Va.—47.

Degree of Doctor of Dental Surgery: L. Cabell Bell, Waterbury, Conn.; Benjamin Bloxton, Richmond, Va.; Carl C. Bowman, Pratts, Va.; R. Owen Canada, Danville, Va.; Frank Garland Chamblee, Wakefield, N. C.; John Mabrey Coleman, South Boston, Va.; William Claude Fitzgerald, Chatham, Va.; Burnam Oscar Grove, Luray, Va.; Chancy Highsmith, Parkersburg, N. C.; Richard Jones, Virginia Beach, Va.; Maryan Buford Lewis, Culpeper, Va.; David K. Lockhart, Asheboro, N. C.; Frank Bell Miller, Newport, Va.; James Oscar Quaintance, Boston, Va.; R. Floyd Waller, Leda, Va.; Lawson Carter Womack, Whittle's Depot, Va.; J. Smith Yates, Griffinsburg, Va.; Paul Preston Yates, Morrisville, N. C.—18.

Degree of Graduates in Pharmacy: E. W. Addison, Cape Charles, Va.; Wm. David Crockett, Buddle, Va.; Claude M. Fisher, Bedford City, Va.; Edward Allison Hines, Abingdon, Va.; John Tumbro Kuester, Richmond, Va.; Jack H. McLaurin, Dillon, S. C.; Joseph Collier Ray, Bangor, N. C.; Claude Mervin Showalter, Mt. Sidney, Va.; Thomas Melville Stanback, Mt. Gilead, N. C.; James David Thompson, Norwood, N. C.—10.

Degree of Bachelor of Pharmacy: Mr. John Benjamin Nicholson, Wakefield, Va.—1.

After the degrees had been conferred, Dr. Smith, the orator of the evening, was again called on for a few remarks as a charge to the various graduates. This short address was to the point, and full of wisdom for guidance through life, and when called on at the banquet immediately following the program at the Academy, that advice was supplemented when referring to the necessity for keeping posted as to the latest advances in the profession. He recalled the necessity some time ago of having to visit a doctor in a far Southern town. When he entered the office, the doctor was engaged, and, having to wait, he used his moments in glancing over the library. Several literary magazines were at hand, but the only works of any scientific interest dated back years ago. As there were no journals or other evidences that the doctor whose advice he sought kept abreast with the times, he determined to take his leave, and was some little distance away when the doctor was ready to see him. He urged upon each graduate the necessity for keeping himself informed of recent advances, and suggested that in order to do so each one should take the leading journals.

The hospital appointments announced were: Virginia Hospital, Richmond, Va.—Dr. John G. Broaddus, Bowling Green, Va.; Dr. William F. Williamson, Alexandria, Va.

St. Luke's Hospital, Richmond, Va.—Dr. E. H. Connelly, Walthall's Store, Va.; Dr. H. M. Crowe, Berryville, Va.

The Retreat for the Sick, Richmond, Va.—Dr. Henry T. Miller, Washington, Va.

The City Hospital, Richmond, Va.—Dr. Cullen S. Pitt, Barton Heights, Va.; Dr. G. F. Turman, Willis, Va.

St. Vincent's Hospital, Norfolk, Va.—Dr. Moir S. Martin, Stuart, Va.; Dr. R. H. Manson, Warfield, Va.

Sarah Leigh Hospital, Norfolk, Va.—Dr. Wiley W. Koontz, Broadway, Va.

Central State Hospital, Petersburg, Va.—Dr. A. L. Hammer, Elkton, Va.

King's Daughters' Hospital, Portsmouth, Va.—Dr. J. D. Collins, Piedmont, W. Va.

Reynolds' Memorial Hospital, Glendale, W. Va.—Dr. Joseph H. Chiles, Fort White, Fla.

The Virginia Home for Incurables, Richmond, Va.—Dr. Karl S. Blackwell, Broadrun, Va.

Dr. Isaiah McPhail, Jr., also passed the examinations required for graduation, but owing to a rule demanding a specified residence at college, his diploma cannot be delivered until that period is made up next year.

The exercises at the Academy of Music were followed by a banquet at Murphy's Hotel.

License Taxes on Virginia Doctors.

While the shoe is pinching it is time to complain. This month, under compulsion of an unjust and oppressive law, Virginia doctors are being compelled to pay their State *license* taxes. There are scarcely a dozen doctors in the State who believe in the right or justice of the law; and yet as law abiding citizens, practitioners are tramping to their respective court-houses to obey the law.

As a profession, we have no one to blame except ourselves for the imposition. We sit back, and, recognizing the iniquitous law, we yet look forward in the hope of somebody making a move in the direction of repealing the law, without individually and collectively impressing on the legislators now about to be elected the injustice of the statutes on this subject.

It would be enormity of offense if the humanitarian or large-hearted, generous man were to be taxed for the giving of his time and labor and money to a charitable object. Legislators and the people alike would abhor the idea of taxing such an one for his benefactions. And yet what is the doctor constantly doing out of his limited means? Pass the eye over the daily visiting list of the practitioner of medicine, and see how out of proportion to others he is constantly contributing to the poor and needy of city, county and State. If the doctor's bills were collectable, dollar for dollar, as are the merchants', the farmers', and business men generally, there would be no complaint. If everybody were wealthy, it would be different. But how few citizens of Virginia, relatively speaking, are able to do more than live with the utmost economy, and yet keep soul and body together? Look over the list of towns and counties where material wealth is a stranger—where the bulk of citizens live from hand to mouth. Such citizens appreciate health and need the physician in sickness. The State does not go to the help of such of its population in the establishment and proper maintenance of the almshouses and hospital appointments. But the already poor neighborhood doctor, though oppressively taxed, is expected yet to give his time, his services and even the medicines in many cases for the healing of the sick.

In a former editorial on this subject, we reproduced from the *Medical Legislator*—a quarterly established by the Medical Society of Virginia, and ably edited by Dr. J. B. DeShazo, of Ridgeway, Va.—a map of the United States showing that Virginia and Louisiana alone are burdened by the iniquitous State law of *license* taxation of doctors. We are not, of course, complaining of property and pole taxes, etc. It is simply the oppression of the license tax on practitioners that we raise our voice against.

What would the State do without doctors? Differing from all other businesses and professions, the demand is upon them to attend the poverty stricken person in sickness. He is expected to be constantly impressing the laws of health and sanitation. He is constantly fighting against his own pecuniary interests by his gratuitous advices as to how to maintain health or how to get well. The laborer in the factory or workshop or on the farm is not taxed. The teacher, the preacher, the editor are not subject to license taxes—nor should they be. The capitalist has no special license taxes to pay, nor has the investor. But what are these doing more than the doctor for humanity? The teacher, the preacher, the editor, the literary writer and book maker, etc., expect their pay. But does the doctor get his fair proportion for the amount of work he does? To become a doctor from now on will require of the party presenting himself to begin the study of medicine to present a certificate of primary education equal in grade to that of a certificate from a high school or graduation as an A. B. from an academic institution. Then he has to spend four years at a reputable medical college and be a graduate in medicine before he can appear before his State Board of Medical Examiners. He has that ordeal to pass through before he can announce himself as ready to practice medicine. All of

these safeguards the doctors of to-day are being required to meet. Every possible precaution is being taken to send out into the field of practice of medicine and surgery only the competent. All of this is being done by the doctor for the public good. And yet what recognition does he get from the public for such sacrifices? If an error in diagnosis or prescription is made he is liable before the law for suit for malpractice. He endures all of these things, and yet for his effort to do good to large classes of citizens from whom he knows in advance he is not to receive even the ordinary fees for professional services, the State and city or county demands of him a burdensome license tax! It is a reflection upon the straight-forward honesty of purpose of the people and of legislators to allow this license tax to be imposed upon doctors.

We earnestly entreat all Virginia doctors to arouse themselves to the wrongs they are enduring in this respect, and urge the repeal of the oppressive and unjust license taxes they have annually to pay.

The Graduate Nurses' Association of Virginia

Held its fifth annual meeting in Richmond, May 10-12, 1905, inclusive, and was largely attended. Besides the regular business sessions, there were several entertainments provided, including those given by the Virginia Hospital Alumnæ at the Woman's Club and by the Memorial Hospital nurses at their hospital building. The duty of the nurse in relation to the fight against tuberculosis caused much discussion, as did also a communication from the Surgeon General of the U. S. Army, in which all registered nurses were urged to join the emergency corps for duty in time of war, plague, or disaster. Miss May Irving Whitehead, Mrs. D. Meade Mann and Miss Agnes Randolph, all three of Richmond, were elected for the ensuing year to serve as President, Recording Secretary and Treasurer, respectively.

Medical Society of Northern Virginia

Is the name of a newly organized society in the section mentioned. The following officers were elected for the ensuing term: Dr. R. M. Slaughter, Theological Seminary, Va., President; Drs. Geo. Tully Vaughan, Washington, D. C., and M. W. O'Brien, of Alexandria, Va., Vice-Presidents, and Dr. A. A. Rittenour, Alexandria, Va., Secretary and Treasurer. The next meeting is scheduled for November, at Alexandria.

Dr. John F. Winn,

Of this city, was elected Professor of Clinical Obstetrics by the Board of Trustees of the University College of Medicine while in session May 17, 1905. Dr. Winn has been connected with this special department since the school was first opened. He is especially fitted for such work by reason of his long experience, and being beloved by his many students with whom he has labored faithfully, the Faculty has reason to congratulate itself upon his promotion to his increased sphere of usefulness.

The American Roentgen Ray Society

Will hold its sixth annual meeting at Johns Hopkins University, Baltimore, September 28, 29 and 30. Arrangements have been made for an excellent program and a large attendance is expected. The papers of the meeting for the first day will deal with X-ray diagnosis, and those of the second and third days will be therapeutic. There will also be an evening exhibit of lantern slides which promises to be extremely interesting. The Belvidere Hotel has been selected as headquarters.

Obituary Record.

Dr. Louis F. High,

Of Southern Pines, N. C., died in New York city, May 3rd, 1905, of sarcoma of the neck. He was born in North Carolina, March 4, 1867; graduated in medicine at the College of Physicians and Surgeons of Baltimore, in 1891, and passed the Medical Examining Board of Virginia in 1895, though he was likewise licensed to practice medicine in North Carolina and Maryland. Dr. High was at one time a member of the Danville Academy of Medicine, and was elected a Fellow of the Medical Society of Virginia in 1898. Although comparatively a young man, he was well known by the profession of Virginia and North Carolina, and was at the time of his death at the head of Pineshire Sanitarium.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 5.
Whole No. 221.

RICHMOND, VA., JUNE 9, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

SOME REMARKS UPON THE USE OF THE UTERINE CURETTE.*

By J. WESLEY BOVEE, M. D., Washington, D. C.

Professor of Gynecology in the George Washington University; President of the Washington Gynecological and Obstetrical Society, etc.

For a considerable number of years I have used the uterine curette for many different conditions. By this fairly large experience I have developed the curette touch, to use an expressive though unusual phrase, that the gynecologist should have and usually has. Three styles of the instrument, viz., the dull, the sharp and the serrated, which latter may be either dull or sharp, are in use. These are not to be employed indiscriminately. The dull variety is to be used for the removal of shreds of tissue after abortion or miscarriage. Even after full-term labor the use of this instrument becomes necessary at times for practically the same indications. The sharp serrated instrument is employed in the removal of intra-uterine growths. We are all familiar with the serrated spoon curette of the late T. Gaillard Thomas, of New York, devised especially for this purpose. The plain sharp curette is the one most frequently employed as the indications for its application are more varied and commoner. In all forms of endometritis not associated with malignant disease of the uterus that does not spring from the mucosa, carcinoma of the body, pediculated submucous fibroids, mucous polypi, subinvolution, metritis and chronic passive uterine congestion the sharp, plain instrument may be employed. In suspected carcinoma of either the cervix or the body curettage is done for the purpose of securing tissue for microscopical examination. In such work there is danger of allowing too much time to intervene between the curettage and the radical operation should a microscopical diagnosis of cancer be made. The absorbents are stimulated by curettage and the disease may be quickly carried to unremovable structures even when unsuspected. Pryor and others have stated not more than ten days should elapse. I believe I have seen this effect shown in three days. In advanced cancer of this organ thorough curettage and cauterization is the classical treatment. In endometritis very often the accompanying uterine retro-displacement that creates an intrauterine reservoir is the principal condition requiring rectification. The dull serrated curette is applicable to practically all the conditions for which the plain dull curette is used and is by some considered preferable. These are practically all the conditions in which uterine curettage is applicable. These might be termed the legitimate uses of the curette.

The abuse of this instrument deserves our very earnest consideration. Its employment in the endometritis accompanying large uterine fibroids that encroach upon the uterine cavity is, in my judgment, reprehensible for the following reasons. First, it is impossible to reach the pockets or pouches above the growths and in which the endometritis is intensest. Anyone who has split many fibroid uteri must have been impressed by the unapproachable pockets and the state of the endometrium lining them as contrasted with the remainder of the uterine lining. Second, the danger of infection is an element that must be considered, as very often infectious material lurks in these fossæ and denudations invite its absorption. Third, the tendency to hemorrhage in such conditions, when disturbed by the curette, is far from being a fancy. Fourth, the preparations of the patient and the necessary administration of general anæsthesia are practically the same as for more radical procedures. This last should be borne in mind whenever this operation is considered as an alternative for any of the more radical operations upon this organ. When fibromata have undergone malignant degeneration or are accompanied by such condition in other

*Read before the first meeting of the Medical Society of Northern Virginia, at Alexandria, Virginia, May 17 1905.

portions of the organ or have become infected, the use of the curette becomes not only interdicted but absolutely harmful, except when extirpation of the malignant growth becomes impossible. In sarcoma of the uterus in stages not too advanced for extirpation curettage should never be done.

The employment of the sharp curette in puerperal infection—a practice altogether too common, is reprehensible as it permits rapid absorption of the remaining septic material the removal of which can hardly be expected. It is believed obstetricians are gradually realizing this contraindication of the use of the sharp curette. In the endometritis accompanying backward displacements of the uterus curettage can be of little service except the proper position of the uterus be subsequently maintained. When this latter precaution is overlooked the patient is placed on her back in bed directly after the curette has been used and the retro-displaced uterus is thus hopelessly deprived of drainage—a factor of the greatest importance at this time. I have repeatedly relieved patients of uterine hemorrhage and offensive leucorrhœa following repeated curettage, by careful exploration of the uterine cavity and the removal from it of small growths such as fibroids or mucous polypi. I may also here refer to a practice of some physicians of doing curettage in their offices and sending the patients home afterward. This I consider malpractice in as much as the technique of such procedure must be very faulty and the danger of infection enormously enhanced. Repeatedly I have seen pelvic peritonitis, usually suppurative in character, follow such proeedure and am confident a large number of women have had their tubes removed because of pus tubes created in this manner. I should like to protest against routine curettage being employed when plastic work on the cervix or the perineum is done. I believe this is a quite common practice.

A few remarks upon the technique and after treatment of curettage patients may not be out of place here. I never enter the uterine cavity except under a very careful technique without great trepidation. Even the introduction of a uterine sound without such care is limited in my work, to perhaps two or three instances annually and necessity for it is regretted. We should remember it is a surgical operation and done upon an organ practically the most important in womanhood and one in which infection so easily created may lead to a fatal termination. The vulva should be carefully shaved and prepared and after curettage the uterus carefully swabbed with small pieces of sterile gauze that the rmoval of all debris may be assured. In the after-treatment antiseptic vaginal douches should be employed one or more times daily for 8 to 14 or more days. The patients should be kept in bed from 8 to 15 days after operation and at the following one or two menstrual periods. The bowels should not be allowed to become overloaded. Exercise of these patients during the following two months should be very limited.

1404 *H Street, N. W.*

THE TREATMENT OF NEURASTHENIA.*

By J. ALLISON HODGES, M. D., Richmond, Va.
President and Professor of Nervous and Mental Diseases, University College of Medicine.

The treatment of neurasthenia calls as much for the exercise of judgment and knowledge of human nature as for the intelligent administration of medicine. Each case is a study in itself. In considering the proper treatment for individual cases, it appears to me to be necessary to keep well in mind the three following propositions: First, that there is per se, such a thing as nervous weakness; second, that the nervous system is preeminent among the tissues of the body in that it not only influences every other tissue, but is also itself in turn, influenced by them; and third, that there are well recognized pathological conditions that will cause neurasthenia. In other words, there are at least three forms of neurasthenia: Simple reflex and the so-called lithæmic; and according as the particular form is present in any given case, so must the treatment be.

It is not surprising that the symptoms of many cases of neurasthenia have been considered to be due to hysteria or hypochondria and have been treated accordingly; but this has been as much a medical mistake as has been the wholesale contempt in which functional diseases of the nervous system have been usually held, simply because they were not accompanied

*Read before the Richmond Academy of Medicine and Surgery, May 9, 1905.

by the more expressive phenomena of the disease such as pain, loss of consciousness, etc.

It is true that a hysterical, hypochondriacal or neurotic individual may be afflicted with a genuine neurasthenia, and it sometimes becomes a perplexing problem to determine the relative proportion causatively of the predisposing neuroses and the true neurasthenia. Happily, however, the treatment of the one is usually efficacious with the other. The treatment, then, will vary according as the case is classified definitely under simple, reflex or lithæmic.

Simple neurasthenia. Treatment. This form may not relatively be so numerous as some may claim, but still it does exist and calls for our best efforts and greatest skill in treatment. As weakness, either physical, mental or both, is the earmark of this disease, so must its prevention be the keynote of treatment. To accomplish this, the conjoint restriction of the expenditure of energy according to the needs of the case, and the restoration of the impaired functions of the nervous system are imperative. This is easier said than done. Its proper application calls for much experience and nicely balanced powers of clinical perception.

This plan of treatment, summarily stated, implies rest, either absolute or modified, and nourishment either forced or moderate.

My mistakes in the past serve now for my guidance, and between these extremes I, at present, stand for far less heroic methods than are usually advocated in the treatment of neurasthenia. Instead of universally applying the rest cure treatment in all cases I now most frequently employ a scheme of graduated work for these cases, and especially do I wish to strongly protest against prolonged absolute rest in the treatment of all cases of simple neurasthenia. Fatigue, for which it is supposed to be the inexorable antidote, is not always resultantly from the same causes. Likewise, rest for one patient is not rest for another; and while to some relaxation may be synonymous with rest, still to others diversion is rest.

Hence, the universal application of the rigid and routine "rest-cure" treatment is not wise and is frequently not warranted by existing conditions. In my judgment, its absolute enforcement by rule and by precedent often proves a hindrance to the patient's improvement, and for this reason, I protest against its wholesale application. In order to judge of its utility, the physician must consider this important point, that is, whether the state of exhaustion present is due to worry or overwork. I do not believe that sufficient stress has been given to this point, nor do I believe that sufficient stress has been laid upon the necessity of considering "worry" as one of the independent etiological factors of this disease.

Worry and overwork, I admit are twin sisters, and often so closely allied that it is often almost impossible to disassociate the two, but there is a difference. Either may be a cause or a sequence, and besides, a sense of fatigue often not distinguishable from the muscular or mental fatigue resulting from overwork, accompanies worry. Of the two, considered as etiological factors, I believe that overwork is a more frequent factor than worry in bringing on neurasthenia; but it is another fact which must be reckoned with, that overwork is almost invariably accompanied by some mental fault, such as worry. The important difference between the two, however, as regards the point we are now considering, the treatment of simple neurasthenia, is this: that the fatigue resulting from overwork is usually more transitory and responds more readily to proper and reasonable rest, while that which follows worry is more prolonged and persistent and does not yield in the same degree to physiological rest.

If these facts be admitted, then the line of treatment regarding the quantity and quality of rest to be given an individual patient is obvious, for physical rest is not necessarily mental rest. In brief, it is necessary to study the every-day life of each patient and to modify this part of the treatment according to individual necessities and requirements.

The employer may suffer from both overwork and worry, but the employee as a rule, is more liable from the nature of the case, to suffer from the latter. Consequently, the daily life of the individual in question must be considered and the routine life of the patient must be radically changed, all faults corrected, and as far as possible, right living suited to individual needs, insisted upon. Rest, proportionately relative to the cause of the condition and the temperament the individual, is to be prescribed, and thus limited, is one of the best remedial agents known. The old worries and irritations especially must be eliminated as far as possible, if the best results possible are to be expected or obtained. From the beginning of treatment the patient should be interested, for if he is not, his nervous

energies turned in upon themselves, are apt to create the habit of introspection and, consequently, depression and mental confusion.

The neurasthenic should be lifted up and out of his tangle of nervous symptoms at first by encouragement and diversion; then by encouragement and physical exercise after a proper time and later, by encouragement and graduated work. In short, the habit of self-forgetfulness through the agency of some occupation, must displace the habit of introspection, and this can not be done by substituting some such abnormality, for example, as unduly prolonged rest or some other such hard and fast procedure in lieu of the conditions hitherto prevailing in the patient's normal life. To do this latter is to add fuel to the flames in many cases, and to make a bad matter worse.

It is for these reasons that I protest against the almost universal routine practice of instituting absolute rest cure in the treatment of all neurasthenic cases. In the last five years, I have had the necessity to use with benefit the prolonged rest cure in but three cases, whereas before that time, following precedent, I thought it was indicated in every case.

I prefer now, after having decided the points referred to above, to begin the treatment of simple neurasthenia by a short period of rest in bed under the usual rest-cure conditions, and then without the knowledge of the patient but with the co-operation of the attendant nurse, each day seek to interest and draw out the dormant energies of the patient in some new direction, he remaining passive until he becomes strong enough eventually, to take the initiative himself. This method of treatment, of which it is impossible to speak minutely in this brief paper, requires judgment on the part of the physician and especial skill on the part of the nurse; and while reorganizing and stimulating the life of the patient, will substantially and speedily improve the condition without undue tax on the physician, nurse or patient. Physical work thus becomes hygienic, both mentally and physically, and in the interest and self-forgetfulness created by this new life, the need of prolonged rest is lost sight of and the results speak for themselves.

As adjuvants to this line of treatment, mechanical measures as well as tonic medication are, of course, utilized to the greatest advantage. Therapeutic baths, massage, electricity, vibration, forced feeding, graduated exercise, etc., all have their appointed places as needful utilities, but there should be a well considered use of each before its application. Massage, for instance, unless properly advised and executed, is often a harmful procedure in this class of cases. The same may be said of other remedial agents.

Treatment of the reflex form. To successfully treat reflex neurasthenia is to treat the causes of the same, which are apt to be found in some of the non-nervous organs, either the kidneys, nasopharynx, the eyes, the heart, the liver, the intestines, the genitalia, and in such vicious habits as masturbation, alcoholism, morphinism and cocainism.

The coincidence of neurasthenia with the beginning of one of these lesions must always be carefully considered and correctly estimated accordingly in the treatment. It is also true, however, that occasionally, the neurasthenic may be relieved by appropriate general treatment while the reflex irritant may remain. This fact is encouraging, but its rarity of realization is disappointing.

Treatment of lithæmic form. According to my experience, Gray's method of dividing these cases for treatment into sthenic and asthenic types is the most feasible plan. At best, the treatment pursued must be, in a measure, tentative and expectant, for no absolute method applicable to all cases of this form can be outlined.

The sthenic cases may be submitted to one or other of the following forms of treatment, usually in the order named: Alkaline, acid, antiseptic, dietetic or hygienic, either one or more, separately or combined.

The asthenic cases require, in brief, a preservation of initial strength, a restriction of expenditure of energy, and a continuously progressive method of muscle and nerve force upbuilding.

107 *East Franklin Street.*

In Cases of Carbuncles Creel has relied on ecthol given internally in teaspoonful doses; flax-seed poultices applied locally; emptying of pus and scraping out of dead tissue, and cleansing with peroxide of hydrogen. After this a topic application of ecthol on absorbent cotton is used every four to eight hours. The average duration of this treatment in his cases was ten days.—*Jour. A. M. A.*

STATIC ELECTRICAL TREATMENT OF NEURASTHENIA.*

By R. W. MILLER, M. D., Ph. G., Barton Heights, Va.
Lecturer on Nervous and Mental Diseases, and Dean of Pharmacy Department, University College of Medicine.

Inasmuch as the clinical types of neurasthenia are purely arbitrary, having for their basis a preponderance of symptoms referable to the cerebral, spinal, or sexual apparatus, I shall view the static treatment of the condition through the morbid processes as we know them.

Resulting as it does from an impaired metabolism, thus producing waste products, which substances effect an auto-intoxication by reason of the circulation of such products in the blood current, we have expressed, first, nerve weakness; second, nerve irritability.

From this weakness and irritability of the nervous system we might well expect anemia, indigestion, precordial pain, irregular action of the heart, in short, disorganized conditions of the secretory and excretory organs associated with hysteria or hypochondriasis. Scarcely any treatment will meet as many of these symptoms as static electricity: 1. It controls local congestion. 2. It relieves pain. 3. It quiets irritated nerves. 4. It grants peaceful and natural sleep. 5. It favors general functional activity. In brief, it is a counter-irritant, sedative, hypnotic, narcotic and general tonic.

For general treatment, I usually employ the wave-current or one pole current, so termed by Dr. Morton, "because its circuit to be completed produces Hertzian waves emanating from the patient's body." The patient is placed upon an insulated platform, the negative pole grounded, and the positive pole, terminating in a zinc plate, or tinsel braid, is bound upon the bare skin of the patient, the point selected being dependent upon the part giving the most expressive symptoms. The machine is then started and the spark gap opened from 1 to 4 inches according to the condition of the atmosphere, speed of the machine, diameter of the plates, physical characteristics of the patient, etc. Usually, this treatment is continued 20 to 30 minutes daily.

Bridging treatment should be used lest relapses occur and treatment fail. Particularly is this true if the condition be purely of functional origin; for in all forms of neurasthenia of functional origin, nerve weakness and nerve irritability are very pronounced, and yet are easily and speedily relieved by the treatment.

As a result we find: 1. Metabolism stimulated. 2. Improved nutritive process. 3. Elimination of objectionable accumulations. 4. Sleep. 5. Increase of weight.

As evidence of increased glandular activity and electrical benefits, it is interesting to note that following the general treatment, the secretion of the sweat glands which in neurasthenia are more or less inactive, have after five or six treatments, their functions re-established. The nearer the return to normal of these glands, the better the whole condition—better sleep, better appetite, better nerve tone.

Should insomnia persist in spite of the general treatment, it is well to have two sittings per day, one in the early morning hours, the other at night before retiring. In giving this, a 9 or 10 inch plate may be placed over the abdomen and treatment continued for 30 minutes. As a rule, conditions favorable to sleep, i. e., general relaxation, lowered arterial tension, lessened nervous irritability, result.

An unsatisfactory peripheral circulation, if not improved by general treatment may be greatly stimulated through the application of friction sparks over the entire body, using for the purpose a large ball electrode or good metallic brush.

Special treatment may also be used in obstinate constipation. The bowel atony due to diminished nerve tone, causing loss of secretory and excretory functions, may respond splendidly to the undulating current, which consists of a current starting at zero and gradually increased until the maxim of strength is produced, then returning to zero. Twenty minutes of this to-and-fro treatment will produce a change in muscular action through this wavelike contraction and relaxation. Exhaustion of muscle cannot occur, because the maximum contractions are of the very shortest duration.

In sexual neurasthenia, the employment of the electrode as used in the foregoing condition, yields phenomenal results.

Lastly, but not least, great psychic impressions are made by the wise look and curious machine upon the hysterical and hypochondriacs.

To the layman, electricity is a by-word, a joke; but a fair investigation will convince the most skeptical that as a therapeutic agent, it stands foremost among the elect.

* Read before the Richmond Academy of Medicine, and Surgery, May 9, 1905.

MYOMA OF UTERUS.*

By J. M. HUNDLEY, M. D., Baltimore, Md.
Clinical Professor Diseases of Women, University of Maryland School of Medicine, etc.

We will all recall that the ordinary way of looking at fibroidd tumors has been to regard them as benign growths which usually at the menopause cease to give trouble, and that, unless for some urgent reason, they could be let alone; that unless hemorrhage was persistent and profuse, or on account of the size, or the development of pressure symptoms, they need not be interfered with. I remember very well that during my years of association with Dr. Howard—and I believe that in his day he represented well what was thought and what was being done in the treatment of myomata of the uterus—that removal of the growths and hysterectomies were not generally done. Some palliative means were employed, such as ergot, electricity, or these failing to produce any effect on the symptoms, oophorectomy was done. Of course, we know now that that was but a poor makeshift. The cases were kept under observation, the growths many times tending to grow, or if it were of the interstitial type, bordering on the submucous fibroid the woman would perhaps come back with a sloughing mass being discharged through the vagina.

Two of the cases I would refer to were of especial interest to me, the first in that I had delivered the patient twelve years ago and did not notice at that time any difficulty, any tumor or other abnormality. In about a year after the birth of the child the woman consulted me at my office for menorrhagia. I examined her and did not then detect that she had a myoma. Her uterus was soft and boggy and a little larger than it should have been, but, about a year later the hemorrhage became worse, there was irregular uterine hemorrhage and I examined her again to find that she had a diffuse myoma, not an encapsulated, but a general myoma. At that time I advised curettage of the uterus but she refused operation and I ordered ergot and that at the beginning of each period of hemorrhage she should lie in bed. She left the city and I did not see her again for six years; that was in 1903. I saw her off and on during the time she remained in the city. She came back in November, 1903. She then had a tumor reaching a little above the umbilicus, was edematous in the lower extremites and suffered from dyspnœa on moving around. She gave evidence of having lost a great deal of blood. She was operated upon in December, 1903. There was considerable anxiety felt on account of the irregular heart action, loss of blood and her general condition. She was quite stout, too, which always embarrasses one. On opening the abdomen an angry looking soft myoma was found and a supravaginal hysterectomy was done. In cutting across and in the right broad ligament I noticed that the tissues looked very different from what is ordinarily seen; there was a great deal of whitish tissue exuding a clear fluid. The anesthetist advised me to hurry the operation as the patient was doing badly under the anesthetic. I hurriedly removed the tumor and finished the operation. Now the sad part about it is that on opening that uterus it was found to be filled to the internal os with a soft brainy looking tumor. Macroscopically we diagnosed it as a sarcoma and microscopically it proved to be a round and spindled-celled sarcoma, the round cells predominating. She left the hospital in January. When I made another examination at her home I found in the right lateral vaginal fornix a cystic tumor, just where I had noticed at the time of operation that whitish looking tissue and fluid. I suspected and believed at that time that it was a sarcomatous cyst. I advised removal of the cervix, but operation was refused on the ground that if the cystic degeneration was sarcomatous, removal of the cervix would be of no avail, which was probably true. I then began the use of Coley's erysipelas toxine. He had written a good deal about the use of this toxine in the treatment of sarcoma and reported a number of cures and I thought we might try it. Thirty-six injections were given, the last one in June, 1904. After the fourth injection in the cyst it sloughed, separated and atrophied, dried up. The injections were alternately given, one time in the cyst, the other in the cervix. It has been about sixteen months since the operation. I examined her in October and apparently, so far as one could discover, the parts were normal.

The next case is one that I had seen six years ago and it was operated upon in November of this past year. I had curetted in this case six years previously to arrest hemorrhage. She had had the diagnosis made of uterine fibroids.

*Read before the Baltimore Medical and Surgical Association, Feb. 28, 1905. Dr. Eugene Lee Crutchfield, Sec'y.

The uterus occupied the true pelvis, the tumors were not large. I had lost sight of her after the curettage. She then tried the electrical treatment which she thought helped her. I heard from her off and on in the interval between the curettement and the operation done in November of last year to the effect that she was never well, and was always being treated in ony way or another. She suffered great pain at the menstrual periods and never had any comfort in life. A hysterectomy was done in this case. On opening the abdomen there were three areas noticed in the fundus to one side of the uterus that were soft and very red and angry looking. My previous experience made me feel that some degenerative change was going on in the myoma and I did a panhysterectomy. Now, curiously, this too was a sarcoma; it was a spindle-celled sarcoma but the cervix was not involved as in the other case. She left the hospital about the first of January and is getting along pretty well.

The third is an out-of-town case which I saw in July of the past year. She had a tumor in her abdomen starting in the pelvis and reaching midway between the umbilicus and the pubes. She had been well up to two years pervious to her admission to the hospital. She was forty-eight years of age. The other cases were forty-six and forty-two. This patient noticed two years ago that she had a lump in her abdomen and about that time, where she had been having previously irregular uterine hemorrhages, she was seized with violent abdominal pain and was laid up in bed for a month with pain and fever. She had never been well since that time. The pain and hemorrhage forced her to come to the hospital to seek relief. Her tumor was associated with two large pus tubes. There is nothing particularly unusual in this case. A panhysterectomy was done. She suffered a great deal more from pain than did the other two. As a general thing fibroids in themselves do not give rise to pain unless we have a supervening peritonitis. Of course, fibroids are frequently associated with salpingitis, and for that reason operation may be demanded when the tumor itself would not demand it.

The fourth case is an interesting one from several standpoints. The patient was a young woman of thirty-six who consulted me in January last with this history: That since 1900 she had been ill; that previous to that time, while never robust, she had enjoyed fairly good health. During February of 1900, she consulted a physician who diagnosed tumor of the womb but stated that it was of such a nature that he did not think it advisable to have an operation. She was more or less incapacitated for her duties as milliner, and lost a good deal of time. She got along for about two years in this way. In March, 1902, she had a fall down the steps and the injury sustained laid her up in bed for seven weeks. During that time she passed a large number of bloody stools, had fever, and suffered a great deal of abdominal pain. She then began to go down hill rather rapidly, became emaciated, had sweats at night and had to give up her position. In February, 1904, she stated that she was still advised that it was not necessary to operate on this tumor. She remained at home from that time and finally was in so much pain that she came on to the city. In examining her I found the pelvis blocked with a tumor. It appeared to be an inflammatory affair and I supposed that all I had to do was to open the posterior fornix and evacuate an abscess. She went into the hospital and was operated upon about the 12th of January. A most unusual condition of things was present. We found that she had a myoma attached to the posterior wall of the uterus by a small pedicle which had become necrotic. The tumor had lost its attachment and was getting its blood supply from a portion of the mesentery of the ileum—not at all from the uterus. The tumor was adherent all around in the pelvis and was soft and beginning to break down. In releasing the attachment of the tumor to the ileum we found that it consisted of a fibroid cyst having a cavity 10 cm. in diameter which communicated with the lumen of the bowel. Fecal matter was also found in the tumor. This explains, I think, the passage of the large bloody stools following the accident sustained by the fall down stairs. I thought it a malignant affair and resected about six inches of the ileum and did an end to end anastomosis with the Murphy button. The patient, however, never rallied from the operation and died in about 60 hours.

The point I wish to make and the conviction I have reached is that we should not look upon fibroids as such benign growths and so free from serious consequences as we have been led to believe in former years. In the last few years I have come to think that when fibroids give rise to symptoms, no matter what kind of symptoms;

when fibroids force patients to consult me, at least when a patient consults me, and on making an examination I find that she has a fibroid, and I believe that her symptoms or her ill health are due to the fibroid, it is best to advise an operation. I think when we take into account that the mortality should only be about 2 per cent. in uncomplicated hysteromyomectomies, because we generally do a supravaginal operation, which is almost devoid of danger, and as these growths are liable to take on malignant degeneration (though they rarely do), and when we take into consideration the inflammatory conditions, the ill health, the invalidism, it seems to me that an operation is called for. I believe, too, that this is the position of the majority of men doing work in this line. I am sure that all of us have seen fibroids that did not make their presence felt at all, but I believe that it is not right to allow women to go on from month to month, and from year to year, in the vain hope of relief at the menopause when we know that many of these tumors do not cease to grow, but continue to give trouble.

DISCUSSION.

Dr. J. H. H. Rowland: An important point to consider in the discussion of a subject like this is the different relation that the general physician and the specialist bear to the same patient. The general practitioner is not a specialist and it is often sometime after seeing these patients that he makes the diagnosis. Generally the patient's history is very unsatisfactory and then even when the diagnosis is made by the family physician the first thing he has to contend with is that almost every patient will refuse at first or be very regretful of even the suggestion that she go to the hospital to be operated upon. The symptoms generally are not urgent. I have a woman in the hospital now who before she was delivered had such nobs on the uterus that they could be seen distinctly felt through the abdominal wall, and yet she was delivered without any trouble and is recovering. She may go along for years without serious trouble. I had another case several years ago in which I diagnosed this condition and told the woman what should be done. She refused operation and went on with her work for a good many years, finally going to the hospital more for the want of a home than because of any discomfort that the tumors gave, although they had grown to a considerable size. The complication in this last case of Dr. Hundley's was evidently caused by the accident which happened to the woman.

Another point is that many of these cases are seen by men whose reputations are not yet fully established and they hesitate to let the woman run even the 2 per cent. risk, especially when the woman is not very sick. Those who work in hospitals have one idea and the general practitioners have another and it is very difficult to reconcile the two views. We often have to compromise with our patients. It is a question whether we shall force a patient to go into a hospital for operation, or whether we shall continue to treat them when they refuse to have the thing done that we believe to be right. Of course, the methods we employ outside of surgical removal are of no use and the position is one of embarrassment for the general practitioner.

Dr. Sydney H. Cone: This question becomes all the more interesting when we consider it from a pathological standpoint, for fibromata and sarcomata may be so nearly allied that the growth may be malignant from the start. Even the keloids take on a malignant tendency and some of the growths in the vagina and uterus that have been looked upon as being more or less benign have now been found to give metastases; some of those containing unstriped muscle fibers have given rise to metastasis in the lung. The fibromata are frequently combined with these muscle tumors and the fibroma itself may be malignant in the sense that it may cause metastasis or the combination may make it such. There is a case that I was thinking of when the doctor referred to the tumor giving the appearance of brain matter, a case reported from the Good Samaritan Hospital some years ago by Dr. Brown, the specimen of which I saw microscopically, a lipomyxoma of the cervix with subsequent growth in the vagina in an infant which was followed by metastasis in the lungs. These growths often degenerate and give an appearance that may be taken for a degenerating syphiloma, gumma. The tumor the doctor spoke of as being connected with the lumen of the bowel was a degenerating tumor classed as a fibroid; it was a fibroma of the uterus that had ulcerated into the bowel, and the fact that it had undergone such degeneration suggests that it had malignant properties in itself for the typical fibroma is not prone to that degeneration.

The good result obtained with Coley's treatment suggests that there must be some connection with a malignant tendency of these fibromata. Coley treated not only sarcomata but other tumors with good results. I visited his laboratory and saw many of the cases. Dr. Finney tried it on a case of sarcoma of the neck in which the serum did not do good, but in a certain series of cases benefit has been obtained. The fact that the patient had no recurrence while under the treatment speaks in its favor.

The idea that fibroids were apt to disappear at the menopause gave rise to the treatment of enlarged prostate by removing the testicles and causing atrophy of the growth. We do not know just what it is with fibromatous tissue and epithelial cells that is going to make them malignant or keep them benign, but there is something in the life of the individual influencing the history of this process and the history of the woman and her organs must influence the clinician in his judgment as to what is going to occur in an individual case. Perhaps, by watching the case carefully and keeping up the health of the individual you may avoid operation, but if it is producing symptoms, then operate, because then the condition is such that the cells are going to take on a tendency to grow rather than to discharge their metabolic properties. That is suggestive of one of the theories for the explanation of tumors—that the parts, because of something that occurs, take on this one property of growth to the suppression of every other.

Dr. C. Urban Smith: There is a possibility of these tumors being malignant from the beginning. I should like to ask Dr. Hundley, who has removed a great many fibroids, and who reports four cases that were malignant perhaps, how that compares with the number he has seen or removed? As Dr. Rowland has said, the matter of advising these patients presents a difficult subject for the general practitioner. We have all seen these cases go on for years without having any trouble. I had an old lady for a patient about four months ago that Dr. Howard saw thirty-five years before and advised against operation. She had an immense fibroid and yet lived to be seventy-four. I think, however, that the greatest difficulty for the general practitioner is to be able to diagnose these cases properly. You find so many fat abdomens where there are fibroids which adds greatly to the difficulty of diagnosis. I believe that what the doctor says is correct—that when these tumors commence to give rise to symptoms they should be operated upon. I do not believe that they should be allowed to run on, as is so often done, until they are in a moribund state. The tumors should be removed as soon as the symptoms referred to by the doctor manifest themselves. The chances are certainly for a more comfortable life. It is certain, too, that some of them do go on to grow after the menopause, up to the age of fifty-five and later, when it becomes more dangerous to operate.

Dr. J. M. H. Rowland: I believe Dr. Hundley is right and I only wanted to emphasize the position of the general physician. I recall one case now that would emphasize his idea; a woman of sixty-seven, who had had hemorrhoids and been operated upon for them five years before I saw her as a patient. This operation had been successful so far as the hemorrhoids went, but she had a fistulous opening. She was in very good health. Her father had lived to be ninety-six and her mother ninety. While in the country she had a fall and the next morning did not seem to be able to go about very well. I was asked to see her and immediately on examining the abdomen saw, on the right side, a nodule which evidently came out of the pelvis and which appeared to be an ordinary fibroid. I called her attention to it and she said, "Why, doctor, that has been there for forty years I know." It had either been in the pelvis and become dislodged, or it had been there for a good many years as she said. Her own physician was called and a more thorough examination made. It was attached below to the fistulous tract in the rectum and also to inflammatory tissue which was there. She declined operation, although three surgeons advised it, and from that moment the tumor grew very rapidly. There were all the symptoms of a malignant growth from that time and she died in a few months.

Dr. Hundley (closing): It has not been my experience that a large number of these tumors cease to grow at the menopause. Dr. Smith spoke of an old lady seen by Dr. Howard many years ago and who lived to be seventy-five; that really doesn't mean much. One must know something of the woman's environments, how she went along in life. She may have been able to regulate her life just as she chose, been provided for without having to do anything, so that she could put up with inconvenience and ill

health. It is surprising how accustomed some of these women can become to ill health. Women, as a class, endure almost anything in the way of suffering. They go along suffering with irritable bladder, sensations of weight in the pelvic region, with hemorrhage and pain. I saw a case last week where the woman was brought in with uremic coma from pressure and with only a very small fibroid. Of course, these women may go along for a long time with these fibroid tumors, but when they begin to make themselves felt, to make the woman feel that she has something radically wrong, then it is time to remove them. Ordinarily, if they are not adherent, they are easily removed and should not be allowed to remain to destroy the woman's usefulness and make her life one of discomfort, if not of misery.

TUBERCULOSIS AMONG THE MOUNTAINS OF SOUTHERN WEST VIRGINIA.*

By J W. PRESTON, M D, Keystone, W. Va.

I have nothing new or startling to offer you on this subject; I have chosen it for the reason that I do not believe as a rule it receives the consideration at the hands of the family doctor it deserves. I say this advisedly, for all agree that unless this insidious disease be taken in its inception its victim is doomed to the depths of despair; and, if this paper elicits a discussion among us that leads on toward earlier diagnosis and more patient and systematic treatment, its purpose will have been fully attained.

With this in view, I believe that a brief resume, first, in a general way, and second, from the standpoint of personal observation will best serve my purpose.

As it was said in ancient days that all roads led to Rome, I may paraphrase and say that all diseased and debilitated conditions gravitate toward this gaunt spectre, which in its pursuit of mankind, reaches out its bony fingers and clutches at his vitals.

I am persuaded that the general practitioner who, with alert and trained faculties, has become familiar with the tendencies of his individual patient and skillfully leads him over this stony pathway, restoring him to health, has saved a life just as surely as has the surgeon who staunches a spurting blood vessel; and, likewise, that he cannot get best results till he has carefully studied every influence touching the daily life of his patient both as to habits, home environment, and climate.

It is a demonstrated fact that each case of tuberculosis is a law unto itself, that each patient is a culture medium different in some respects from every other; and that in one the germ itself is of a most virulent type, while in another it may scarcely have vitality sufficient to thrive under the most favorable conditions.

Heredity cannot be ignored; yet if I mistake not, the present tendency is to think less of the "soil" and more of the "seed," and to look upon tuberculosis in exactly the same light as we do other germ diseases; except that where from three to seven days are allowed diphtheria to incubate, and from twelve to forty for typhoid, tuberculosis may claim anywhere from one month to ten or more years from time of exposure to a period of activity—lying dormant in some gland or tissue and becoming aggressive when, for any reason, the habitat becomes less resistant. As mythical as this may seem, there is good evidence to support it, and the educational crusade throughout the civilized world relative to the destruction of tubercular sputum has already borne fruit, and the dawn of a better day seems at hand.

By a glance at the topography of our State, showing as it does a rugged mountainous stretch of practically unbroken forest of high elevation, not unlike many other sections heralded far and wide as health resorts, it would seem that a formidable barrier would be presented to the inroads of this disease. My observation, extending over a period of nearly a dozen years, together with a careful enquiry both among the older inhabitants and my neighboring physicians in the Flat Top coal fields, has proven conclusively to my mind that such is not the case; and, worse still, that we have among us many cases which have heretofore been looked upon as those of general anæmia, chronic bronchitis, or other similar troubles, but which in the light of better diagnostic means of later years are proving to be tubercular.

I am led to believe that the progress of the disease in this region from its inception to consolidation of the lung is comparatively slow, and that there are not a few such cases treated

* Read before the West Virginia Medical Association, at Wheeling, May 25, 1905.

by tonics and hygenic measures and restored to health, a clear diagnosis never having been made. On the other hand, I have noted that when consolidation of any considerable area or cavity formation has been reached, progress to a fatal termination has seemed to be comparatively rapid. I believe that a careful study of these facts, and of the peculiar climatic conditions which must influence them, will be well worth our while, for in the absence of specific medicinal treatment for the disease, there can be no doubt that the best solution of the problem must be found in reasoning from cause to effect.

The privation incident to an uncertain and insufficient food supply would seem to have predisposed the earlier settlers to the disease, while dissipation and in many instances a syphilitic taint has weakened the resisting power of the laboring classes in more recent years, thus preparing a "soil" in which the germ would flourish in almost any climate.

The exciting cause is to be found, no doubt, chiefly in the sudden changes in the atmospheric conditions resulting both from the frequent and rapid condensation of moisture, chilling the air and wetting the ground; and the regular diurnal variation of many degrees in temperature from the chill of early morning to the heat of mid-day, then dropping suddenly in the afternoon as the sun disappears behind the mountains.

It is surprising how few of our inhabitants have been trained to note these changes and to protect themselves by the proper use of wraps and heavy footwear, and thus ward off colds, catarrhs, and other similar troubles which are extremely common with us, and which so often are the precursors of tuberculosis.

Touching the diagnosis and prognosis, while modern statistics seem to demonstrate that about 50 per cent. of incipient cases of the disease properly treated are permanently cured, my observation leads me to believe that were the records of our cases—diagnosed as such—collected, we could boast of no such showing; but I firmly believe that with our energies more particularly directed to the possibilities before us, very much could be accomplished in the way of making earlier diagnosis and consequently in greatly increasing our percentage of recoveries.

With an energy born of a new hope the physician who saves the most of these cases will in future base his diagnosis more and more upon an abnormal vesicular murmur, a slightly lessened chest movement, and a higher pitched percussion note; and less and less upon the signs that go to indicate firm consolidation or cavity formation.

As a means of confirming a diagnosis in somewhat advanced cases the microscope is invaluable, but it must be a dangerous instrument to depend upon, for to await the discharge of bacilli is to await the sloughing of tissue.

There can be no doubt that the clinical thermometer is worthy a freer use in the diagnosis and treatment of a beginning consumption than is usually accorded it in general practice.

Tuberculin promises much in both diagnosis and treatment but for the present its practical use must be limited, except in hospitals.

In the way of treatment, to reach a successful issue requires unlimited patience and persistence with a careful study of the individual patient and his environment; the family physician is certainly in the better position to undertake this, and to encourage his patient to make the long and tedious fight. But it is too often that the poverty of our patient, badly arranged and badly located dwellings, domestic worries grating upon the nervous system, and other obstacles well nigh insurmountable are encountered.

These are conditions which emphasize the crying need of sanataria. With a few such institutions, even cheaply constructed and maintained, in accessible localities over the State a great boon would be conferred upon suffering humanity and a burden lifted from the profession with such an arrangement so that each incipient case might be accorded the privilege of residence and treatment—if only for a short time—for the purposes of education as to the best means of caring for himself and protecting others from the germ, then allowed to return home, a great number of lives would be saved annually, and a strong check put upon the rather rapid spread of the disease.

The common habit of indiscriminately advising every tubercular patient to change climate regardless of his means, or the stage of his disease cannot be too strongly deprecated. They but too often go to a climate better advertised but no better suited to their needs than our own, there in a weak and debilitated condidtion to fight a losing battle with home-sickness and privation, and finally to die in exile.

A successful treatment is essentially a process of hardening and fattening; a maximum of nutritious food, fresh air, and sunshine; and a minimum of worry and exertion both physical and mental while the temperature is above a hundred.

Drugs are of value exactly according to individual needs, and should be varied as conditions change. As an aid to nutrition and an alterative to the mucous membranes pure creosote in small doses, combined with nux vomica and other stomachics, is a remedy of undoubted value in many cases. Fowler's solution has seemed to serve me a good purpose as a tonic, but cod-liver oil, while of value in many cases has often disappointed me; I believe as a routine, good beefsteak properly cooked and raw eggs are better.

To recapitulate, I would say: First, the high elevation and mild climate of Southern West Virginia are antagonistic to the development of tuberculosis, but these are more than counterbalanced by sudden atmospheric and temperature changes, and the disease is on the increase; second, it is the duty of the family physician to keep on the alert for the first symptoms of the disease, and to rigidly train his patients relative to its care and prevention; third, there is urgent need of sanataria in different parts of the State to care for the indigent, and to educate the masses relative to the disease.

CLOSURE OF ABDOMEN BY LONGITUDINAL SUTURE.*

By E. B. CLAYBROOK, M. D., Cumberland, Md.

In 1903 Charles Davison, of Chicago, advanced the idea of using a running longitudinal suture in the fascia of the abdominal wall in conjunction with regular through and through sutures. The through and through sutures were first passed, and left untied, until the longitudinal suture of silkworm gut was in place and drawn tight, the ends being secured in a bow knot. The through and through sutures were then tied and the ends of the bow-knots of the continuous suture allowed to escape from the wound where they could be grasped by forceps, the bow pulled out and the suture removed at the time of removal of the others, or later as deemed best. In April, 1904, he read a paper before the Chicago Surgical Society, giving very flattering results from the use of the suture, both as to primary healing and easy removal and the absence of ventral hernia after its use. The chief idea in the use of this suture in the fascia is that he gets thorough co-operation of this, the most powerful retaining tissue of the abdominal wall and so lessens the danger of post-operative ventral hernia.

During 1904 I used this method of closure on a number of cases with excellent results both immediate and remote. It then occurred to me that there was no need for any through and through sutures, as the whole abdomen could be well closed with longitudinal sutures in layers; so of late I have been closing my operative wounds in the abdomen according to this idea, and according to the following technique:

The first suture passed closes the transversalis fascia and peritoneum, the edges of which are grasped with forceps. A long silkworm gut suture is introduced through the skin an inch or more from the angle of the wound and carried obliquely down to the angle of the peritoneal opening. The free end is caught with forceps and the peritoneum and fascia are closed by carrying the neddle through from one side to the other and re-entering on the side of exit and back to the opposite side, and so continued until the opening is closed, care being taken to make the stitches short enough. The needle is now brought obliquely outward so as to emerge from the skin an inch or more away from the angle of the wound, where the suture is grasped by another forceps. This gives the effect of a mattress suture at the point of contact of the tissues and when the suture is pulled taut it should be straight, or nearly so, and show no kinks. If there is fear of a dead space or oozing from the muscles another suture is introduced for them, one-half inch nearer the angle of the wound, the muscles brought together, and the suture brought out a half inch nearer the other angle of the wound than the emergence of the first.

We now pass one in the same way for the oblique fascia and the usual subcuticular stitch for the skin. We thus have the abdomen closed with three or four longitudinal sutures, as the case may be, with ends projecting from the skin at a distance of a quarter to an inch from the angles of the wound and we know at a glance by its point of emergence which suture controls

* Read before the Allegany County Medical Association, April 4, 1905.

each tissue. The sutures should be pulled taut from the peritoneum outward so as to be sure there are no dead spaces or openings in any of the layers left. The free ends are then tied over a small pad of gauze to keep up tension or in thick skinned people they may be tied over the skin alone.

I have found only one drawback to the method and that is hardly worth considering, viz.: if there is any hitch or mistake in introducing the sutures you will not be able to get them out. But even should this occur the ends can be pulled up and cut short, and you are no worse off than if buried sutures were used.

The advantages are many and may be summed up as follows: 1st. There is no tight grasping of the tissues by the sutures as in any ordinary tied suture, so lessening the irritation and danger of stitch abscess, and for the same reason the patient suffers little or no pain or inconvenience from the wound; 2d. The coaptation of all parts is perfect with like tissues united, thereby lessening the danger of ventral hernia which should theoretically never occur; 3d. The skin wound shows as a fine linear scar which is a great improvement on the monstrous looking "Jacob's Ladder of Modern Surgery" that we see after through and through suture; 4th. We do away with buried sutures and all foreign material left in the tissues and get as good or better results than we can get with other methods; 5th. The removal, if properly done by cutting off the lower ends and pulling from above, is easily effected and is practically painless to the patient; 6th. It may be used in drainage cases, cholecystostomies and such conditions as well as where the abdomen is completely closed.

Some of our surgeons here have been using this method at my request and they all agree that the results are excellent. I expect to continue its use in all suitable cases and hope to hear favorable reports of its use by other members of this Society.

CHRONIC SUPPURATION OF MIDDLE EAR.

By FRANK M. CUNNINGHAM, Macon, Ga.
Aural Surgeon, Macon City Hospital.

Considering the countless papers which have been read upon the subject of this talk it is strange that men will acquiesce in the general non-attention which it receives. There is reason to believe that diminution in the number of cases of this special disease, and prolongation of average human life will be accomplished under the management of the latter-day school of cleanliness. There can hardly be any question of the fact that sanitary reform, advance in medical science and surgical procedures, all largely based on cleanliness of one kind or another, fill the brightest pages of modern history. I wish here to call attention to the awful seriousness of chronic middle ear suppuration. There is no sense in dodging the plain fact, reproach though it be, that up to the present time, we have failed to regard the presence of a running ear with sufficient seriousness.

Chronic suppuration is a much more common condition than any one man from his own clinical observations is apt to think. In an examination of 1,000 school children of London, Arthur Cheatle found over one-third with suppurating ears in one or both sides (*Journal of Laryngology,* June, 1902,). Various European writers show by clinical reports the frequency, and the serious consequences of aural inflammation. The reports of the New York Eye and Ear Infirmary show that in eight years, out of 65,000 aural conditions of all kinds, about 15,000 were chronic suppurative cases. The report also shows that one case in every 88 had some intercranial complication. It is not my desire nor intention to startle every patient having this condition with the news that he is in constant danger, for we know of too many cases which have gone through life to old age with running ears, free from any trouble, and dying from some other cause. But I do most positively desire and intend to put the general practitioner on his guard concerning chronic suppuration, so that he may constantly have in mind the necessity of prompt and proper treatment of every aural suppuration; the acute cases, that chronic suppuration may be prevented; and the chronic cases, so that in the presence of cleanliness, septic complications may be avoided, and if already begun, proper measures be instituted for relief. There is no more seriously urgent condition in the whole realm of surgery, no one requiring more prompt and radical treatment than the picture which confronts us when we have to deal with the inflammatory complications of the acute exacerbations of chronic suppurative otitis media.

There is perhaps no more forcible way of illustrating this condition than to report a case which recently came under observation. A boy

nine years old presented himself at the clinic for treatment. The mother stated that up to three days before, the boy had been entirely well except that he had had a running ear for two years, ever since he had scarlet fever. Three days ago he had pains in his ear and over the whole left side of his head. Examination of the ear showed a large ragged perforation, but no discharge (the mother said that the discharge stopped just before the pain began). There was extreme tenderness over the whole mastoid area, especially over the site of the exit of the mastoid emissary vein, and posteriorly; the tenderness also extended into the neck, the cervical glands in the region of the angle of the jaw being unusually tender. While I was making the examination, the boy began to have a chill. Thermometer showed a temperature of 99 degrees, half hour later the temperature was 103 degrees, and in an hour's time had risen to 105 6-10 degrees. There was nausea and vomiting, and loss of co-ordination of movement (this may have been due to extreme weakness, but I attributed the condition to intra-cranial involvement). The boy was immediately prepared for operation in the usual manner and taken to the operating room. The usual mastoid incision was made, also a straight posterior incision. The cortex was darkened, and at first entrance of the gouge, a thin, greenish-yellow, stinking, purulent fluid escaped; immediately examination showed the streptococcus. The mastoid apophysis, including tip and zygomatic cells, was quickly obliterated. The posterior canal was rapidly removed, doing the complete radical operation in the usual manner. A careful examination of the epitympanic plate showed no perforation of that structure, and no sinus by which the overlying tissues could have been infected. The thin, shell-like, bony covering of the sigmoid groove was now removed with curette and rongeur. At the first opening a quantity of pus, the same character which rushed through the cortical opening, exuded, showing the condition of perisinuous abcess. The sinus was then uncovered from a point nearly as far back as the torcular Herophili past the knee, through the descending portion to a point nearly to its juncture with the inferior petrosal sinus to form the jugular bulb. The vessel had a greenish yellow appearance, strongly indicative of gangrenous regeneration. A knife was introduced and the anterior wall incised in the descending portion. The incision was enlarged with scissors backward as far as the vessel was uncovered and downward almost to the bulb, and found thrombosed throughout the whole extent. The clot was dislodged and removed with a curette. A curette was passed into the distal end and freely used until satisfactory hemorrhage was established. No flow could be induced from the lower end, however, and it was decided to ligate and excise the internal jugular. The neck was prepared and an incision made beginning at the sterno-clavicular juncture and extending along the border of the sterno-mastoid muscle to a point between the mastoid process and the angle of the jaw. The vessel was quickly exposed, lying in its sheath with the common carotid artery and pneumogastric nerve; the tributaries were twice tied and cut between, and the vessel removed from the lowest point of incision to a point as close up to the jugular bulb as possible. The sheath of the vessel having shown infection, the wound in the neck was left open to heal from the bottom by granulation. Intravenous injection of saline solution (temperature 120 degrees) was given on the operating table and the case responded quickly and satisfactorily to the stimulation. The condition improved for several days, and then another chill followed by rise of temperature showed that the septic process had not been abolished. The boy, however, was apparently improving, though slowly, until the fourteenth day, when the temperature dropped to subnormal, and the pulse to 48. These symptoms were quickly recognized as strongly indicative of intracranial pressure, and the patient was again taken to the operating room. The bony covering of the middle and posterior fossæ was quickly removed, and the diseased appearance of the dura over the posterior area suggested the cerebellum as the new focus of the affection. A bistoury was plunged into the substance of the cerebellar tissue, and a small abscess evacuated of about two teaspoonfuls of pus. The patient was returned to the ward, and again showed signs of improvement for two days, when a sudden rise of temperature to 107°, with complete collapse, told the conditions of rupture into the ventricle. Paralysis of respiration ensued, but the heart continued to beat for seven minutes after the respiration had entirely ceased. This case is only mentioned to show what serious conditions can develop in a few days from an ear which has been apparently quiescent.

This case occurred in the service of Dr. Fred Whiting, to whom I am indebted for the privilege of having operated, and under whose super-

vision the operation was done; also for the pleasure of making this report.

The cure for chronic suppuration is essentially surgical. Thorough removal of every particle of diseased tissue, regardless of the area it occupies must be accomplished—some men recommending intratympanic operations, but these cannot fail to meet condemnation. The anatomical location of Kirschner's cells in the posterior root of the zygoma and superior wall, make them absolutely inaccessible to surgical procedures by the intratympanic route. The obliteration of the posterior bony canal wall, converting the tympanum, aditus ad antrum, and antrum into one cavity is the method, par excellence, by which proper drainage can be procured.

The chief objection of the operation lies in the danger of wounding the facial nerve. It is essential that we must approach the area of the nerve in a respectful manner. The removal of the quadrilateral piece of bone at the base of the posterior canal wall, and by which a view of the horizontal semi-circular canal and prominence of the aquaeductus Fallopii can be obtained must be accomplished with extreme care. Contrary to the accepted view, it is my belief that the facial nerve is not as frequently injured in this area as in the area of the upper half of the eminentia pyramidalis where, under ordinary circumstances, the canal wall is very thin and often presents deficiencies, so that it is not at all uncommon for the facial nerve sheath to lie in direct contact with mucous membrane of the middle ear. As a matter of fact, dehiscence of the Fallopian canal in the tympanum is a frequent anatomical condition. Then, too, Zackerhandl has called attention to the normal existence of a small foramen in the canal wall just above the oval window for the passage of a branch of the stylo-mastoid artery to the stapes. With an exudate in the tympanic cavity there is every chance of injury to the nerve, when an attempt is made to remove the exudation. With care, however, and a certain amount of skill, the dangers of facial paralysis should not be feared. The cure depends on the entire removal of all diseased tissue. Care must be taken that the external wall of the attic be removed, for without this, proper drainage cannot be established. The failure to remove this structure has been the cause of failure in many cases, which would have otherwise been perfect results. The fibro-cartilaginous canal is split into flaps, after one of the accepted methods (preferably Pansa's T-shaped flaps). Whether the incision is carried into the concha, and the triangular cartilage dissected out is largely a matter of choice. I have seen one case of perichondritis result from the procedure, and hence, prefer not to incise the cartilage of the concha, if enough room can possibly be obtained without invading this area.

The question of primary skin-grafting has been much discussed recently. I am, as yet, unwilling to give my unqualified approval to the procedure, although I have seen some of the most excellent results from its use. The method most frequently used in America is after Ballance, of London, with a modification by Dench, of New York. They use large Thiersch grafts which are held in position by cotton pledgets. Jansen, of Berlin, uses small Wolff grafts which are held fast by small pieces of iodoform gauze, one layer thick, placed on the graft and then retained by gauze packing.

Recently Berens, of New York, has reported a new plastic operation by which a flap is turned into the cavity from the skin back of the incision. This is good theory, but I have seen no reports of any unusual success with this method. In these operations the posterior wound is invariably closed, eliminating the chance of an ugly scar. The after treatment consists of the preservation of cleanliness; the judicious use of a strong silver solution to keep down exuberant granulations; and the use of a good dry powder to hasten the epidermization.

We realize the ever-present dangers of chronic suppuration; we know the absolute unreliability of the symptoms in many of the complications, and we know we have a positive cure for the condition in the majority of cases.

It is very plain to me that it is the duty of the medical profession to properly and promptly inform every victim.

"Rock of Ages."

Writing of this famous hymn in the July *Delineator*, Allan Sutherland says that a missionary in Indian employed a Hindoo to assist him in translating

"Rock of Ages, cleft for me,
Let me hide myself in Thee," etc.

into the vernacular. His surprise may be imagined when he read, as the result of the effort of the learned Oriental, the first two lines:

"Very old stone, split for my benefit,
Let me get under one of your fragments."

ABSCESS OF THE LIVER.*

By MARVIN E. NUCKOLS, M. D., Richmond, Va.
Lecturer on Operative Surgery and Minor Surgery, University College of Medicine, etc.

While very infrequent, considering the many sources from which it may arise, purulent infection of the liver when it does occur is often so insidious in onset, so vague in manifestations and so serious in consequences that, in order to meet with any measure of success, we must be able to recognize it and institute suitable treatment at the earliest possible moment.

Having seen only two cases of this disease, it could hardly be expected of me that I should present anything now concerning it; so I shall occupy the time by giving a resume of the literature of the subject, particularly that referring to causes and diagnosis, and at the same time referring briefly to the cases that have come under my observation.

It is generally agreed that the principal avenue through which hepatic infection takes place is the portal circulation, though a number of cases result from an extension of infection along the bile tract, a few through the general circulation (hepatic artery and vein), and a few by direct extension from gastric ulcer. Cantlee, an English surgeon, who has had quite an extensive experience with tropical abscesses, believes that extension takes place through the lymphatics. Before taking up the causes proper, it will probably be well to consider the detoxicating or protective power of the liver as well as that of the intestinal mucosa in the normal condition.

More or less fermentation and putrefaction, with the production of toxins, is constantly going on in the intestinal canal. The mucous membrane prevents the absorption of these to a great extent; but, grant that a certain amount is absorbed, the liver normally would be able either to neutralize, combine with or eliminate through the bile, these toxins. But, on the other hand, suppose there is excessive eating and the climate is hot; we have more fermentation and putrefaction and more toxins and, as a result, an overworked liver. Now, if ulceration of the intestinal mucosa should occur, poisons are more freely absorbed and the liver still further taxed, and we have a fertile field for hepatic infection. Hot climates bring about these conditions. Persons, native of temperate climates, accustomed to excess in eating and drinking, on going to hot climates continue to eat and drink excessively, expose themselves to the heat by day and allow the body to become chilled at night.

This gives all the predisposing causes which in themselves will not cause abscess of the liver. We must have infection by pyogenic organism. Some of these are always with us waiting for an infection atrium. Usually we find more than one in pus from the abscess and, occasionally, in old cases none. The micro-organisms most commonly found are amœba coli, colon bacillus, streptococcus, staphylococcus, pneumococcus and typhoid bacillus. Any one or many may be the cause. Opinions differ as to the influence the amœba has in the production of abscess. Some, among them Virchow and Kartulis, claim that while not direct causes, amœbæ are carriers of infection, and by their amœboid movement break or injure the capillary walls. Others, among them L. Rogers, Councilman and Lafleur, believe them the only cause of tropical abscess. H. D. Rollerston in his recent book, after giving many of the opinions held, states that there is a tendency to doubt the importance of amœbæ as factors in the production of hepatic abscess, even though they may be found in the pus. Flexner and Shiga have never found the bacillus dysentericus in the pus from hepatic abscess. In typhoid fever, we have practically all the conditions necessary for the formation of abscess but, strange to say, it is very rare either during or following this disease, while gall tract infection is very frequent. In tubercular ulceration of the bowel, abscess is almost unheard of. The causes of the two cases under my care—one a single abscess in a negro woman—followed an injury in the region of the liver. The infecting agent is unknown as the pus was not examined. The other, multiple abscess in a white man, followed dysentery. The infecting agent was the streptococcus.

The diagnosis of abscess of the liver is sometimes very difficult and, if statistics be true, 13 per cent. are only diagnosed post mortem. Still, if the case is carefully followed up and all means of diagnosis exhausted, we are usually able to work out the real condition.

A sufferer from abscess of the liver always appears to be very sick, looks anæmic and septic even in the absence of fever, local symptoms or any evidence of suppuration. Usually the subject is a man of alcoholic habits, an excessive eater, who has had dysentery or some intestinal

*Read before the Richmond Academy of Medicine, and Surgery, May 9, 1905.

trouble or who has received an injury over the liver. For some time he has been feeling bad, is depressed and has lost his appetite. He does not sleep wel, and when he falls asleep, sweating is profuse. There is a feeling of weight and sometimes pain, which is variable in intensity, just under the ribs on the right side. Often, the pain is referred to the shoulder and down the right arm, and is markedly increased by lying on the left side.

The skin has a muddy hue though not actually jaundiced; the tongue is heavily coated. De Burn calls especial attention to the tongue and claims that it presents characteristics that are diagnostic. He says: "It gradually sheds the coating which covered it, the tip and edges become red, the whole organ becomes dry and three lines appear running the length of its face aspect, two lateral and one median uniting at the tip. If protruded from the mouth, it is without its natural suppleness, is fiery red and feels to the finger like a piece of wood." It is also his opinion that if this tongue is associated with indistinct pain in the shoulder and liver with intermittent fever, the diagnosis is assured.

With the foregoing history, physical examination will reveal an enlarged liver, usually upward as the abscess is most frequently on the upper surface; the upper border of dullness presents a curve with convexity upward. Some tenderness just below the ribs and probably slight rigidity of the right rectus muscle is elicited on pressure. If the patient is shaken, pain is markedly increased. If the stethoscope is placed over the liver and the abscess is near the surface, crepitation is heard which is likened to the sound produced by walking on frozen snow. Skiagraphy may show the diaphragm fixed and higher than normal. The urine shows a decrease in urea at first, which Roswell Park considers diagnostic. Urates are increased, and leucin and tyrosin may appear. Bile, as a rule, is absent. If the blood is examined, leucocytosis may or may not be present. It is usually absent if the abscess is surrounded by a thick capsule. Osler failed to find it in amœbic abscesses. If present, it is of great value, especially when it increases daily.

Two symptoms were present in my case of multiple abscess which I have not seen in any of the literature to which I have had access—continuous and uncontrollable hiccough and frequent hemorrhages from the bowel. The latter may have been due to pylephlebitis. Leucocytosis was present and increased from day to day.

Of all diseases subphrenic abscess is probably the most difficult to distinguish from hepatic abscess. The history of gastric or duodenal ulcer, cholecystitis or appendicitis may help, though all of these may be forerunners of abscess of the liver. If subphrenic abscess results from perforating gastric or duodenal ulcer, the cavity contains gas and percussion shows tympany intervening between absolute hepatic dullness below and impaired resonance above. Auscultations shows breath sounds below the level of dullness, descending with inspiration. If it results from other causes, we can hardly differentiate them except by exploratory incision.

Suppurating hydatid cysts usually give an angular border of dullness above, instead of a convex border. Unless we find this, operation will only determine the condition. Suppurative cholangitis is characterized by more pain, tenderness and rigidity of the rectus muscle, the history of previous attacks and possibly jaundice, absence of enlarged liver and presence of palpable gall bladder. Empyema can usually be distinguished by history of previous pneumonia; more cough and dyspnœa than hepatic abscess gives. Percussion shows dullness curved like the letter S, being low at the spine, high in the scapular region and low in front. The color of aspirated fluid may also aid. It must be remembered that empyema is cometimes a sequence of liver abscess and that both may exist.

In typhoid fever, we have the agglutination test, but this may be valueless in a person who has recently had this disease. Leucocytosis is absent and local hepatic symptoms are absent.

In malaria, we find the plasmodium, and the spleen is usually enlarged.

It was not my purpose to refer to the treatment, but a few words along this line will hardly be out of place.

All writers on this subject state that multiple abscess should not be operated on as it is a uniformly fatal disease. But can we tell before operation which cases are single and which are multiple? I think it is very doubtful. If we should operate and find multiple abscesses, surely we have done no harm. Nothing short of early and complete evacuation of pus and free drainage will do. Aspiration before the liver is exposed should be condemned. After exposure, if the abscess cannot be located, as-

pirate repeatedly, always withdrawing the needle before introducing in another direction. Any number of punctures may be made until the pus is located. If the abscess is on the upper aspect of the right lobe, subpleural thorocetomy is the operation of election. Excising periosteally, the seventh and eighth ribs in the anterolateral aspect of the chest, or the ninth and tenth ribs in the mid axillary line.

824 *West Grace Street.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.

Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE IV.

Resistance Offered by System to Action of Bacteria, Methods of Study—Microscope—Test Tube—Inoculation—Isolation of Various Bacteria—Koch's Laws—Agglutination Test—Predisposition and Immunity to Disease—Mitschnikoff's Phagocytic Theory—Erhlich's Side-Chain Theory.

Having described the different ways in which pathogenic bacteria may enter the body and their local and constitutional action, it now remains to show how the germs are destroyed and eliminated and how the toxins are neutralized. As the majority of patients who suffer from infectious diseases get well, it is logical to assume that the system has some way of disposing of the micro-organisms and antidoting their poison. That such is the case is proven by the rapid disappearance of microbes from the blood when injected into the circulation of a healthy animal, and the subsidence of fever and correction of constitutional disturbances with ensuing convalescence.

RESISTANCE OFFERED BY SYSTEM TO THE ACTION OF BACTERIA.

Nature's offensive and defensive resources consist in alexines, phagocytes and antitoxins, and when these fail she has a further resource in the emunctories. *Alexines* are normally found in the blood serum. They are the most powerful of all the non-toxic germicides. They give the serum an antiseptic power equivalent bulk for bulk to a 1-10,000 solution of bichloride of mercury. Alexines act on microbes chemically and are potent in destructive power. *Phagocytes* are also normally present in the blood, and when suppuration threatens or is in existence their number is largely increased. They grapple in physical hand to hand combat with the germs, and, if they are victorious, kill and remove them. *Anti-toxins* are not found normally in the blood, but are produced by the organism in some unknown way after infection has taken place. They have no effect on the germs, but on the toxins produced by the germs. An anti-toxin combines with a toxin as an acid does with an alkali, neutralizing it and rendering it inert. If by means of the three above described factors the system is not able to overcome bacteria and their products, resort is frequently made to the emunctories, and by diarrhœs, diuresis and copious sweating—the "critical discharges" of the old authors—the germs are eliminated.

THE STUDY OF BACTERIA.

Bacteria are studied by means of the microscope, by cultivation in test tubes, and by inoculation on lower animals. Owing to the minuteness of the organisms and the imperfection of the instruments, small progress was made in the microscopic study of bacteria until the advent of Abbe's condenser, which gives powerful illumination to the field and allows the use of high power lenses. With modern instruments and the use of stains we can readily distinguish the different species.

The cultivation of bacteria is carried on in test tubes. For their growth they must have the same conditions as other plants, namely, suitable soil, warmth and moisture. The best soils or culture media are animal broths, solutions of sugar, gelatin, blood serum and agar-agar, the latter a jelly-like substance obtained from seaweed. The culture medium is first sterilized by heat to kill any germs that may already be present, and then the bacteria to be studied are transferred to it by means of a clean needle. The test tube is then plugged with cotton and placed in an incubator, where if maintained at a suitable temperature in a short time rapid proliferation will take place. Skilled observers can recognize many of the different species by their manner of growth and by the color imparted to the media.

Much information concerning bacteria has

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

been obtained by inoculating or injecting them into healthy animals and noting the results. An animal is taken, usually a rat, guinea-pig, or rabbit, the skin shaved and disinfected and a solution of the germs injected with a hypodermic syringe, or an incision is made in the skin and a piece of infected tissue implanted, and the results watched. In three or four days the specific disease which the germ produces will be apparent. This method is often of great aid to the surgeon in making a diagnosis. If, for instance, a patient has a tumor and a positive diagnosis between syphilis and tuberculosis cannot be made, inoculation will give a certain differential diagnosis, for if a rabbit is inoculated with a piece of syphilitic tissue no symptoms will supervene, but if it be of a tubercular nature the characteristic symptoms of tubercular disease will follow.

ISOLATION OF VARIOUS BACTERIA.

Certain diseases are produced by certain germs. The germ of tuberculosis always produces tuberculosis, the germ of suppuration always produces suppuration, etc. Koch has formulated four laws which should be complied with by a germ before it can be said to be the specific cause of a disease.

Koch's Laws.—1. The germ must invariably be found associated with the disease.

2. The germ obtained from the tissue of the diseased animal must be grown for successive generations in a test tube.

3. The cultivated germ must be capable of reproducing the disease when injected into a healthy animal.

4. The germ must be capable of demonstration in the tissues of the second animal.

AGGLUTINATION TEST.

Since these laws were formulated by Koch another test has been developed which may give valuable evidence as to the nature of the germ. This is the agglutination test. It is based on the observation that when bacteria are mixed with the blood of a patient who has been infected with the same species of micro-organisms, owing to some modification of the serum, probably the addition of anti-toxin, the germs will undergo a clumping and loss of motility, in other words, agglutination. To illustrate the practical value of this test it is only necessary to say that when Shiga isolated the germ of epidemic dysentery the strongest proof he could adduce of its specific character was the fact that the germs underwent agglutination when added to the serum of a patient who had suffered from the disease. Also when a patient is suspected of having typhoid fever the Gruber-Widal reaction is relied upon as a final diagnostic test, namely, the absence or presence of agglutination of typhoid fever germs when added to the serum of the patient's blood.

ATTENTION AND ANTAGONISM OF BACTERIA.

The germs of different diseases have been subjected to all kinds of tests and tried under all sorts of conditions in order to study their peculiarities. Many strange facts have been learned. One is that bacteria of great virulence can be rendered weak and comparatively harmless by breeding them under adverse conditions, just as the Bushmen of Africa have deteriorated by existing for years under debilitating climatic conditions. Another curious fact is that certain germs have a violent antipathy for each other, and if placed in a culture media in the same test tube will devote all their energies to a conflict, and only after one has subdued the other does growth commence. As an example may be stated that if a rabbit is inoculated with the bacillus of anthrax alone he will always die, but if after inoculation with the germ of anthrax he is inoculated with the bacillus pyocyaneus he will not die.

THEORY OF IMMUNITY AND PREDISPOSITION TO DISEASE.

It has been discovered that some people "catch" diseases easily; that others never take them at all—that some have a predisposition to disease while some have immunity. This is explained by the fact that a person who has a tendency to acquire every disease to which he is exposed has blood and tissues which have feeble resisting powers and which present favorable soil for the growth and development of germs. A person who does not readily take disease is just the opposite, he has unfavorable soil for bacterial growth.

THEORIES OF PROTECTION.

One attack of many infectious diseases, such as small-pox, scarlet fever, etc., prevents a subsequent development of the same disease. This is explained in one of two ways; one the "abstraction" theory and the other the "retention" theory. According to the abstraction theory the invasion of the system by a certain species of bacteria is attended by the removal of certain food products from the tissues necessary for the life of that special organism. This food stuff is not replaced and hence the same breed

of bacteria cannot again maintain an existence in the individual. The second, or retention theory, is based on the belief that recovery from an attack of infectious disease is due to the formation of antitoxins by the system in quantities more than sufficient to neutralize the toxins formed by the microbic cause of the disease. It is believed that the unused supply of antitoxin remains and is retained in the system, and prevents a second occurrence of the same disease.

MITSCHNIKOFF'S THEORY OF PHAGOCYTOSIS.

Mitschnikoff, the modest pupil of Pasteur, practically an exile from Russia, offers a simple and plausible theory of normal resistance to infection and of natural immunity so often possessed by individuals to certain diseases. Mitschnikoff observed in his study of lower life that certain animal organisms ingested and destroyed certain yeast fungi with which they came in contact. On investigation, he finally proved that in the human being the leucocyte or white blood cell possessed similar power, namely, that it ingested and destroyed microorganisms, and he gave to this power the name of phagocytosis and called the leucocyte a phagocyte. In other words, Mitschnikoff claims that the leucocyte exercises the function of a police patrol, and when it meets a germ it will arrest and imprison it. Sometimes a germ offers little or no resistance and it is easily captured and removed. Again the germ proves pugnacious and a terrific struggle ensues. On the issue of the combat between the leucocyte and the germ depends the health or life of the individual.

SIDE-CHAIN THEORY OF FIHRLICH.

Opposed to the cellular theory of Mitschnikoff is the Side-Chain Theory of Ehrlich. The latter is the newest and most scientific theory of immunity that has been advanced, but it is difficult to explain in simple terms as its complete understanding requires an intimate knowledge of the most intricate problems of higher chemistry. Stripping the theory as far as possible of the technical terms that have been coined by its originator, the following is a superficial statement of its leading features. Germs in growing in the body produce poisons called toxins. Different germs produce different toxins. Each toxin has certain characteristics and produces a definite set of symptoms. It has long been recognized that in some indefinite way Nature resisted the action of toxins and it was finally claimed that this was done by the formation of antitoxins. Before the publication of Ehrlich's theory all that could be stated was that antitoxins were produced as a result of the reactionary effort of the system to defend itself against infection. No effect was made to explain the origin of antitoxins, the nature of antitoxins, or how antitoxins restored health or conferred immunity. Ehrlich noted that when toxin and antitoxin were combined in proper proportions in a test tube that a non-toxic substance resulted. On heating the fluid, however, he found that it again became toxic. This seemed to indicate that at first a union had taken place between the toxin and the antitoxin in which neither was destroyed, but that on heating the combination the bond was broken and the two substances liberated. What was the character of the link that could be coupled and uncoupled? Ehrlich assumed that to each molecule of the toxin and of the antitoxin there was attached a special group of atoms, and that the chain of atoms on the one fitted into the chain of atoms on the other like a key to a lock. He called these hypothetical coupling links the "haptophores" of the molecule, i. e., the binding group of atoms.

Ehrlich next considered the metabolism of the normal cells of the body, and soon reached the conclusion that it was necessary to assume that the cell constituents must enter into chemical combination with food substances in order that the latter might be made available for the use of the cell. Therefore he claimed that cells had certain atom groups of unknown chemical nature which made possible the binding of foodstuffs, and to these groups he gave the name of "receptors" from the fact that it was through them that substances were received into the cell.

Ehrlich stated that just as it was necessary for a poison to get into an animal before it could exert its effect, so it was necessary for a toxin to get into a cell before it could affect it. The only way a toxin could link itself to another substance was by means of the haptophores, the only point it could attach itself to in the case of a cell was the receptor. As a haptophore could only link with a corresponding group of atoms it was therefore necessary to assume that the cell receptor possessed haptophores. Having described how a toxin gains entrance to a tisue cell, we will next consider how the injury it produces may explain the production of antitoxin, for the damage inflicted by the toxin is a necessary antecedent of

the ultimate reaction that results in protection. When a toxin unites with a cell there is as a necessary consequence the destructive action of the toxin on the vital activity of the cell. The more molecules of toxin attached to the cell the greater the injury to the cell and the greater the number of receptors "bound." If the amount of toxin is not sufficient to destroy the cell, then there is resistance, reaction, or response to injury by the cell. Regeneration demonstrates that tissues have a tendency to reproduce, not only to the extent of repairing the injury but even to the point of increasing the original number of cells. As an example may be cited the excess of connective tissue cells in a cicatrix. When a non-fatal amount of toxin unites with the receptors, a cell defect or injury is created. For practical purposes the cell may be said to have lost just so many receptors. This loss stimulates the vital activities of the cell with the result that new receptors, identical with those "bound," are replaced. Receptors are frequently reproduced in excess of the number injured, and the excess may be so great that the cell may be overstocked with them, and many may be cast off and reach the general circulation. These cast-off receptors, or side chains, still retain their power of uniting with the toxin and constitute the antitoxin. Hence the truth of Behring's statement: "The receptor when attached to the cell is the agent through which the latter is attacked, but when cast off from the cell is its protector."

Book Notices.

Drink Restriction (Thirst Cures) Particularly in Obesity. By PROF. CARL VON NOORDEN and DR. HUGO SALOMON. New York. E. B. Treat & Co. 1905. Small 8vo. Pp. 86. Cloth. Price, 75 cents.

This is part VI of the "Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition, by Prof. Dr. Carl von Noorden, Physician-in-Chief in City Hospital, Franfort, a. M." The authorized American edition has been "Translated under the direction of Boardman Reed, M. D., Prof. Diseases Gastro-Intestinal Tract, etc., Department Medicine, Temple College," Philadelphia, etc. The volume under notice reviews the therapeutic employment of thirst cures in various diseases of the blood vessels, stomach, heart, kidneys, in diabetes insipidus, obesity, etc. The conclusions of the discussion of the subject are named on pages 61 and 62. The book makes plain the fact that even intemperate drinking of water is a dangerous habit—leading to many diseases of metabolism and nutrition.

Tumors of the Cerebellum. By DRS. CHARLES K. MILLS, CHARLES H. FRAZIER, GEORGE E. DE SCHWEINITZ, T. H. WEISENBURG, EDWARD LODHOLZ. Reprint from *N. Y. Medical Journal and Philadelphia Medical Journal*, Feb. 11 and 18, 1905. New York. A. R. Elliott Publishing Co. 1905. Cloth. 8vo. Pp. 179.

It is unfortunate that symposium series of papers on a subject of such great interest should have been issued simply as reprints—without preface, introductory chapter or index. An index would be especially serviceable, since so many facts and conditions are noticed in the several articles. There are a number of illustrations and figures in the text, as also a table of 116 cases of cerebellar tumors in which operative treatment was resorted to. A number of clinical reports are also included in the book—which make it a valuable reference work for surgeon and physician.

Editorial.

Medical Association of Georgia—Is it Legally "Reorganixed"?

A singular state of affairs exists with reference to the Medical Association of Georgia. During the session of 1905, at Atlanta, the Constitution of that Association under which it was sitting, required an affirmative vote of two-thirds of those voting during an annual session for any amendments or changes to be made in that instrument. After a full discussion as to whether or not the Association should be "reorganized" along the plans of the American Medical Association, the ayes and nays were called and the vote resulted 134 for, and 111 against "reorganization." Total votes cast 245. Necessary votes for change of the Constitution, 164. There were wanting 30 votes to make the reor-

ganization plan legal; and yet the ruling was that the reorganization plan had been constitutionally adopted! This was not a convention of doctors to organize a Society. The action was that of an organization under its existing Constitution. If the Constitution of the Medical Association of Georgia is to be interpreted as that of other like organizations, clearly the whole ruling is wrong. What is the use of a Constitution if it is to be so ruthlessly and summarily disregarded? The facts remind one of the rulings of the "carpet bags days" just after the Confederate war.

Surely the Judicial Council of the American Medical Association will not—in justice to itself as a *Judicial* Council—recognize any such *ipse dixit* ruling. The whole matter should be referred back to the Georgia Association to decide the matter in open regular session for themselves, according to its own Constitution and By-Laws, and in accordance with the privileges granted by the American Medical Association itself for each existing State Medical organization to determine its own policy in such a matter. No other straightforward honorable course is open to the Judicial Council when the illegal vote of less than two-thirds of the Georgia Association attempts to decide such a matter. The rights and privileges of the less than two-thirds voters have been conceded to all other State Societies. Why should they be denied to the Georgia Association?

Any other ruling on the part of the National Association might precipitate the reference of the whole matter to the courts of Georgia for judicial decision, for the Medical Association of Georgia is an incorporated body.

The West Virginia State Medical Association

Held its thirty-eighth annual meeting in the Board of Trade Hall, Wheeling, W. Va., May 24-26, 1905. The following papers were read: "The Teachings of Failures," by Dr. F. L. Hupp, Wheeling; "The Palliative Treatment of Prostatic Hypertrophy," by Dr. H. E. Sloan, Clarksburg; "Preoperative and Post-operative Treatment of Surgical Cases," by Dr. J. E. Cannaday, Paint Creek; "Appendical Abscess—Pathology and Treatment—Report of Cases," by Dr. S. M. Mason, Clarksburg; "Injuries of the Head—Report of Cases," by Dr. Henri P. Linsz, Wheeling; "Anatomical and Physiological Principles Involved in the Symptomatology of Brain Traumatism," by Dr. J. Schwinn, Wheeling; "Office Treatment of Rectal Diseases," by Dr. William M. Beach, Pittsburg; Symposium on Pneumonia: Etiology, by Dr. S. S. Wade, Morgantown; Pathology, by Dr. L. O. Rose, Parkersburg; Symptoms and Signs, by Dr. W. W. Tompkins, Charleston; Treatment, by Dr. L. D. Wilson, Wheeling; "Tuberculosis," by Dr. J. W. Preston, Keystone; "Pseudo-Membranous Croup," by Dr. S. W. Bush, Parkersburg; "Cases and Experiences of Interest," by Dr. W. H. Sharp, Parkersburg; "Diseases of the Kidneys," by Dr. M. McNeilan, Parkersburg; "Rupture of the Bladder," by Dr. J. R. Cook, Fairmont; "The Importances of early Diagnosis of Inter-ocular Lesions," by Dr. H. R. Johnson, Fairmont; "Fikker's Diagnosticum," by Dr. L. O. Rose, Parkersburg; "Drugs and the Diazo Reaction—A Communication," by Dr. William W. Golden, Elkins; and "Notes on Tuberculosis," by Dr. Andrew Wilson, Wheeling.

Webster Springs, W. Va., was chosen for the next place of meeting. The following officers were elected: President, Dr. S. S. Wade, of Morgantown; 1st Vice-President, Dr. G. W. Bruce, of Moundsville; 2d Vice-President, Dr. F. L. Hupp, of Wheeling; 3rd Vice-President, Dr. A. S. Grimm, of St. Marys; Secretary, Dr. Wm. W. Golden, of Elkins; Treasurer, Dr. V. T. Churchman, of Charleston. Councellors: 1st District, Dr. A. O. Flowers, Clarksburg; 2d District, Dr. A. R. Warden, Grafton; 3rd District, Dr. W. W. Hume, Quinnimont; 4th District, Dr. W. N. Burwell, Parkersburg; 5th District, Dr. T. W. Moore, Huntington. Delegates to American Medical Association: Drs. J. L. Dickey and L. D. Wilson, both of Wheeling, W. Va.

The Medical Society of North Carolina

Met at Greensboro, N. C., for its fifty-second annual session May 23, 24 and 25, 1905. In addition to the reading of many valuable papers, several matters of importance were presented by the House of Delegates for discussion. Among the number were resolutions resisting the efforts of old line insurance companies to make the examining fee less than five dollars; and another resulted in the selection of a committee of five to organize a special society for the arrest of tuberculosis.

Charlotte was selected as the place for next annual meeting. The officers elected were: Dr. E. C. Register, Charlotte, president; Dr. L. B.

McBrayer, Asheville; Dr. W. H. Cobb, Goldsboro; Dr. W. O. Spencer, Winston, vice-presidents; Dr. J. Howell Way, of Waynesville, secretary; Dr. G. W. Sikes, Grissom, treasurer. Delegates to the American Medical Association, Drs. J. Howell Way, J. A. Burroughs. State Board of Health—Drs. George E. Thomas, Wilmington, and Thomas E. Anderson, Statesville.

A reception and banquet, tendered by the Guilford County Medical Society to the visitors at the Benbow Hotel, was a most elaborate affair.

The report of the North Carolina Medical Examining Board was read by Dr. G. W. Pressly, of Charlotte, and showed that in the examination of 129 applicants, representing thirty-nine medical colleges, eighty-eight made the requisite per cent. and were entitled to license to practice in North Carolina. One applicant withdrew and forty failed.

The new president, Dr. E. C. Register, of Charlotte, after his introduction, announced that fourteen candidates for license as trained nurses had successfully passed the examination before the trained nurse board, and were awarded certificates in accordance with law.

Virginia Sanatorium for Consumptives.

Mr. Samuel Heilner, of Philadelphia, has donated an ideal site at Ironville, Bedford county, Va., to a benevolent corporation for the care and treatment of consumptives of this State. The corporation is establishing three Sanatoriums—one for poor white consumptives; one for colored consumptives; and one for such patients as are able to pay $15 or more per week. As to the first two, such as cannot afford to pay, treatment will be free; others, according to their ability, will be charged from $5 to $8 per week. State and city patients will be received at the rate of $8 per week. The organization is purely charitable and dependent on voluntary donations and subscriptions. Mr. D. W. R. Read has tendered his entire time as resident business manager for one year free. No stock will be issued and no dividends declared. Directors are representative physicians, lawyers, business men and philanthropists from all parts of Virginia.

The Sanatoriums are near the N. & W. Railroad station, in the Blue Ridge Mountains, twelve miles east of Roanoke and about a mile and a half from the famous Blue Ridge Springs. The location is dry, free from mosquitoes and other pests, elevation about 1,300 feet, Southern exposure, protected by hills from adverse winds, cool in summer, and with pure air and water; the scenery is picturesque. The corporation also proposes to distribute literature about consumption and consumptives—how to prevent the disease and how to care for its victims. It is an institution to which the State and the cities and counties of Virginia as well as citizens should be regular contributors of money and material. Address all communications of inquiry and containing contributions to *Virginia Sanatorium for Consumptives,* Ironville, Va.

The University of Virginia

Commencement exercises take place June 11-14, 1905, inclusive. There are no separate and distinct exercises for the Medical Department. The annual meeting of the Board of Visitors occurs June 12th; Alumni Day is on the 13th, and the program is concluded by an address and delivery of diplomas in the various departments on the 14th. The graduates in medicine and the hospital appointments have not yet been made known.

The George Washington University

Held its eighty-fourth annual commencement exercises at the Memorial Continental Hall, Washington, D. C., May 29, 30 and 31, 1905. The exercises for the departments of Medicine and Dentistry were separate from those of the other departments, and took place on first day. There were sixty-one graduates of Medicine and twenty-three graduates of Dentistry from the various portions of the United States, over a third of whom were from Southern States.

The Northern Neck Medical Association

Was organized at Heathsville, Va., May 26, 1905. More than half of the physicians of the Northern Neck, composed of the counties of Westmoreland, Richmond, Northumberland and Lancaster, were present and enrolled—nineteen in number. The following officers were elected: President, Dr. J. W. Tankard, of Lilian; first second and third Vice-Presidents, respectively, Drs. H. W. Harding of Wicomico Church, F. W. Lewis of Whealton, and L. G. Mitchell of Downings; Secretary, Dr. R. O. Lyell, of Warsaw; Treasurer, Dr. W. N. Chinn, of Hague;

and Librarian, Dr. A. C. Fisher, of Emmerton.

This Association will meet twice each year, and the next regular session is scheduled for Warsaw, Va., December 7, 1905.

The American Medical Association

Meets in Portland, Oregon, July 11-14, 1905, for its 56th annual session. While the meeting will have numerous matters to engage attention, yet the pleasure of this Western trip itself will be so exceedingly interesting—together with the many side-trips that have or can be arranged at small extra cost—that we are convinced all who can spare the time and money to do so will have no cause for regret. Owing to the Lewis and Clark Exposition which will be in progress at Portland until Fall, no trouble should be encountered in securing special railroad fare, though all who contemplate the journey would do well to make inquiries of the ticket agents immediately as to the various routes, charges, etc.

The Southside Virginia Medical Association,

Although composed of members from the counties of Prince George, Surry, Sussex, Southampton, Greenesville and Brunswick, the opportunities afforded of an interesting session and the easy range of the place to the sections named were so inviting, that the suggestion to meet at the Central State Hospital, Petersburg, Va., June 8, 1905, was readily adopted without question. The Petersburg Faculty will cooperate with Dr. Wm. F. Drewry and his assistants to make the meeting at the hospital of which he is superintendent a signal success. Why should not Dinwiddie county be included in the area covered by the Association anyway, and thus make the territory embraced practically a square?

The Association of the Army and Navy of the Confederacy

Will hold its eighth annual meeting in Louisville, Ky., June 14-16, 1905, in conjunction with the annual reunion of the United Confederate Veterans. Physicians who are sons of veterans are now admitted as junior members. The membership fee is one dollar, payable only for meetings attended. Drs. J. S. Cain and Deering J. Roberts, both of Nashville, Tenn., are President and Secretary, respectively. Dr. R. Alexander Bate, of Louisville, Ky., is chairman of the Committee of Arrangements, and assures "old Kentucky hospitality" to all who attend.

The Medical Examining Board of Virginia

Will hold its next meeting at the University College of Medicine, Richmond, Va., June 20-23, 1905, inclusive. Registration by the Secretary, Dr. R. S. Martin, of Stuart, Va., will begin at 10 A. M., the 20th, while the examinations begin at 9 A. M. on the 21st. Graduates of medicine must present their diplomas for inspection. Undergraduates will be examined only on subjects for which they show certificates. Three examinations of three hours' duration each will be put up on each of the three days. One hour—from 3 to 4 P. M.—is allowed for dinner.

The Southwest Virginia Medical Society

Will hold its next semi-annual meeting at Pulaski, Va., July 4, 1905. As the programme will be issued about June 20 th, it is important that all who intend to read papers should immediately send to the Secretary, Dr. E. T. Brady, Abingdon, Va., the titles, together with subheadings, outlining its trend.

The American Pediatric Society

Will hold its 17th annual meeting at The Sagamore, Lake George, N. Y., June 19, 20 and 21, 1905. Besides the reading of papers by many prominent authors, there will be much of pleasurable interest to those attending—including an excursion on the lake.

Dr. Harry L. Myers,

Of Norfolk, Va., was elected chairman of the Southern Section of the American Laryngological, Rhinological and Olotogical Society during the session at Boston, Mass., June 7, 1905.

Obituary Record.

Dr. J. T. DeJarnette

Died, aged 75 years, at his home near Lewiston, Va., May 21, 1905. He was a prominent citizen of Spottsylvania county, and was formerly a superintendent of schools.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 6.
Whole No. 222.

RICHMOND, VA., JUNE 23, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

RELATIVE VALUE OF THE VARIOUS METHODS OF DETERMINING THE SANITARY QUALITY OF A WATER SUPPLY.*

By ERNEST C. LEVY. M. D., Richmond, Va.
Director of the Laboratory of the City Water Department.

It is only within comparatively recent years that the importance of pure water has come to be fully realized. Up to that time little more was asked of any source of supply than that it could be relied upon to furnish an abundance of water pleasing in appearance and agreeable in taste.

In the dawn of the new era, when men began to realize that a water possessing the above elementary requirements might still be unwholesome and even dangerous for drinking purposes, the aid of the chemist was called in to settle the question. During this period things were expected of the chemist which we of to-day know he is unable to accomplish. It was then common practice to send him a bottle of water, with no data as to its source or as to surrounding conditions, and expect him, as the result of his laboratory investigation, to give a final and absolute opinion.

With the advent of bacteriology, hopes were for a brief time entertained that an infallible means had been found of determining the sanitary quality of a water with unerring accuracy. The really harmful factor in a polluted water being the bacteria of disease which are present, the detection of these, it was argued, would be the final proof of the unfitness of a given water, while in their absence a water could be considered at least not dangerous. But it was soon found that, however well established the relation between certain bacteria and the disease to which they give rise, and however easy the identification of these bacteria in pure culture, yet their detection in water was a task never easy, and usually impossible. Thus, because bacteriology stood self-confessed as unable to accomplish the supreme task demanded of it, the real possibilities of the science were either overlooked or undervalued, and for a time, indeed until quite recently, chemical methods again enjoyed the ascendency, though now decidedly shorn of the almost superstitious reverence previously accorded them.

Along about this time it began to be recognized that the subject of water sanitation was one of sufficient importance to constitute a real specialty in itself; and so, while most chemists and bacteriologists were engaged in the futile and rather amusing attempt of claiming superiority for their respective sciences, a few, with wider vision, began to attack the problem in the true modern spirit—by work instead of words—and as a result of their labors, both directly and in the impetus thus given to the whole subject, the modern water expert came into being. The object of the present paper is to show the necessity of bringing to bear all available methods of research in arriving at a trustworthy opinion of the sanitary quality of a water supply. This can, of course, be done merely in outline in a paper of this kind.

As above suggested, the work of the water expert is not the simple matter it was formerly held to be. True, in many instances, a given water is so obviously and grossly contaminated that its unfitness for drinking purposes is manifest to even the most casual observer. Such cases need not be discussed here. At the other extreme stand those woodland springs and streams (each year becoming more rare) so removed from all possibility of contamination as to be unquestionably pure. But the vast majority of all possible sources of water supply (excluding those so plainly contaminated as to be unworthy of consideration) fall in the class where prudence suggests or demands an investigation of their sanitary quality.

The opinion is still widely prevalent, not only among the general public, but among members of the medical profession as well, that a chemical examination of water for sanitary purposes

*Read before the Medical Society of North Carolina, at its meeting in Greensboro, May 23-25, 1905.

is much the same thing as an analysis for any other purpose, such, for instance, as for the determination of the commercial value of an iron ore or the purity of a food product. Such is by no means the case. In a sanitary water analysis the analytic processes themselves are for the most part as satisfactory as in the instances above cited, but with the iron ore or the food product the interpretation is evident when once the analysis has been made, while the water analysis merely furnishes data to assist the judgment in arriving at an opinion. This is a necessary state of affairs, arising from the fact that, in a water contaminated by ordinary sewage, chemistry does not detect the presence of any substances actually characteristic of sewage, but merely gives evidence of the presence of such things as, however harmless in themselves, have been found to be associated with polluted water. Thus, were one to give to a chemist a sample of water to which had been added a few spoonfuls of moderately salted broth, the analysis would be pretty much the same, even before the broth had undergone any change, as if an even larger amount of sewage were present, yet the broth is, of course, harmless, while the sewage might contain myriads of typhoid or other disease germs.

In spite of their limitations, the importance of chemical methods must by no means be underestimated, but, except in cases of marked pollution, they can seldom be relied upon in themselves for furnishing adequate information. Their greatest field of usefulness, perhaps, is in affording a measure of the degree of pollution where this is very great, rather than in giving evidence in more doubtful cases.

In one direction, at least, chemistry is able to do what can be accomplished by no other means —namely, to afford evidence of the fact that a spring or well water comes from a polluted source, even when complete removal of the contained bacteria and oxidation of the organic matter originally present in the water has been accomplished. In this way it can direct attention to the possibility of future danger through interference with the soil filtration by which purification is taking place at the time of the examination.

Bacteriological methods, like the chemical, fail as a rule to show the presence of the actual things which make a water unwholesome or dangerous, but they accomplish a much nearer approach to this end. The real danger in a polluted water lies in the presence of bacteria of disease, and especially, so far as our present knowledge goes, in the presence of bacteria derived from individuals suffering with certain diseases in which the germs gain entrance to the body by the mouth and leave it, enormously increased in numbers, from the other end of the digestive tract. Bacteriological methods are able to determine, with a high degree of accuracy, the presence of organisms characteristic of sewage; and since a water supply which is shown to contain sewage must be liable at any time to contain dangerous micro-organisms (in case any of the individuals contributing this regular sewage should be suffering from any of the water-borne diseases), such water is properly held to be dangerous.

Not only can bacteriological methods determine the presence of sewage contamination with greater directness than can be done by chemistry, but they can detect its presence when the dilution is so great that chemical methods fail utterly. In distinction to what has been said of the ability of chemical examination to throw light on past pollution and to predict at times the danger of serious conditions in the future, the revelations of bacteriology are confined strictly to conditions existing at the time of the examination.

Besides the chemical and bacteriological examinations, we are able to gain valuable information in some cases by means of the physical and the direct microscopical examination, which last affords a means of ascertaining the character of the suspended matter present, including organisms other than bacteria. These two methods, while having their own field of usefulness, are not of as great value in this special connection as those previously mentioned.

In determining the sanitary quality of a water supply, we have, in addition to the laboratory methods above mentioned, two other methods of the utmost value: (1) a study of the vital statistics of the community supplied by the water in question; and (2) a sanitary study of the watershed in the case of streams and of the more immediate environment in the case of wells and springs.

The information to be gained by studying the vital statistics is, of course, available only in connection with a water supply already in use. In certain instances the information secured by this means is more positive than that obtainable by any of the above methods, but this study

must be conducted with the greatest care, avoiding the many pitfalls always in wait for the unwary.

Regarding the sanitary study of the watershed, it is right here that a mistake is frequently made. While it is universally acknowledged that only the chemist and bacteriologist can carry out the methods of these special sciences, it is by no means uncommon to regard the ability to draw correct deductions from a sanitary study of a watershed as independent of such special training. As a mater of fact, the ability to give their proper value to the various features present and to sum up intelligently the influence of all the factors involved comes only from long experience. Even then, cases will arise in which the water expert must draw upon his judgment rather than upon any precedent either in his own experience or that of others.

A careful investigation of all possible factors of contamination must be entered into. The relation of the volume of the stream to the amount of polluting material, the distance of the source, or sources, of pollution from the intake of the water supply, the time taken by the stream in flowing between the points in question under both normal and flood conditions are among the most important considerations where a running stream is concerned. In this connection it may be mentioned that modern scientific opinion tends more and more to the view that, in the present built up condition of our country, very few streams indeed furnish a water entirely satisfactory from a sanitary standpoint without the adoption of some means of artificial purification. In the case of springs and wells, the points to be observed are different, and usually relate to the rather immediate environment, except in the case of deep (real and so-called artesian) wells, the water of which may come from great distances. The geological structure of the region must always be given consideration. In a recent case of the writer's the fact that certain shallow wells were in rocks of igneous origin led to the expression of an opinion quite different from what would have been given had they been in sandy or gravelly soil.

From what has been said it must be evident that the forming of an opinion as to the sanitary quality of a given water is a thing demanding more than a mere chemical and bacteriological examination. Both of these are necessary, but in addition to this there are many other things to be done. Even so far as the analyses themselves are concerned, the real test of skill is in the ability of putting a correct interpretation on the analyses after they are made. The analytic data themselves may aptly be compared to the symptoms which enable the physician to make his diagnosis, and every member of this Society knows the skill demanded in this connection, and how, at times, some apparently trivial symptom, which one of less experience might entirely overlook, may lead the skillful diagnostician to his final judgment of the true conditions.

The study of the surroundings should never be neglected. To do so would be much the same as for a physician to be contented with making his diagnosis and deciding on his line of treatment after making a laboratory examination of the urine, sputum and blood without having ever seen his patient or having even learned anything of his past history or present symptoms. At times this might be possible, but generally it is a thing few would care to attempt. Of course, it is possible in many instances to have a division of labor between a skilled observer in the field and the chemist and bacteriologist in the laboratory, in the same manner as the laboratory worker and the attending physician may co-operate.

The writer wishes in concluding to urge upon the members of the medical profession the importance of becoming acquainted with the work which has been done in recent years in connection with water sanitation. While such a degree of familiarity with the subject as can be acquired by the busy practitioner will not, of course, make him an expert in this line, it will still enable him to do an immense amount of good in calling attention intelligently to some of the more palpable transgressions against the laws of health, which are now reaping their regular harvest of illness and death.

INJURIES TO THE BRAIN AND NERVOUS SYSTEM FROM ALCOHOLIC MEDICATION.*

By T. D. CROTHERS, M. D., Hartford, Conn.
Superintendent Walnut Lodge Hospital, etc.

The supposed tonic and stimulant properties of alcohol as a medicine are not sustained by modern research. The text-books on the prac-

* Read before the ——— County (Conn.) Medical Society, May, 1905.

tice of medicine recognize this in the brief mention of alcohol as a remedy, and that only in stages of collapse. Works on therapeutics make equally brief mention of its value in disease.

Careful studies by the general practitioner show that the therapeutic value of alcohol is more or less doubtful, and that the substitutes are very numerous and more effective in their influence on disease. The use of spirits and quinine as an anti-malarious remedy has been practically abandoned by both physicians and laity. In the same way spirits as an anti-tuberculosis remedy is now considered dangerous. The old time prescription of "rock and rye" has been found to actually increase the degeneration for which it was given, and practically did nothing more than conceal the symptoms. In the various forms of nervous exhaustion and neurosis, alcohol is found to be a dangerous remedy. Its use in fevers is very severely condemned, and even in the later stages for heart failures, it is growing less and less popular. Its common use in cases of collapse has been practically abandoned for the reason that in all probability it lowered vitality and seriously complicated the condition, and so on through almost every disease where it was commonly used ten years ago, it is now entirely discarded. A quarter of a century ago, the late Dr. N. S. Davis showed by clinical comparisons of cases that its use in typhoid fever not only increased the mortality, but protracted the convalescence, and left complications and general feebleness of the organism not noted in persons to whom it was not given. A few years ago almost every case of pneumonia, typhoid fever and diphtheria where alcohol was given freely from the beginning of the disease developed delirium, which was practically from alcohol alone. I have seen well marked examples of delirium tremens in the last stages of typhoid fever and pneumonia.

A prominent physician who insisted on treating himself in a typhoid fever case developed delirium tremens. He was taken to the hospital to die. All spirits were removed, and the recovery was rapid and marked. A quack doctor received great local reputation for his treatment of fevers which was practically a concealed saline associated with sponge baths of some form of acid water three times a day. The local physicians were giving large quantities of spirits and quinine and failed. Persons found unconscious on the street are given large doses of spirits for the purpose of rousing up the heart's action. If the coma is due to hemorrhage, the action of alcohol by rousing up the heart's action drives an increased current of blood through the opening with more certain fatality. The post-mortem of many of these cases indicates diffused hemorrhage, which has been intensified and increased by the action of alcohol. Hence it is an exceedingly dangerous and uncertain remedy to use alcohol in the ordinary comas found on the street.

Persons who overwork and live badly and suffer from acute indigestion, insomnia and exhaustion may apparently be helped by the prescription of spirits, but this is only temporary. More serious complications and acute disorders localized in the stomach, liver or kidneys appear.

The modern teachings show that the original conditions were toxæmias and the prescription of alcohol added new poisons to the condition and covered up the protests of nature by its anesthetic action. Many very serious protracted diseases begin with these symptoms, and are given alcohol for its tonic and stimulant action, ending in death, or long, slow recovery. A prominent New York physician built up a large practice by advising the discontinuance of all spirits and the substitution of salines and acids concealed so as to be agreeable to the taste. He recognized the danger of toxæmias and the anesthetic action of alcohol, and insisted that it should be discontinued.

Probably one of the most confused and doubtful uses of spirits has been for the purpose of overcoming tuberculosis. It is the frequent observation that persons who have used alcohol as a beverage very frequently die of this disease. In my own experience there appears to be a very close relation between inebriety and tuberculosis. Persons suffering from tuberculosis frequently become inebriates, and inebriates who become abstainers suddenly develop tuberculosis. In both, the end is fatal. One is called "galloping consumption," in which the lung tissue breaks down in a few days or weeks. The other is called dipsomania, in which the patient drinks with delirious precipitency.

The use of alcohol to counteract the growth of the bacillus of consumption may conceal the acute symptoms while it destroys the vigor of cell resistance and increases the growths of toxæmias. Alcohol always diminishes the oxygen carrying power of the blood cells and natural immunity of the system to overcome this injury. Alcohol lessens the power of absorption, of nu-

trition and greatly enfeebles the rapidity of elimination. Remedies given to prevent tuberculosis which contain large quantities of alcohol actually increase the fibrinous deposits and diminish the elasticity of the blood vessels as well as lower the vitality; hence may be classed as among the most dangerous according to the latest modern researches.

The various forms of influenza so common of late years, attended with extreme prostration, are evidently very greatly aggravated by the use of alcohol as a remedy. The toxæmic condition present which seems to concentrate on the nerve centres, lowering the power of resistance and generally depressing the system, is increased by the addition of the alcoholic toxin. Local epidemics of la grippe where various remedies are tried have amply confirmed this fact. It has been stated by good authorities that the use of alcohol in influenza is a very active cause of neuritis. It is claimed that both poisons from the germs and the spirits concentrate on the nerve's extremities, producing most serious complications, pains and palsies. The so-called rheumatism marked by pain, stiffness and loss of power are common in alcoholic excesses and in neuritis, and when both causes are combined, they are more chronic and severe. Practical experience brings out this fact very clearly.

Another question about which there is much difference of opinion is whether alcohol can be used without danger in old age and debility? There is quite an extensive literature extolling its virtues, and in the most extravagant way commending it as a tonic in old age and a protractor of longevity and vitality. Many persons believe that it is practically harmless, and has some real value when given medicinally in the later years of life. These delusions are not sustained by critical inquiry. The general failure and exhaustion of old age may be covered up by the use of spirits, but is never checked or stopped, and, on the contrary, it is always increased. This can be demonstrated by clinical studies and laboratory experiments of the action of alcohol on the system. Thus we now know that the circulation of the blood in the brain is disturbed by alcohol, the normal rhythm is broken up, and the blood current is driven with an irregular, jerking action. This follows from vasomotor paralysis of the blood vessels and their terminals. This disturbance prevents nutrition and plasmic matter from being properly distributed to all parts of the brain and body, hence there are practically starvations and derangements. In age, the elasticity of the arteries is impaired, and the flow of blood is lessened. Alcohol by its action increases this impairment of arterial contraction and expansion. In old age, fibrinous deposits increase and the balance of nutrition is disturbed. The metabolism is enfeebled, and the power of elimination diminished. These are special and peculiar effects, which follow from the action of alcohol.

In addition to this, alcohol has a peculiar eroding and corroding property by absorbing the water from the cells and diminishing the oxygen carrying properties of the blood vessels also increasing the toxins, conditions which are all prominent in old age. These facts are established, and the question occurs whether these effects only follow from large doses of spirits in peculiar physiological conditions, or are they common to all persons who use spirits late in life, and seem not to be made worse for it? So far, the evidence seems to show that these peculiar effects are common to all forms of spirits, but, owing to the anesthetic action of alcohol, are concealed and unrecognized. Victor Horsey, the great English surgeon, said: "There is no substance known whose effects will more profoundly increase the degeneration and precipitate the organism into old age than alcohol."

A study of the causes and conditions which precede death in old age bring out a startling array of symptoms which are common to inebriates and alcoholics who have used spirits for a long time. Thus arterio-sclerosis, hypertrophy or atrophy of the heart, liver and kidneys; inflammations of the terminal nerves or neuritis, called rheumatisms, associated with stiffness, local palsies and enfeebled nutrition, defective metabolism and low votality—these are all symptoms of age and of inebriety. The causes of death are also strikingly similar; thus cerebral hemorrhage, pneumonia, acute inflammations of the kidneys, sudden profound exhaustion followed by heart collapse, are common to both classes.

Some authorities assert that spirits given in small doses are not followed by these extreme effects, but there is no experience or laboratory study to confirm this. Another fact, not well known, is that the action of alcohol even in small doses, is cumulative—that is, after a time the pathological effects manifest themselves, although less prominent than when the body is suddenly poisoned by large doses. The facts are established that alcohol is not a tonic or

stimulant, but an anesthetic and narcotic, explains clearly something of its cumulative action. We can now demonstrate by well attested clinical and laboratory experiments that this is true, and it should become a working basis from which to study the effects of alcohol as a drug. We all recognize the injurious effects of spirits when used as a beverage and in large quantities; but as yet, there is no evidence that its effects differ when used in disease in smaller amounts. As an anesthetic, its action would be more complicated and its effects concealed according to the method of giving and the physiological condition of the person who uses it.

There is a wide unknown field of personal equation which may be described as susceptibility to the drug conditions of the organism, presence of toxins, capacity to eliminate, powers of absorption and other unknown forces which determine the special effects. Researches into this realm may throw much light on the apparent contradictory facts which are defended so strenuously as final truths. So far, it may be stated with great positiveness that the use of alcohol as a tonic or stimulant to protract life in old age, or increase the heart's action to overcome disease, or for some supposed food it may contain, is not only reckless, but unwarranted from our present knowledge. If these physiological effects of anesthesia from alcohol with depressing cell erosion are constant, its damage in disease and old age is most serious and dangerous. If alcohol is given for its specific, anesthetic and narcotic action, the same as its derivatives, of which ether and chloroform are most prominent, this will be practical, scientific and rational, but given in any other way, for any other purpose, is not only doubtful, but reflects on the good judgment and knowledge of the physician.

The practical conclusion is this: The whole subject of alcoholic medication should be studied anew by each physician in his every-day practice. He should seek to determine its effects above all theories or opinions or the prejudices of others. Careful clinical studies of the effects from this drug compared with similar cases where it has not been used will furnish reliable facts, which will determine for the practitioner its value or danger in medicine.

"When the shore is won at last
Who will count the billows past?"

FORCIBLE REMOVAL OF FOETUS FROM UTERUS: THE HISTORY, INDICATIONS, AND MEANS.*

By M. J. PAYNE, M. D., Staunton, Va.

The forcible removal of the fœtus from the uterus at times becomes a matter of urgent necessity. While the subject may be presented in the very broadest manner, I have abridged as much as possible, and incorporate only such subject matter as is essential. I will purposely dwell at some length on the history, with the hope of stimulating review of what, I am sure, is a neglected branch of medical study—viz., the science and art of obstetrics. I wish to restrict the term forcible removal to means other than uterine contractions, excited by the process of labor or abortion. We will not discuss criminal abortion, excited by design, either on the part of the patient or attendant.

HISTORY.

Many artificial methods of removing the fœtus have been practiced, dating far back into the earlier centuries. While crude, some methods then employed are now advocated. I need only refer to the uncus, crochet, and the similar instrument, the hook, described carefully by Celsus. It is not clear just when the operation of artificial dilatation of the cervix was first performed, or by whom, nor is it known by whom craniotomy was first done. Craniotomy was, however, described by Celsus, and was known to the Arabian school of medicine. Celsus lived about the time of Christ.

While the forceps is mentioned in the earlier writings of the Arabian school of medicine, its description, and the old instruments found, would not fit the fœtal head at or near term. It is more than probable, therefore, that the instruments then used were for the express purpose of extracting the fœtal head, after a caniotomy was done. Craniotomy was very frequently practiced, was carried to such an extreme that the Church of Rome made it an offence, punishable by excommunication. Turning to the original claimants, Palfyn and the Chamberlins, a careful review of the subject must give credit to the latter, as Palfyn's instrument would neither fit the fœtal head nor conform to the maternal tract. The Chamberlin family, for purely selfish reasons, retained the secret for many years, and not until Hugh Chamberlin boastingly claimed his power to deliver any woman in

*Read before the Augusta County (Va.) Medical Society, Nov. 9, 1904.

labor had the instrument been seen. Being a high position and a short straight instrument, he failed, and accordingly much discredit was at once heaped upon the discovery. It is not strange, therefore, to learn that the forceps was much discredited for nearly a hundred years afterwards. The Chamberlin family lived from about 1520 to 1600 A. D.

In 1747, Levret brilliantly conceived the idea and made the forceps that is practically used to-day, making at one stroke the cranial and pelvic curve, the lock, shank and handle. But little interest is attached to the history of the forceps from that time on till Tarnier advocated and perfected the axis-traction principle about 1877. I have omitted describing the earlier forceps, for they were of the very crudest pattern, often being made in the country blacksmith shop.

Cæsarean Section.—The derivation of the term seems to be wrapped in obscurity, but the better evidence points to the fact that the name, Cæsar, owes its origin to the verb *cædere,* to cut, and that children so delivered were called Cæsar. It is not known when the operation was first practiced, but it is certain that the Greeks practiced post-mortem Cæsarian section to remove the fœtus. Pliny mentions the fact that Scipio Africanus and Malinus were born in this way. Mischanajoth, an earlier writer than Pliny, states that "in a twin birth, neither the first child, which by section of the belly is brought into the world, nor the one coming after, attain the rights of heirship or priestly office" (140 B. C.). It is interesting, too, to study the expressions of opinions of men of high station relative to the operation. Napoleon is made to say, "Treat the empress as the shopkeeper's wife, but if one life is to be saved, save the mother"; while Henry VIII, of England, is credited as saying just before the birth of Edward VI, "Save the child by all means, for other wives may easily be found," a typically true expression of the character of the man. The first authentic operation deliberately performed appears to have been done by Trautman in 1610 A. D. However, it is only since the advent of asepsis and antisepsis that the operation can be said to have assumed a recognized place. Much discredit has been placed on the operation, owing to the fact it has always been held that it should be done as a last resort.

The consideration of Cæsarean section would be incomplete unless some mention was made of the cow surgeon—for Macduff was from his mother's womb untimely ripped," and by a cow. It is known that the cow has performed the ripping section eleven times in the last 400 years, with a maternal mortality of 22.2 per cent., and a fœtal mortality of 54 per cent. It is further known that several Macduffs have lived and have grown to manhood. One is now living at West Point, age 37, and is in good health.

Many crude, makeshift operations have been devised to take the place of the Cæsarean section, but are now fortunately relegated to oblivion. To-day the modern Sanger-Tait or Sanger-Cæsarean section, and the Porro-Cæsarean operation are the operations chosen. Porro, of Pavia, made his attempt in 1876, with the most brilliant results. Storer, of Boston, in 1886, first practiced hysterectomy on the pregnant uterus after section. The vaginal Cæsarean section devised by Duhrssen is a modern operation, and is very highly praised, but it has not yet been sufficiently tried to award it a proper relative place in obstetric surgery.

Symphyseotomy, or section of the pubis, proposed and performed by Sigault in the year 1777, has not gained the favor that at first was thought to be due the method.

The *induction of premature labor* was first practiced and performed in England, and in spite of much opposition both at home and abroad on the part of the clergy and State, the English obstetricians finally succeeded in obtaining the legal and professional sanction for this important operation. The originator is not known, but in the year 1756, a consultaion of the most eminent obstetricians, held in London, considered the advantages of the then untried procedure. This consultation resulted favorably to the important, but radical departure, and Dr. McCauley, of the Strand, was the first one to perform the legalized operation successfully; the patient being the wife of a linen draper. German obstetricians only sanctioned the operation as late as 1804, while in France the controversy was bitterly waged until 1827. In 1831 all opposition seems to have disappeared, the operation was rationally considered, and the application broadened, bringing to the home previously blighted by the death of the child, and often death of the mother, the blessings of childhood and parentage. The once frequent practice of craniotomy has correspondingly been lessened, and it is the hope of the writer that it may in time be abolished.

INDICATIONS.

(1) To anticipate the death of the fœtus, il-

lustrated by the death of the fœtus, say at the eighth month, labor may be forcibly imitated, and often a living fœtus delivered at seven or seven and a half months; (2) abnormal processes on the part of the fœtus, such as premature ossification of the bones, especially of the cranium and hydrocephalus; (3) abnormal processes on the part of the mother, notably, new growths, either malignant or non-malignant, obstructing the birth canal; (4) gross disproportion of the fœtal and maternal structures, and contracted pelves; (5) grave obstruction of the urinary tract (ureter), or of the intestinal tract, the result of pressure of the gravid uterus; (6) rupture of the uterus, and certain trauma of the uterus—e. g., gunshot wounds; (7) certain diseases of the mother, hydremia, nephritis, cardiac diseases, nervous diseases, mental diseases, tuberculosis, hyperemias, grave or pernicious anæmia, or serious body dyscrasiæ—e. g., chorea gravidarum; (8) new growths of the pelvic viscera complicating pregnancy, such as myomata and fibroids of uterus, and certain new growths of the abdominal viscera, notably of the renal system; (9) malformation of the anatomic structure of the genital tract, and organic stricture of the birth canal; (10) certain hernia, notably hernia obstructing the birth canal, and obstructed hernia; (11) certain abnormal positions of the uterus, and fixation of the uterus; (12) eclampsia; (13) placenta prævia; (14) hemorrhage independent of the relative attachment of the placenta—so-called accidental and concealed hemorrhage; (15) certain diseases of the eyes—e. g., albuminuric retinitis, and hemorrhage of the retina.

I have not included in this paper the diagnosis of any of the indications, nor have I considered any of the methods in a medico-legal aspect, for the sole reason that the paper would be, in consequence, of too great length. Mention is made of certain relations the practitioner should assume in order thereby to save himself from censure. I wish also to leave out of consideration justifiable abortion, for the reason that the term—abort—necessarily implies that the fœtus perishes, while forcible removal of the fœtus, as now understood, has in view means directed to saving the fœtal life.

Finally, every case has to be considered on its merits, and due reflection is to be enjoined before attempting to decide the urgency of the case. I wish to be understood as not advocating the reckless and hasty interference with what is, when ideal, an entirely normal or physiological act; however, whenever a case presents conditions such as to prevent normal delivery, nothing is to be gained, and all may be lost, by waiting. The obstetric moment, or just the time when interference should take place to prevent complications and to save the mother and fœtus, demands a constant attention on the part of the attendant.

MEANS.

Violence to the womb should not be done except upon urgent necessity, unless there is a very clear perception of its necessity as relative to both mother and fœtus. Such was the teaching of Meigs in 1852, and it is true of opinion today. No one would be justified in resorting to forcible means, except by counsel to decide the urgency of the case.

The removal of the fœtus may be accomplished in many ways. The ingenuity of man has been supplemented by the viciousness of the cow, and the triumphs of modern surgery—especially with the advent of asepsis—have made interference less likely to result disastrously.

In choosing a method, first, exercise care to select the simplest method that will effect delivery safely to the mother and child. One cannot have the right to purposely select a method deliberately to destroy a life. A critical comparison of the mortality rate of the methods usually advocated will convince any one that it is far better for the mother to select a method that will save the child. It would be clearly more rational to resort to a Cæsarean operation at once—before the strength of the patient is exhausted—having in mind to save both mother and child, rather than resort to long and fruitless efforts to deliver by the birth canal when the indications are positive that delivery cannot be accomplished by the natural passages. Cases generally do bad in which delay has been unavailing. A woman has a greater chance of survival after a hysterectomy of the pregnant uterus, cleanly and quickly done, than after a long, fruitless tearing, lacerating and contaminated craniotomy. Men of experience refrain from doing a craniotomy. If you wish to know some of the horrors of this mutilating operation, read in Meig's Obstetrics, 1852, case of Mrs. R., and then in comparison, read of the Cæsarean operation done by Dr. Gibson on Mrs. R., in Philadelphia, all in the practice of Meigs. Much may be learned from some of the older works.

A recent discussion of dystocia had by the New York State Medical Association showed

the consensus of opinion to be that an obstetrician should be something more than a midwife, and that judgment and rational interference, instead of provoking complications, materially lessened both fœtal and maternal complications, and gave a more favorable maternal mortality. Briefly, then, we will point out the indications for the various methods, and allude somewhat in comparison to the relative advantages of their choice.

Craniotomy shows a high maternal mortality, variously stated at 20 to 25 per cent., and a fœtal mortality of 100 per cent. Its only indication is when the fœtus is dead, the head is low and impacted, and the pelvic diameter is over 6cm. It is said that about 64 per cent. of craniotomies are made on living children.

Symphyseotomy is a method of dividing the pelvic ring, and is a proeedure to somewhat enlarge the pelvic diameters. It is not a simple operation, the hemorrhage being at times quite profuse, while the mortality is about fourteen per eent; however, in properly selected cases it may prove of value. The operation has caused death directly. Forceps have as a rule to be applied to effect delivery.

The so-called *vaginal Cæsarean section,* of Duhrssen, in eertain cases of anatomie rigidity, or stricture of the cervix, or placenta prævia, is applicable, and is a step in the right direction. The technic is simple, but the hemorrhage may be profuse, and necessitate extreme measures—i. e., a hystereetomy. After exposing the surfaee of the uterus by an incision into the vagina and separating the bladder, an incision is made on its anterior face, and a stiteh placed at the upper end of this incision in order to prevent a further rending of the struetures. It may be required to divide the pelvie ring in addition to the uterine incision. After delivery, the wound is closed by eareful suturing.

Forcible delivery by the natural passages may be accomplished in several different ways. The eervieal eanal must first be dilated, and this may be accomplished by the various bags, chiefly hydrostatic, and the bag of Coe, by metal dilators, and manual dilatation. I think the preferable method is to seize the eervix with a strong volsella, drag it down to the vulva, introduee the metal dilator of Goddell, continue dilatation to the extreme of the dilator, then introduce the two index fingers, and imitate the dilator, then two fingers of each hand, and so on, being sure to obtain full dilitation. Now apply the foreeps, preferably the axis-traction instrument, and continue as an ordinary forceps operation. It may be more feasible to turn under certain conditions, but turning is not nearly so favorable to the child.

Embryotomy is only indicated when the child is dead, or is a monstrosity and is dead. *Craniocłasis,* or compression of the fœtal head, is a restrieted operation, and at times is difficult and unsuceessful, and should only be applied to cases in which the fœtus is dead.

Cæsarean section—the forcible removal of the fœtus by the abdominal route—is always to be preferred to an elective craniotomy, or embryotomy. If the maternal diameters are 6cm., or less, it becomes an operation of compulsion—there is no escape. In certain new growths, either complicating or obstructing the labor, it must be chosen. In rupture of the uterus, trauma of the uterus, and in certain faulty fixations of the uterus, the Cæsarean operation is again a matter of compulsion. In cases of the elective Cæsarean operation the mortality is not over nine per cent.; in cases of compulsion, when the patient has been exhausted by prolonged efforts at delivery, the mortality is twenty-two per eent. Reeently a series of 38 cases were tabulated, showing 38 maternal recoveries and 37 fœtal lives saved. The Porro operation may be employed, and is safe, and assures the prevention of future eonceptions.

Cæsarean section has of late been advocated in the treatment of placenta prævia, and shows in comparison most favorably with the older treatment. A comparison of mortality shows Cæsarean operation—maternal, 9 per eent.; fœtal, 10 per cent.; while delivery by turning—maternal mortality, 14 per cent.; fœtal, 22 per cent.

It is clear, then, that the modern Cæsarean operation is to be favorably considered in the treatment of placenta prævia. In treating a ease of placenta prævia, it is easy enough to rapidly dilate the cervix, but when you attempt to turn and bring a foot down so as to plug the eanal, you will be alarmed at the hemorrhage, and the child will likely be sacrificed. If you apply forceps and deliver, the child will have a somewhat more favorable chance. Cæsarean section is not to be considered a simple affair, and the relative advantages of the different methods should be considered.

In eoncealed hemorrhage the maternal mortality is about 40-50 per cent., and the fœtal mortality is 95 per eent. It is wiser here to secure rapid dilatation in order to rapidly ex-

tract the fœtus, either by turning or with forceps, and then to secure uterine contractions. In the diseases of pregnancy, delivery by the natural passages is the method to be selected.

Normal labor should not be interfered with, though just so soon as urgent indications arise rational interference should take place. It is irrational to allow a case to go on to extreme exhaustion, or wait until complications are present before beginning interference. I may have appeared too radical in many instances, but the trend of medical science is to go forward, and not backward. Veit states that after an experience of 8,000 cases, fœtal destruction purposely committed has no place in modern obstetric practice; that when bad results follow, the more modern methods of forcible removal of the fœtus, long delays and ill-advised attempts at delivery have been practiced. His mortality, both fœtal and maternal, when practicing the Cæsarean operation has been 10 per cent. for all cases. No life should be purposely sacrificed. It is no more radical than rational to state that the abdomen should be opened to extract a living fœtus. The subject, therefore, demands our most careful attention. Remember, your duty extends to the unborn as well as to the mother, for modern obstetric surgery has made it possible that to-day fœtal destruction electively done is unnecessary and unpardonable.

CIRCUMCISION—ITS IMPORTANCE IN THE TREATMENT AND PREVENTION OF CERTAIN REFLEX NERVOUS PHENOMENA.*

By MARK H. O'DANIEL, M. D., Bullards, Ga.

There is perhaps no operation in all the field of minor surgery the *modus operandi* of which is so easy and simple, which affords to the patient so much protection and relief as that of circumcision. It protects. in that it renders the individual less liable to the contagion of venereal diseases, balanitis and the irritations so common in the warm season from a long, tight prepuce, and it relieves the divers reflex neuroses resulting from phimosis.

The old Jewish rite of circumcision on the eighth day evidently had as its fundamental principle that of hygiene and cleanliness. The proper time to do the operation should rest in the judgment of the physician, the best time, in my opinion, being when the conditions are such as to justify it. It is true we could dilate the opening and break up the adhesions; but, after all, this does not give that satisfaction and permanent relief which a complete circumcision would do.

In the treatment of the various nervous troubles found in children and even in older subjects, we should be careful we do not overlook this cause. It is indeed surprising what distressing symptoms phimosis will cause, and if let alone what serious results will follow.

I give here a few cases taken from my notebook, showing the nervous reflexes, which, I trust, may prove interesting.

. . *Case I.*—A young man 19 years of age, of good family history, pale and effeminate looking, the leader in his class at school; appetite and digestion poor; at times melancholy and listless; quite nervous. He suddenly became deranged (a hysterical form of mania). He would laugh and cry alternately; would make speeches and imagined he was a great orator, etc. He was treated some weeks without any improvement when he came under my care. After gaining his confidence, I questioned him as to his habits, and upon examination of his genital organs found he had long, tight prepuce. He stated he had troublesome erections, and had practiced the habit of onanism that he might obtain relief. These erections were no doubt at the outset irritable. I advised immediate circumcision, to which he consented. Upon operating I found good deal of smegma around the corona and phimosis. I prescribed absolute rest, nourishing food, and opium and camphor as an antiaphrodisiac. In a few days he was decidely better. He improved gradually, and in three months was entirely well and much stouter and stronger than ever before in his life.

Case II.—A boy seven or eight years of age; family history good; was thin and pale; had a weak facial expression; was quite nervous; his lower limbs were small, and he complained of pain in his joints. Had been treated for rheumatism. I suspected the trouble at once, and upon making an examination, I found a long, tight prepuce, small opening. Advised circumcision. Operated, and found phimosis smegma around corona. I placed him upon tonics, massage and faradism to lower limbs. He improved

*Read before the Medical Association of Georgia, April 19, 1905.

rapidly, and in two months was perfectly well, and a nice looking boy.

Case III.—Baby boy, eight months old; good family history; quite nervous and fretful; had an ugly eruption over body and limbs, which had been present for some time. Examination showed long prepuce, pinhole opening, ballooning as it were, when he urinated. I advised circumcision, which was done in the usual way. The child improved rapidly, and in a week the mother took him home well.

Case IV.—A boy nine years old; of neurotic family history; appearance healthy. There was nothing unusual with him, so the father stated up to about ten days ago, when he saw a crazy negro hand-cuffed and became excited and ran from home. When found, he fought and resisted; being returned, he finally became quiet, however, and came all right, with the exception of being nervous, he appeared as doing very well until the next day, when he had a spell, in which he would bite his hands, and if let alone would run until his spell passed off. He continued to have these spells at irregular intervals for some days, when the physician who was treating him sent him to my office for a diagnosis of his case.

Upon examining him, I noticed he had a long, tight prepuce, so I decided he had incipient epilepsy, induced by the reflex irritation from phimosis, with a hereditary predisposition to same, as the father stated, the grandmother had fits after she passed middle life. I advised circumcision as the proper treatment. The boy, living some distance from me, I have not kept up with him, but presume he is doing well.

There is no daubt that many cases of epilepsy come from these causes primarily, and unless one is careful in his investigation he will fail in a proper conclusion. I have seen a number of cases of epilepsy, in which there was no other symptom other than the disposition to run. Of course, as the disease progressed, the symptoms become more pronounced, and again I have seen them in which there was only a facial movement of smacking of the lips.

My object in presenting this paper is to show and impress the importance of a closer investigation along these lines, and to urge the importance of circumcision in the treatment and prevention of these nervous reflexes.

Go to the ant, thou sluggard.

TUBERCULOSIS IN CHILDREN.*

By St. GEORGE T. GRINNAN, M. D, Richmond, Va.

Instructor in Diseases of Children and Principles of Surgery, Medical College of Virginia.

There is no reason at the present time to alter that wise expression of Sir Thomas Brone, "Consumptive and tabid roots sprout early." Samuel Johnston, when a child, was taken to London to be "touched" for the King's Evil. All are not so fortunate, however, as to have the constitution of Samuel Johnston.

Tuberculosis is a cause of death which begins as a minute wedge and grows constantly broader from youth to age. Statistics in regard to tuberculosis in children are somewhat startling, and are most important in stamping out tuberculosis in the adult. The disease is rare in the first four months of life, common during the second half of the first year, very prevalent during the second year, and increases rapidly to the fifteenth year. Within the last eight months evidence of tuberculosis was found in 40 among 138 cadavers examined at the Berlin Pathological Institute.

In 500 autopsies upon children in Munich, Muller found tuberculosis in 40 per cent. of the cases; in 30 per cent. death was due to tuberculosis. Holt records that in 319 consecutive autopsies at the Babies' Hospital in New York, tuberculosis was found in 14 per cent. Geill's statistics embrace a large number who died of acute infectious diseases. In 584 autopsies on children who presented no previous symptoms of tuberculosis before the onset of the acute disease, 198 or 33.9 per cent. presented unmistakable naked eye evidence of tuberculosis of one or more organs, 384 of the children being under two years of age (Jahrb. f. Kinder, hl. Kde Bd. XXXII S., 165). At the Foundling and Nursery and Child's Hospital in New York, Dr. R. G. Freeman found that out of 1,448 autopsies, 11 per cent. showed tuberculosis (*Med. Rec.*, May 7, 1904). The Register General of England and Wales bears out the same general statistics. Prof. Graucher found that on examination of all the children of two schools of Paris, 14 per cent. of the boys and 17 per cent. of the girls gave positive signs of tuberculosis. Out of 896 children, 141 were in a condition of latent tuberculosis (*Lancet*, p. 115, July 9, 1904).

The census of 1900 shows that more female

*Read before the Richmond Academy of Medicine and Surgery, May 23, 1905.

children are attacked by tuberculosis than male. The census also shows that of mothers living in America, those born in Ireland give more children to the tubercular altar than mothers of any other race in America. The French mothers come next, followed by mothers born in Scotland. The immunity of the Jew is again shown by the fact that mothers born in Russia-Poland, and living in America, present the fewest number of children at the tubercular altar.

The following table gives the death rates from tuberculosis among the whites during 1900 per 100,000 of white population by birthplace of mothers.

Birthplace of mothers.	Registration Record. Total.	Cities.
United States	112.8	116.6
Ireland	339.6	364.3
Germany	167.0	174.7
England and Wales	135.1	147.0
Canada	143.1	158.1
Scotland	172.5	191.9
Italy	113.6	122.5
France	187.7	210.6
Russia-Poland	71.8	72.6

The census points out that there are more deaths from tuberculosis during March, April and May than any other months (*Census* 1900, *Vital Statistics,* Vol. III, Part I).

Osler and Holsti have both pointed out that under two years of age, tuberculosis has a localization which quickly causes death before the real trouble is manifest.

The liability of children to tubercular infection was shown in the case of a midwife at Reich, who was accustomed to inflate lungs by blowing into the infants' mouths. Ten infants died in one year from tuberculosis at Reich, having been infected in this manner by a tubercular midwife (Holt).

In youth, tuberculosis is more of a systematic disease than in the adult. The chronic destructive ostitis, so accurately described by Percival Pott in 1779, almost always begins in youth. Tuberculosis is far more common in the bones of children than in adults—witness hip disease. The various glands of the body are more subject to tubercular infection in youth than in age. The cervical glands are often so enlarged as to obliterate the contour of the neck; hence the term pig neck or scrofula (little pig, a digger). Holt says that meningitis developing during a pulmonary disease of doubtful character is generally tubercular, and its occurrence is generally to be interpreted as establishing the tubercular nature of the process in the lungs.

When the child begins to crawl upon the floor and sweep the dirt with its clothes and suck dirty fingers, the danger of tubercular infection is greatly increased. Statistics bear out the fact that at the crawling age tuberculosis is more prevalent in young children than later. Drs. Priesich and Schutz have investigated the subject of the infectious nature of the nails and fingers of infants at the crawling age. The outcome of this investigation was that out of 36 children examined, 14 contained tubercle bacilli under the nails (*Berlin Klim Wochenschrift,* May 19, 1902). Diendonne made cultures from the hands and noses of fifteen children whose mothers were tubercular. In two instances, the organism was found (*Munch. Med. Wochenschrift,* September 3, 1901). Infection of such origin might be avoided by putting a clean sheet upon the floor for the child to play upon. Surely the war against tuberculosis should begin in the homes where the disease is bred in the child.

The various infectious diseases may pave the way for tuberculosis. More than 200 years ago Willis recognized this when he gave voice to the expression, "tussis convulsiva vestibulum tabis." Adenoids and hypertrophied tonsils have little power of resistance, and are the open doors of commerce for the tubercle bacilli.

The infected house is one of the greatest dangers that confronts the infant and adult. The best recorded example is recorded by Latham as observed by Engelmann (London). "A newly built flat in a fairly sanitary condition, but badly lighted and ventilated is occupied by a family, the mother being consumptive when she came. She died in the flat. Shortly after the family left, having lived there for one year only. The flat was next occupied by the family of seven persons, all healthy. After a year's stay they left, and some years later the father, mother and one son died of phthisis, and a boy of chronic peritonitis. A third family, L, all healthy to begin with, next took the rooms. One child died of meningitis, another of marasmus, and a third contracted hip disease; subsequently the father died of phthisis, another child of meningitis, the mother acquired consumption, and a child became scrofulous. A fourth family, W, came into the residence. After a time the mother became phthisical and two children died of meningitis."

Statistics have shown that every patient

among the poorer class in town will infect from two to three houses a year. Osler has pointed out that careful work by district nurses in Baltimore showed that 183 patients occupied 379 houses in one year.

The rooms of tubercular parents should be cleaned by means of damp cloths or cloths saturated with dustless oil. Cronet's experiments have furnished a good illustration. "He spread out tuberculous sputum on the carpet of a room, mixed it with dust, then allowed it to dry for two days. Guinea pigs were placed on the floor and at varying heights. The floor was then swept and a cloud of dust raised. By this means Cornet was able to infect 46 out of 48 animals." As has been said, the sound of the broom should no more be heard in a sanitarium than was the hammer within the sacred precincts during the buildings of Solomon's Temple.

It can safely be asserted that the infant receives infection both through the respiratory tract and by means of food. While some insist that the tonsils are the chief portals of entry, the majority point out the tracheo-bronchial glands as the most frequent source of primary infection. Freeman in 158 autopsies found the following lesions: bronchial nodes, 126; lungs, 112; spleen, 90; liver, 66; mesenteric nodes, 4; meninges, 30 (*Med. Rec.*, May 7, 1904). Of Holt's 119 personal autopsies, 108 showed disease of the bronchial lymph nodes. Northrup's experience is even more remarkable: Out of 125 autopsies, he found that in every case the tracheobronchial glands were infected. Arnold has shown that in animals that inhale dust, the lymph nodes are filled with dust, though the bronchi and alveoli are free. The latent tuberculosis that passes to the teens is more frequently in the bronchial glands than in any other part of the body.

The bronchial glands are placed between the divisions of the bronchi at the root of the lungs and about the bifurcation of the trachea. They are 20 or 30 in number. They receive the lymphatics from the lungs and visceral pleura. Of great importance also are the deep cervical glands along the carotid sheath, which drain the mouth, tonsils, palate, pharynx and larynx. The bronchial glands may become infected by gradual extension in continuity either downward from the cervical glands or upward from the mesenteric glands. These glands bear important relations to the pulmonary arteries and veins, pneumogastric and recurrent laryngeal nerves, superior vena cava, aorta, œsophagus, bronchial arteries and veins. The glands may obstruct any of thees organs or produce instant death by ulceration into a vessel. Northrup believes that tuberculosis of the lung is, in the majority of cases, secondary to tuberculosis of the tracheo-bronchial glands (*New York Med. Jour.*, 1891, Vol. LIII, p. 201). The works of H. P. Loomis and many others confirm this.

The subject of milk infection has been considered more seriously in England and Germany than in America. Gottstein has gathered statistics to show that of 4,091 deaths from tuberculosis in nurslings, 444 were breast fed, leaving 3,647 deaths in the bottle fed. The ratio is 1,000 to 108 (*Munch. Med. Wochenschrift,* October 8, 1901). Louis Fisher, of New York, after a study of 800 nurslings, found tuberculosis to be uncommon in breast fed children.

The tubercle bacillus can penetrate the healthy mucous membrane and not leave any trace. The mesenteric glands once infected, the lungs may be infected by way of the bronchial glands. Infection of the mesenteric glands by milk containing tubercle bacilli is commanding more attention daily. The liability of the infection of cows to man is a matter of considerable importance. Dr. Thomas Darlington, Commissioner of Health, New York city, has pointed out an instructive case. At an institution near New York consumptives were allowed to play quoits in a pasture near the hospital. They did not use their spit cups, but spat on the grass. Ten cows grazing on the same pasture were killed, and it was found that nine of them had general tuberculosis (*Med. Rec.*, May 7, 1904). Surely the question of pure milk is most important in stamping out this disease in children.

I do not know of any error more frequently made in examining children for tuberculosis than the belief that the disease begins in the apices of the lungs as in the adult. The apices are not, as in the adult, the region most frequently affected with tuberculosis. The first change may appear in the lower lobe or lower portion of the upper lobe. The disease more frequently spreads from the tracheo-bronchial nodes. Ulceration of the tracheo-bronchial glands infects the middle or lower portion of the lungs, the hilum being infected first. We see, therefore, that the symptoms of tuberculosis are not so characteristic in infants as in adults. The development pointing to involvement of the lung is frequently most difficult to determine.

In some cases there is paroxysmal cough re-

sembling whooping cough, often ending in vomiting. There may be dyspnea on exertion, with slight cyanosis, and attacks resembling asthma (Williams). Dyspnœa produced by pressure on the bronchus may simulate bronchitis. Pressure on the vagi may cause rapid pulse; pressure on the œsophagus, dysphagia; pressure on the trachea, inspiratory dyspnœa; pressure on the pulmonary veins, hyperæmia of the lungs. Even with these symptoms, the diagnosis of enlargement of the bronchial glands is difficult.

In chronic tuberculosis of the lungs there are shotty glands in the axilla and groin. The greater activity of the general lymphatic and glandular systems in the child accounts for the great difference of tuberculosis in children and in adults. The temperature is irregular—it may be high, normal or subnormal. There may be no physical signs of pulmonary disorder. There is a dry cough as a rule. The pulse respiration ratio is disturbed. The ratio of the respiration to the pulse is more important than the rapidity of the pulse. A ratio of 1 to 3 or 1 to 4 indicates that the trouble is not an affection of the lungs, as the ratio would then be about 1 to 2.

Under seven years of age there is no expectoration as the sputum is swallowed. A most important fact to remember is that the percussion note is often tympanitic owing to emphysema of the uninvolved area. This condition is very frequent and easily leads to error in diagnosis. The dyspeptic troubles of the adult are frequently absent. The urine will contain albumin and give the diazo reaction. Anæmia is certainly much more characteristic in infants than in adults. Enlargement of the spleen is a constant accompaniment. Osler says that it is common to see a child come under observation with general anasarca, due partly to anæmia, partly to renal conditions, and the pulmonary tuberculosis be entirely overlooked. He gives a good illustration in the following report of a case: "General anasarca, albumin and granular casts in urine, cough, diffuse bronchitis, moderate fever, death on the fourth day. Autopsy as follows: Tuberculosis of the bronchial glands. Scattered miliary tubercles." (*Trans. Amer. Ped. Soc.*, 1893, Vol. V.)

A tubercular child may have a temperature of 104°, pulse 140, respiration 40, yet cry because it is not allowed to go out and play. I have seen such a condition frequently. I would like to emphasize the fact that it is necessary to hunt for the disease in children. Being called to see a girl of 11 years, I found that she had just come from school. The temperature was 103.5°. Physical examination revealed tuberculosis of both lungs. I asked if there were other children. A girl of ten was brought in, but I was told that she was well. Her temperature was 104°; tuberculosis of both lungs. Both children were dead in two months. While attending a girl of 19 for tuberculosis, I persuaded the mother to bring in the rest of the children for examination, so impressed with the importance of hunting for tuberculosis in children. One of these children, a girl of 12 years, had a temperature of 101°. Physical examination revealed tuberculosis of the right lung. She was taken from school, put to bed for three weeks. One year has now passed, and she is doing quite well. I am convinced that tuberculosis in childhood shows a better prognosis than in adults, if taken early. When we consider Sir Herman Weber's case of the tubercular husband who lost four wives successively from tuberculosis, we can realize more fully the dangers children are subject to.

We know that the mortality among negroes from tuberculosis is much greater than in the white race. The negro, here in the South, is a menace to the whites in regard to the spread of tuberculosis. I have in mind a negro family of seventeen children, fifteen of whom within seven years died of tuberculosis. All of the children worked in the homes of white families, some as cooks, some as house maids, several as milkers. I have in mind another instance of a negro family of nine children, all of whom died of tuberculosis. The mother was a laundress. Here in Richmond I have seen two negro children ill with tuberculosis in a room in which laundry was spread to dry, the mother handling the children and the laundry alternately. At the City Dispensary here, a woman who had tubercle bacilli in every cell in her body got a position to mind a young baby.

S. A. Knopf has pointed out that in Naples a royal decree, dated September 20, 1782, ordered that the apartments of consumptives be disinfected by means of vinegar, brandy or lemon juice, sea water or fumigation, the same to apply to personal effects, furniture, etc. The physician who failed to notify the authorities of the existence of a tuberculous patient was fined 300 ducats for the first offence, and a repetition of the neglect would banish him from the country for ten years. If the royal decree of

Naples, passed more than 120 years ago, was in force in Richmond to-day, I believe that every physician now in the city would be an exile for life. Just outside of Richmond a family was exterminated by tuberculosis. A public auction was held, and all of the household effects, beds, bedding, wardrobes and washstands, carpets and cooking utensils, etc., were distributed in the surrounding neighborhood. Well may we cry out with the impatience of Plato: "All are not awake when the dawn appears."

We know that nearly twice as many negroes die from tuberculosis as white people. We know that the negro has a tropical lung, smaller than the lung of the white man:

"Mean weight of white and colored soldiers *according to circumference of the chest.*"

Circumference in inches.	Weight White Soldiers—lbs.	Weight Negro Soldiers—lbs.
32	118.93	129.05
32.5	123.31	131.02
33	126.25	133.76
33.5	128.12	135.58
34	132.03	139.07
34.5	134.18	143.25

(Gould, Military Statistics, pp. 454 and 456.)

Does not the fact that the negro has insufficient lung capacity predispose him to tuberculosis? Lung capacity should be cultivated in the child. The baby should be allowed to cry lustily each day. Mothers should be taught that crying is beneficial. The poor method of infant feeding surely prepares a large number of the human race as food for the tubercle bacilli. A child should be taught to clean the teeth when very young: Poor teeth, poor digestion, poor resistance. Proper exercise in the form of the daily "dry swim" motion is very beneficial to children. The avoidance of dry heat and the presence of some humidifier in the room would mark a great progress in our modern living.

The prohibition of child labor and the proper ventilation of factories surely cannot be overlooked if we wish to prevent tuberculosis.

The value of sunlight has long been realized in the expression, "a freckled child rarely has consumption." The Italians have an expression to the effect that "where the sun does not go the doctor goes." Charlottenberg has set a good example in establishing outside of the city the "school of the woods" for tubercular children. France, Germany, Holland and Italy and many other countries have sea coast sanatoria for tubercular children.

We must agree with Lord Beaconsfield when he said: "The atmosphere in which we live has more to do with human happiness than all the accidents of fortune and all the acts of government."

The city needs more lungs, more parks, more breathing space for children.

CLINICAL SIGNIFICANCE OF THE ASPECT OF THE TONGUE.*

By ALBERT A. DAVIDSON, M. D., Augusta, Ga.

Its position, peculiar structure, and its function furnish obvious reasons for looking to the tongue for indications of diagnostic and prognostic value. In part: The anatomy of this organ of the vestibule of the alimentary tract presents a body of peculiar muscular arrangement; a vertical septum, marked by a raphe on the dorsum and a frenum on the under surface which divides it into lateral halves. It is freely movable and is capable of extension and retraction. About its base, among and beneath its muscles are three sets of glands which open into the mouth on its under surface by means of ducts. In the interfascicular spaces are fat and delicate connective tissue in which are numerous lingual glands; in the intermuscular spaces of the tongue is fat, with blood vessels and nerves. The mucous membrane of the mouth is reflected over the tongue, entirely investing its free surface, and forms its most conspicuous part. That covering the sides and under surface is thin and smooth like the lining of the mouth throughout, and contains small papillæ and many mucous glands (Piersol). On the dorsum near the tip it is thin, somewhat irregular and intimately joined to the muscular tissue which it overlies; posteriorly it is thicker, looser and more conspicuously irregular in appearance. This roughened aspect is because of projections of the connective tissue of the mucous membrane which are the papillæ and of which there are three varieties. The largest in size, and least in importance to the clinician, are eight or ten in number arranged in a V form at the back part of the dorsum of the tongue, their form suggesting the name—circumvallate

*Read before the Medical Association of Georgia, during its Fifty-Sixth Annual Session, held at Atlanta, Ga., April 19-21, 1905.

papillæ. The fungiform papillæ are smaller and thinly scattered over the tongue, and are easily seen among the conical or filiform papillæ, which variety is very numerous over all the upper surface of the tongue. Scattered over the whole surface of the tongue are openings of ducts from the mucous and serous lingual glands of the submucous tissue. Squamous stratified epithelium forms the outer layer of the mucous membrane of the tongue.

The filiform papillæ by reason of their hair-like processes and epithelial covering give to the tongue's surface a whitish cast. In health the tongue is moist, being bathed by the gland secretions which in twenty hours amounts to twenty ounces or more. A habitual mouth-breather, however, may present a dry tongue.

The normal tongue presents a moist whitish granular symmetrical appearance while lying within and just filling the space formed by the lower dental arch or when protruded for inspection. A departure from this state now engages our consideration. The variations from the normal aspect of the tongue may be in point of form, size, movement, color, humidity, coating.

The form may be changed when the tongue is protruded, to point to one side. This most naturally would mean a paresis of the side of greatest volume, and a lesion at or affecting the lower end of the fissure of Rolando on that side to which the tongue points, which is the site of origin of the motor nerve of the atonic side. However, an ulcer on the lesser side may explain the asymmetry. In general hemiplegia, the protruded tongue always points to the side of the site of the lesion if the lesion does not occur below the pons.

A change in *the size* of the tongue is usually because of disease of the organ itself, although in anæmia, cachexias—as malarial—in general enervation and in atonic forms of dyspepsia, it is flaccid, broadened and receives and retains deep impressions of the teeth. In irritable dyspeptic troubles it is narrowed and pointed. In exhausting sickness and in depletion, it presents a shrunken look due to lowered arterial pressure, absorption of its fats, etc.

When the tongue is *difficult of movement* and slow to be protruded—with crippled or poor articulation, cerebral disturbances or lesion of grave importance, as bulbar paralysis, is indicated. When slow of protrusion, tremulous and indifferent of retraction, a typhoid or an adynamic state is thus expressed. Then the patient's faculties are off guard and very wide-awake should be the nurse or attendant.

The color of the tongue varies in appearance. It is pale in anæmia and debility, and where there is enlarged spleen, indicates the lack of red matter in the blood. In scarlet fever, the fungiform papillæ show distinct and red through the fur on the tongue which, soon thrown off, leaves them yet more prominent. While this is known as the scarlet fever tongue, it is seen in other acute febrile affections. In acute throat diseases, the tongue is commonly red. The dry red tongue—glazed or beefy—shows where earlier in the course of the given disease there was an exfoliation of the superficial cornuous layer of the epithelium, together with many of the papillæ it covers, the malady continuing in not lessened severity; it evidences failing nutrition. In mitral insufficiency producing pulmoary hyperæmia and in extensive pneumonias, or in any condition causing venous engorgement of the alimentary tract, the tongue is cyanosed. Jaundice shows plainly along the margin of the tongue on its under surface.

In chronic dyspeptics there may be the red irritated tongue; indeed it is possible for dyspepsia to produce chronic glossitis. This may somewise argue for the theory of Matthieu and Roux (*Gaz. de Hopit.,* 1903) regarding the aspect of the tongue in disease, that as the structure of the tongue as much as that of the skin which sometimes evidences, by rash or eruption, a gastro-intestinal disturbance, so it desponds; but by reason of its freer vessel and nerve supply much more commonly, by a more rapid proliferation of cells to form a heavier fur; and if this be thrown off an inflamed appearance is disclosed. Or if the coating is not formed the papillæ are inflamed and the edges are sore. The vaso-motor nerve giving radicals to the submaxillary ganglion may have significance pertinent here. This sore tongue accompanies a form of stomach intolerance or irritability, as alcoholic gastritis. It disappears when the gastric disturbance is relieved. It should not be forgotten, though that an irritant substance may be the local cause of a sore tongue.

Excessive salivation may be excited by nervous influence as sight or thought of food or drink; or by local irritation, as dentition; or by the presence of a foreign substance in the mouth. But with these causes eliminated, it evidences quickened gland function in the system, whether due to the effect of drug, or the nature of food taken, or to some idiopathic cause. It is

the first stage of emesis (Hurst). *A dry tongue* means an inhibition of local or general gland secretion; though, as before mentioned, mouth breathing may cause it, first, by evaporation, which, in turn, discourages the opening of the stoma of the gland ducts. The tongue is dry in fevers—as pneumonic, exanthematous, or typhoid—where they promise fatality. It is so also in diabetes because of the renal drain of the body fluids.. There is a bare red tongue, most often dry, shrunken and cracked, met with in septicæmia—common in the puerperal type; chronic empyema; liver abscess, and in advanced phthisis. This tongue is characterized *hectic* (Butlin). The organ becomes hardened —board-like; sores may form on it which will crack and cause bleeding. Should a humidity at the edges supervene it will show that the absorption of toxic matter is restrained and that the vital forces are overcoming in the fight. Another dry tongue, lessened in size, and nearly bare where the papillæ are shed like hair of the head is not uncommon to the prematurely old or to those who are wasted in health. A somewhat similar state obtains in a disease of the organ known as xerostomia.

Fissures in the tongue often have no clinical significance; the patient may not remember when they were not present. Butler thinks they are sometimes a result of chronic liver trouble, chronic dysentery or diabetes mellitus.

"Fur on the tongue," says Butlin, "whether in health or disease is composed partly of epithelial scales and of debris of food, but especially of micro-organisms." These organisms are always found entangled in the layers of the epithelial cells on the hair-like processes of the papillæ, seldom in the depressions between. They are not found on the fungiform and rarely on the circumvallate papillæ. It is shown that when the coating is thin and scraped off large numbers of the papillæ are removed; but when the coat is thick and spontaneously thrown off micro-organisms are chiefly shown. Da Costa holds that the loosened cell-scale covering of the papillæ, when sticky, wraps around the hair-like processes and in being scraped off in the act of mastication, elongate the processes and so give the furred appearance to the tongue implying that this glutinous property of the epithelium is because of faulty function of the glands which, in turn, is because of a deranged state of the system. It is easily shown that debris of food engages in the filiform processes and adds to the furry coat. It is well to say here that the character of the food or drink may alter the color of the fur, misleading the attendant to believe it due to a suspected disease.

The tongue, lightly furred in health, easily becomes heavily coated in many disorders of the system—especially of the digestive system. In acute general diseases, as is their severity and the effect of their ravages upon the vital combative forces of the body, the coat is darker, heavier and dry. In an acute sickness—as pneumonia or typhoid—usualy, the tongue, moist, light or yellowish at first, becomes, as the illness progresses, dark-brownish, more heavily coated and dry, as the gland activity of the body is lessened; thus evidencing a depraved state of the system and the exhausting effect of the disease. It is not a good prognostic sign. But a brighter prospect may show. The margin of the tongue may now become moistened slightly, the tip clear; gradually down the center comes a break in the coating; the mucous glands beginning work again, moisten and loosen the covering; it is thrown off and the tongue appears fresh and clean to indicate a returning general gland activity. The dry tongue without coating may follow to point to a reinvasion—in the lung if it be a pneumonia, or more involvement of the intestinal wall structure if it be enteric fever. There is here no coating, for an interim sufficient has not been afforded for new epithelial growth and bacterial lodgment on papillæ processes nor is there much food passing over the tongue to lend to the coating. This is the dry relapsing tongue.

Primarily a coated tongue would suggest non-use, as it is by its constant rubbing against the hard palate, by the passing over its surface of mases of food in the act of chewing that epithelial cells, accumulated to entrap bacteria and collect food residua, are otherwise kept wiped off. Hence on seeing a coated tongue an anorexia, or a forced abstinence might be presumed. If the lining is unilateral an ulcer, or a carious or missing teeth on the coated side, or yet a neuralgia of the lingual branch of the third nerve—any of these could account for a one-sided furring. But the clinician sees the tongue where there is appetite—where food is daily masticated and ingested; where the teeth are sound, when it is lined with a heavy brown fur—without dryness; the patient thinks he is bilious; a cholagogue cathartic given often produces a more marked furring, presumably because of its irritant effect upon the stomach and duodenum; after which the coating disappears.

It may be, as is maintained by many, that the coated tongue is only from non-use and can have but indirect significance to the clinician; it may be as Dr. Dickinson (*Lumlian Lectures*, London, 1888) avers, that the appearance of the coating—the parasites, which he claims form the bulk of the fur—is of secondary interest; that they are "the fringe of the garment and not the garment . itself." These things may be, and with reason; but it is not denied that this coating *is* of significance though secondary; and we know that it is easily seen; is common to certain presumable conditions; that its changes attend variations in the given condition. Because of these things we may not lightly ignore it. It is worthy to be called a symptom, which taken alone, may be and too often is unreliable, but which, with other attendant signs and phenomena, does have clinical significance. "It is by the aggregate and succession of symptoms that disease is detected" (Dunglison). Faulty elimination of the products of metabolism may be mirrored on the tongue which accumulates its old epithelium and is slow to throw it off. Changes in the blood affect its coating by lessening the gland activity, and diminishing the watery element, the secretion is viscid and holds the cells, adds food detritus and encourages multiplying of bacteria. When all gland function is stopped the moisture is quickly evaporated, the lining dries; the tongue itself becomes shrunken and board-like. These changes, most often met in typhoid fever, are common to the typhoid state which may supervene in any acute infectious disease as an expression of the toxic state of the system.

Diseases of the tongue and their effect on its appearance have not been dealt with in this paper. From the study of its clinical aspect in other disorders we may safely conclude: That it *is* an aid to diagnosis, but of inconsistent value; that its greatest value as a symptom is to indicate the progress and promise in the given disease. The observant physician's greeting, "Put out the tongue," implies "How are you to-day?" and the protruded tongue, though silent, is expected to make reply.

731 *Greene Street.*

BOOKS REFERRED TO

Histology, Piersol.
Anatomy, Gray.
Pratice, Osler; Anders.
Diagnosis, Butler; DaCosta.
Diseases of Tongue, Butlin.

RESULT IN ONE CASE OF SARCOMA OF THROAT TREATED BY SERUM THERAPY--AFTER TEN YEARS--PATIENT PRESENT.*

By F. T. CHAMBERLIN, M. D., Washington, D. C.,
Consulting Physician to Washington Asylum Hospital; Government Hospital for Insane, etc., etc.

The object of this paper is not to elaborate on what might be done with serum therapy in treatment of cancer, as Dr. William B. Coley, of New York, has so thoroughly gone into this subject at about the time that my first patient was treated on this principle that I do not pretend to show more than results. The patient proving the result of treatment before you this evening was treated by me for the first time—as in accordance with what will be shown below—Feb. 14, 1895; in other words, ten years, one month and twenty-three days ago. Consequently, I think, from all accounts appearing in literature on this subject, you will have to allow that sufficient time has gone by to certify with me that I can at least show a *cure in one case of round celled sarcoma of throat;* and, in looking over literature on subject, find a potpourri to the extent that it is almost impossible to figure out from same a parallel to case which I show you this evening. Will not make claim that I am showing you the only case of this kind, yet believe from research that I have made and data at hand that I can say so. Do not misunderstand me that I mean that other cases have not been treated and cured by same method, but that I have been unable as yet to find a case that parallels this as to locality—owing to immediate necessity to save life of patient—which I will show by previous article read before Society on April 8, 1895.†

Now for a moment I will carry you to *modus operandi* of treatment—viz., the toxines of prodigiosus and streptococci of erysipelas were used. The first is made from bacillus prodigiosus; the erysipelas toxines are produced and have been used either directly or indirectly through the small animal, or taken direct from a case of erysipelas. Cultures have been used, filtered or unfiltered. In my case as reported, I used a filtered culture made for me by the Bacteriological Institute of New York. To give full meaning to above, I quote the result of Drs. W. H. Park and Alexander Hamberty to show the toxæmic differences of serums: After culture

* Read before the Medical and Surgical Society of the District of Columbia April 6, 1905.

† Reported and Illustrated in *Virginia Medical Monthly*, June 1895, page 260.

had been passed through 60 rabbits, one c.c. reduced to a 6,000,000 part of its strength would kill a rabbit in twenty-four hours. Why the addition of the bacilli prodigiosus to the erysipelas side of the question seems to be necessary in order to make combination more effective, appears to be still in doubt, but the same is nevertheless true. Now, my dosage in this particular case was heavier than recommended in literature at the time of treatment. Perhaps I was in error, but success shows results. I might even say I was heroic in treatment, but I wish to state this, that it was either a case of cure or kill. Patient would have died in a few weeks, or he had to be pulled out of his trouble. He is before you to-night to verify whether I did right or wrong.

It has either been my good fortune or misfortune that I have only met with three cases in the buccal cavity, including this case, one of which I injected twice, and owing to an accident in family, patient had to make trip West, and was lost track of. Other case referred to would not submit to treatment.

Now as a *resume,* from my limited experience, I would advise in every case, more especially in inoperable cases, that the patient should have the chance I evidently gave mine.

The treatment of sarcoma appears to be more amenable to the side of spindle celled, although my case is one of round celled. The giant celled seems to be left in the background, but must be included. From the personal limited experience at hand, I should say this, and which is borne out by other authors, be careful whether you give your injection in sight of tumor or a distance from same; also whether you use a straight culture or filtered one. Furthermore, take into consideration age of patient, position of growth, and, if you follow me in above case as quoted, I hope it will not be your office to sit at the bedside and see a patient in condition at which at any moment you expect it may be necessary to do tracheotomy. Am glad that my experience as pertaining to the subject of this paper speaks for itself.

The technique necessary for cleanliness and serum therapy you are all familiar with, and, in order to carry out ancient history refer to a paper which I read before this Society on April 8, 1895, published June, 1895, in *Virginia Medical Monthly,* page 290.

I note in prior paper pertaining to injection given on April 4th, and in which sight of tumor was used, that my data shows temperature ran to 104°, with decided reaction at the time.

1323 *M Street, N. W.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE V.

The Blood—Composition and Function—Description of Blood Plasma and Blood Corpuscles—Regeneration of Blood After Surgical Operation—Differentiation Between Shock and Hemorrhage—Blood Changes in Suppuration, Tuberculosis, Leukemia, Pyemia and Hemophilia.

Blood is a red, viscid fluid, having a specific gravity of 1,060, an alkaline reaction, and constitutes about one-fourteenth of the entire body weight. Its distribution is about one-fourth to the lungs, heart and large vessels, one-fourth to the skeletal muscles, one-fourth to the liver, and one-fourth to the other organs of the body. The color of arterial blood is bright red, and of venous blood bluish purple, the difference being due to the relative amount of oxygen and carbon dioxide present in each. Arterial blood contains more extractives, more salts, more sugar, less urea, and is warmer than venous blood.

The functions of the blood may be classified under four heads:

1. To convey nutrition,
2. To remove waste products,
3. To carry oxygen,
4. To distribute heat.

Blood is composed of the suspension of innumerable microscopical bodies in a clear yellow serum; the solid particles or corpuscles constituting 44 per cent. and the fluid or plasma 56 per cent. The corpuscles have a specific gravity of 1,088 and the plasma a specific gravity of 1,031. The corpuscles are, therefore, slightly heavier than the fluid in which they are suspended, and if blood is allowed to stand in a

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

beaker it will separate into two strata, the corpuscles at the bottom and the plasma at the top. An examination of blood-corpuseles will show that there are three distinct varieties. Hence a systematie study of the blood must embraee first, the plasma; seeond, each of the three corpuscular elements.

I. THE FLUID ELEMENT.

Plasma or liquor sanguinis, is a clear, yellowish fluid, alkaline in reaetion and is composed of 90 per eent. of water, and contains gases, mineral salts, fats, nitrogenous bodies, and carbohydrates in solution. It also contains a ferment that causes coagulation by the production of fibrin. As the chief interest of the pathologist centers in the corpuscles and not in plasma, the subject will be left with merely the repetition of the following formula, familiar to students of physiology:

Living blood=plasama+corpuseles.
Dead blood =clot+serum.
Clot =corpuseles+fibrin.
Serum =plasma—fibrin (—ogen).
Plasma =Serum+fibrin (—ogen).

II. THE CORPUSCULAR ELEMENT.

1. *The Red Blood Cell,* or erythrocyte, is a round, bi-concave disk without a nucleus: when viewed singly it is yellow, but when seen *en masse* it is red. In size, it is about 1-3200 of an inch in diameter. It is composed of an elastic frame-work or stroma containing hemoglobin. It has little or no power to alter its shape, but owing to its elasticity it can be forced through a capillary smaller than its own diameter, and afterwards will resume its original form. The life of a red blood cell eannot be long, as bile and urinary pigments are the results of its disintegration and the liberation of hemoglobin. The red blood eells of the fetus are formed outside of the embryo. At first they are nucleated but at the end of the third month only one-sixth are nucleated, and at birth no nucleated cells are found. In post-natal life red blood eells are derived from the red marrow of bone. At one time the spleen was thought to be the place where they were destroyed, but this theory has been abandoned owing to the observation that the removal of the spleen does not interfere with their destruction. The liver is now supposed to be their graveyard. Hemoglobin constitutes 40 per cent. by weight of the red blood eell. It is a very complex crystalline coloring agent containing iron. It can earry a moleeule of oxygen linked to it in a way to be easily disassociated. Hemoglobin gives to the red blood eell its power to eonvey oxygen. The total number of red blood cells in an adult is approximately 25,000,000,0000,000. The length of these cells placed edge to edge would be 109,370 miles. The total surface of their cells would be equivalent to the area of one and one-half acres. While the above facts are impressive and serve to emphasize the importanee of the red blood cells, it is more practical to consider them in a more tangible form. Red blood cells are normally 500 times more numerous than white blood cells. On an average there are 5,000,000 blood cells in a cubic millimeter in the male and 4,500,000 in the female, although this varies in health with nutrition, age, elevation, ete. In disease there are many abnormalities in number, shape, color, amount of hemoglobin, etc. Sometimes nucleated types are seen.

2. *White Blood Cells,* or leueocytes, are round nucleated masses of protoplasm having no investing membrane or cell wall, and are about 1-2500 of an inch in diameter. White blood eells are consequently larger than the red blood cells, and as has already been stated are found in health numerically in the proportion of only 1 to 500 of the latter. White blood cells occur normally in the blood in three different varieties, probably due to three stages of development.

1. Small mononuclear leucocytes eharacterized by scant protoplasm, relatively large nucleus, and contain no granules.

2. Large mononuclear leueocytes, larger amount of protoplasm, no granules.

3. Polymorpho-nuclear leucocytes containing granules. (a) Neutrophylie. (b) Eosinophilic granules stain with neutral dyes.

White blood cells contain fibrin ferments and when undergoing disintegration aid in the production of fibrin by which hemorrhage is arrested and wounds are agglutinated. In addition, their bodies furnish food in an assimilable form for the other eells. The most interesting properties of the leneocyte, however, are its powers of ameboid movement and phagocytosis, both dependent on its ability to ehange its shape. Ameboid movement is accomplished by throwing out a projection or arm and then allowing the body of the cell to flow into it. By this means the organism has an intrinsic power of locomotion that enables it to travel even in opposition to the flow of a current of fluid. The second property, namely, that of phagocytosis,

is the ability the organism possesses of taking foreign bodies into its interior and there digesting and destroying them. A leucocyte is, therefore, sometimes a tramp, sometimes a scavenger and sometimes a warrior. White blood cells are found in the blood at an early period of embryonal life. The first are probably ameboid cells of mesoblastic origin. In adult life they are manufactured in the lymphatic glands. When they first enter the circulation they are mononuclear cells without ameboid movement. Later they become larger and the nucleus divides giving the polymorphonuclear cell capable of ameboid movement. On an average there are normally about 10,000 white blood cells to the cu. mm. in men and 9,000 to the cu. mm. in women. The number decreases during fasting, old age or the administration of certain drugs. The number increases after digestion, hemorrhage, pregnancy, in diseases in which suppuration occurs, and in leucocythemia.

3. *The Third Blood Cells,* or platelets, are small circular bodies homogeneous in structure, smaller than the red blood cell, and number about 400,000 per cu. mm. They are more numerous than the white blood cells but less in number than the red blood corpuscles. In drawn blood they disintegrate quickly and for this reason they were not discovered until recently. Their origin, structure and function are not clearly known, but they are composed largely of globulin and play an important part in coagulation.

Having reviewed the chemical and histological composition of the blood and recalled some of its physiological functions, the student is now in a position to appreciate the pathological changes which occur in many diseases, and recognize the significance of departures from normal, which may be noted by examinations made by methods taught in other departments. Urinalysis is now on a firm foundation and no diagnostician would neglect to avail himself of the knowledge it affords without subjecting himself to criticism even by the laity. The examination of the stomach contents after a test meal is already a routine method in gastric disorders. The day is not far distant when a blood examination will be a constant practice before a surgical operation to determine the safety of the expedient, and after the operation to measure the recuperative powers of the patient.

BLOOD REGENERATION AFTER AN OPERATION.

The time it takes for the full restoration of the blood after an operation depends on the amount of blood lost, the age and nutrition of the patient, the existence of other diseases and finally the treatment instituted. A loss less than 1 per cent. of the total amount of blood is usually made up in from two to five days; from 1 per cent. to 3 per cent. is made up in from five to fourteen days; from 3 per cent. to 4 per cent. is made up in from fourteen to thirty days. It has been observed that blood regeneration is slow after an operation for malignant diseases, and that it never reaches as high a point as it was before the operation. Mikulicz makes it a rule never to operate on a patient whose hemoglobin is under 30 per cent. Surgeons should have the percentage of hemoglobin estimated in all doubtful cases and postpone operation when it is below the minimum fixed by Mikulicz unless the case be an urgent one.

DIFFERENTIAL DIAGNOSES BETWEEN SHOCK AND HEMORRHAGE.

In many accident cases one of the first questions presented is whether to operate at once or wait for reaction. Is the condition of the patient due to shock or to hemorrhage? Will the patient improve or grow worse under the expectant treatment? An examination of the blood will often settle the question. If the patient has not a history of previous anemia and the count of the red blood cells shows 3,500,000 or less to the cu. mm., then the symptoms are probably due to hemorrhage. If successive blood counts show progressive diminution of the number of the red blood cells then the bleeding is probably still going on. Internal or concealed hemorrhage, such as occurs in ruptured extra uterine pregnancy, ruptured aneurism, or slipped ligatures after abdominal section, can usually be diagnosed by a blood count. It must be remembered, however, that immediately after hemorrhage the count may be normal since only the amount and not the quality of the blood has been affected. Within a few hours the absorption of fluid from the tissues and the restoration of the normal bulk of blood enables the "count" to show the amount of anemia present.

DIAGNOSIS OF DEEP-SEATED SUPPURATION.

Pent-up pus, especially if the inflammatory proces be acute, almost always manifests itself by the production of more or less marked leucocytosis, or an increase in the actual and relative number of the polymorphonuclear leucocytes. The degree of leucocytosis is not dependent upon the amount of pus. A few drops of pus frequently raises the count as much as many ounces. A progressively increasing leu-

cocytosis points to a spreading suppurative process. Frequently timely operations are done for suppurative appendicitis or osteomyelitis when the only indication of an advance of the disease is an increase in the number of white blood cells found in successive examinations. Ocasionally leucocytosis is absent despite the presence of pus. There are several explanations offered for this, but none are entirely satisfactory. All that we can say is that marked leucocytosis indicates pus, but that absence of leucocytosis does not positively exclude its existence. In other words, leucocytosis makes a positive, but not always a negative diagnosis of deep-seated suppuration. A white blood count of from 14,000 to 30,000 to the cu. mm. indicates a mild suppurative process; over 30,000 to the cu. mm. a process of great intensity. Usually after an abscess is opened and exit is given for the pus the leucocyte count rapidly falls to normal. After the cavity granulates the leucocyte count will frequently rise after probing or packing.

BLOOD CHANGES IN CERTAIN DISEASES.

1. *Tuberculosis.* Simple tubercular infection does not produce leucocytosis. If the blood count in that disease shows an increase of the white cells it indicates a mixed infection with pus germs.

2. *Malignant Diseases.* Malignant diseases, such as carcinoma or sarcoma, do not cause leucocytosis unless secondary suppuration occurs as a complication. In the later stages of a malignant trouble there is marked anemia and occasionally there is nucleation or deformation of the red blood cells.

3. *Leukemia.* The diagnosis of leukemia can be made with absolute certainty by an examination of the blood. In leukemia there is a large increase in the number of the white blood cells; but it is different from the increase that occurs in suppurative diseases; the difference consisting not in the number of leucocytes but in the kind of leucocytes. In leukemia the leucocytes are principally of the mononuclear type, while in leucocytosis from suppuration the leucocytes are of the polymorphonuclear type.

4. *Pyemia and Septicemia.* Frequently the examination of the blood in septic cases will give information of great diagnostic, prognostic and therapeutic value. Blood is taken from one of the veins at the elbow under aseptic precautions and subjected to a bacteriological test. Sometimes in severe cases no culture may be grown, but often the pneumococci, gonococci, staphylococci, streptococci or other microorganisms may be demonstrated. The antistreptococcic serum would be indicated if the infection was with streptococci. Its use would be contra-indicated if other forms of microbic infection were found.

5. *Hemophilia.* There are certain conditions of which hemophilia is a type, in which there is marked retardation of the time taken for coagulation. Clotting of blood, nature's method to effect primary hemostasis, normally requires only three or four minutes. In exceptional instances this time may be increased to one or two hours. In suspected cases observation of the "coagulation time" carried out systematically may often save life by giving warning of the danger of uncontrollable hemorrhage after an operation.

Editorial.

The Southwest Virginia Medical Society

Will meet at the County Court room, at Pulaski, Va., on July 4th, at 8:30 P. M., and continue through July 5th. Excursion tickets on the N. & W. R. R. can be had in both directions.

The topic for general discussion will be *Professional Ethics.* The papers so far announced are: *Consultation with Regulars,* by Dr. W. B. St. John; *Consultations with Irregulars,* by Dr. W. K. Vance; *Medicine as a Career,* by Dr. A. F. Horne; *Some Common Stomach Disorders,* by Dr. M. O. Burke; *Arterio Sclerosis,* by Dr. M. M. *Pearson; Puerperal Septicæmia,* by Dr. C. A. Burwell; *Autophatic* (?) *Fever,* by Dr. E. T. Brady. Several other papers are promised but titles have not been given.

There will be an election of officers at this meeting, which is the seventh semi-annual one. The present presiding officer is Dr. James W. Kelly, of Big Stone Gap, while Dr. E. T. Brady, of Abingdon, is secretary.

Faculty Resignations at University.

At the annual meeting of the Board of Visitors of the University of Virginia June 12, 1905, Drs. Wm. G. Christian and A. H. Buckmaster tendered their resignations, which were accepted, as members of the Medical Faculty.

These vacancies will be filled, so it is announced, at a called meeting of the Board in July or August. Dr. Christian has occupied the Chairs of Anatomy and Surgery for a number of years, having succeeded Dr. Wm. B. Towles, whose death occurred in 1893. Dr. Buckmaster came to Virginia from Brooklyn in 1894 to fill the Chairs of Gynecology, Obstetrics and Practice of Medicine, made vacant by the death of Dr. William C. Dabney.

Southside (Va.) Medical Association.

This Asociation, comprising the counties of Sussex, Surry, Southampton, Prince George, Brunswick and Greensville, held its eighth session at the Central State Hospital, Petersburg, Va., June 8, 1905. About 40 were in attendance—representing each of the counties named. The President, Dr. W. H. Wallace, of Disputanta, made his address on "Quackery—its Cause and Cure," in which he attributed much to the over-crowded ranks of the profession, while yet the colleges are pouring annually into the profession large numbers of graduate. Many of the surplus are "sharpers," and not finding sufficient room in ethical fields yield to the temptation of making "quacks" of themselves. Dr. Chas. M. Hazen, of Richmond, by invitation, read a paper of very decided practical merit on "Some Aspects of Liver Function." Dr. Bernard Barrow, of Barrow's Store, after a review of recent observations, read a good paper on "Some Suggestions in the Treatment of Diphtheria." Other papers read and discussed were "Pneumonia," by Dr. J. H. Hargrave, of Garysville; "Empyema," by Dr. W. L. Devaney, of Dendron; "Delivery of the Placenta," by Dr. C. W. Astrop, of Surry.

Great interest was given the meeting by surgical clinics by Dr. Stuart McGuire, Richmond, Va., who operated on several patients needing surgical treatment—both on June 8 and 9.

During recess, Dr. Wm. F. Drewry, the able Superintendent of the Hospital, aided by his full corps of assistants and internes, showed members of the Society many interesting cases in the Hospital. In addition he conducted visits to the adjoining colonies of the Hospital. Most interest was found in the visit to the colony for Tuberculous Cases, where very marked improvement in some patients was evident. This "colonization" consists in keeping tuberculous patients in tents, with raised plank floors, where all the hygienic rules as to sputum cups, asepsis and antisepsis of materials used or handled are rigidly enforced. The colony is on an elevation of ground nearly a mile removed from the Hospital itself, with abundant sunlight, fresh air, and yet with shade trees sufficient. Patients are required to take outdoor exercise according to their ability without overtaxing any one. Hospital attendants are supplied and daily rounds are made by the physician in charge. The simplicity of rational treatment is a marked feature, and the results are most encouraging. It is not too much to add that Dr. Drewry shows himself specially gifted in the line of treatment of the insane, and from the methods which he has adopted, and faithfully attended to by his assistants, many of the alienists of the country may visit the Central Hospital of Virginia, and return home with new and valuable ideas.

Dr. Drewry's social entertainment of the guests at the dinner table will be an occasion of long and pleasant remembrance.

Dr. J. E. White, of Wakefield, Va., makes a most efficient and popular Secretary for the Association.

Dangers of Cold Storage of Undrawn Game, Fowls, Fish, Etc.

In *Maryland Medical Journal,* June, 1905, Dr. J. C. Hemmeter, of Baltimore, has a timely article on this subject which ought to be given great publicity, and lead to restrictive laws in States, cities and towns. There is no question that "some goods, like beef, mutton, etc., are improved and rendered more digestible by cold storage"—due to the fact that the carcasses of slaughtered beeves are not preserved until the viscera and entrails have been removed. But for mercantile reasons, such as to get every cent possible for each ounce or pound of weight, undrawn poultry, game, fish, etc., are being more and more frequently turned over to the cold storage plant, when in fact, prolonged cold storage of such things causes putrefactive changes. The muscular part of such meat becomes soaked with toxic substances. When such poultry, fish, etc., are taken out of cold storage only a very few moments will suffice for rapid absorption of the toxins by the muscular parts. He has "personally observed numerous cases of sudden and severe auto-intoxication from the gastro-intestinal tract" which he could explain in no other way than by the fact that of ingestion of cold storage food. Sometimes animal food that is put in cold storage—say in New York

and other places—is considerably decayed before it reaches the place for cold storage.

It should be constantly impressed on buyers, sellers and users of cold storage foods, as well as upon law makers that impure food may be infected food, and tubercle bacilli in food are not destroyed by cold storage." For infection to take place by means of food, no recognizable lesion whatever of the intestinal wall is necessary. Tubercle bacilli, in short, can enter the intestinal wall without leaving any trace of their passage. The bacilli after once entering the lymph stream, may lodge in other places, especially in the lungs, and cause pulmonary consumption.

While the facts stated have long since been well known to the profession, Prof. Hemmeter has put them so plainly and tersely they should command prompt attention of sanitarians. Rigid inspection by competent laboratory workers should be constantly made of food stuffs that go into and come out of cold storage plants. Market men and hucksters and the like should also be vigorously prosecuted by law for the having of undrawn poultry, game or fish for sale. Quoting from the same *Journal* Dr. Healy, of North Dakota, states a well recognized fact that "game *eviscerated immediately after being killed,* can be kept (in his section) for several days without refrigeration; but if evisceration is delayed for even an hour or two, the meat soon becomes tainted."

We trust the health importance of this subject will lead to the enactment of suitable laws in States, cities and townships.

The University of Virginia

Commencement exercises for the Medical Department were held in conjunction with exercises of the other departments June 11-14, 1905, inclusive.

The following are the degree men in medicine:

Frederick William Barger, Shawsville, Va.; Richard Phillips Bell, Staunton, Va.; James Ramsdell Bloss, Huntington, W. Va.; Micajah Boland, Lawyers, Va.; Richard Walker Bolling, Huntsville, Ala.; Thomas Venable Bond, Griffin, Ga.; Kenneth Bradford, Montgomery, Ala.; Samuel Elkan Brown, Norfolk, Va.; Henry Coleman Chalmers, New Ferry, Va.; Charles Edward Conrad, Harrisonburg, Va.; Thomas Sanford Cooke, Portsmouth, Va.; Walter Wooten Council, Wananish, N. C.; Leech Key Cracraft, Wheeling, W. Va.; John Sebastian Derr, Boston, Mass.; Jesse Wright Downey, Jr., New Market, Md.; Edgar Stuart Estes, St. Augustine, Fla.; Walter Smith Ferguson, Lynchburg, Va.; James Morris Fontaine, Charleston, W. Va.; Walter Weldon Harloe, Winchester, Va.; Clifton Hopewell Hogan, Charlottesville, Va.; George Forrest Hull, Hightown, Va.; Howard Hume, St. Elmo, Va.; George Lester Kite, Graves' Mill, Va.; Stuart Johnston Lawson, Burke's Garden, Va.; Claude Marshall Lee, Charlottesville, Va.; John Marye Lewis, Manassas, Va.; Charles Emerson MacPeek, Moundsville, W. Va.; James Tate Mason, Lahore, Va.; Hugh Nelson Page, Jr., Norfolk, Va.; Oliver Beirne Patton, Huntsville, Ala.; Joseph Harrison Shelton, Waco, Texas; Wilford Wallace Smith, Shreveport, La.; William Alexander Strother, Lynchburg, Va.; Adrian Stevenson Taylor, Mobile, Ala.; Augustine Washington Tucker, Norfolk, Va.; Isaac Roy Wagner, New Hampden, Va.; Howard Lombard Walker, Charlottesville, Va.; Charles Edward Wooding, Charlottesville, Va.

The hospital appointments were not announced in the notice which we have.

The United States Civil Service Commission

Announces an examination on July 12-13, 1905, to secure eligibles from which to make certification to fill vacancies in the position of hospital interne under the Isthmian Canal Commission on the Isthmus of Panama. Age limit, 20 to 30 years; for men only; salary, $50 per month with board and quarters, provided that if appointees are retained after one year they will be paid $125 per month. For full particulars, address *United States Civil Service Commission,* Washington, D. C.

New Small-pox Hospital for Richmond.

The mayor of this city has approved an ordinance appropriating $5,000 for a new building for contagious diseases on the small-pox farm. The President of the Board of Health, Dr. W. T. Oppenhimer, was instructed to confer with the City Engineer and secure plans.

Virginia Practice Wanted.

A physician that we are able to recommend wishes to know of a location in a village or small city in Virginia. He is willing to purchase a good farm with practice. Address Dr. Miller, care *Va. Med. Semi-Monthly,* Richmond, Va.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 7. Whole No. 223. RICHMOND, VA., JULY 7, 1905. $2.00 a Year. 10 Cents a Copy.

Original Communications.

TUBERCULAR DISEASE OF THE SPINE.*

By E. H. ARNOLD, New Haven, Conn.

Tubercular disease of the spine has been known so long and described so often that there has become fixed in the medical mind a very typical picture of this disorder. Nothing is more conducive to error in diagnosis than to approach any disease with the idea that it must conform to a type. Age, sex, occupation, climate, previous conditions of health, characteristics of individuality, character and strength of virus, if the disease be of an infectious nature, localization of the disease in the body all contribute to change the manifestations of the disease in any given case.

Tubercular disease of the spine is no exception to this rule. Not only does it present a certain number of atypical cases, but it presents certain well defined types which it may well repay us to pay some attention to. To a consideration of these types this paper is devoted.

Clinically and pathologically we may establish several types, first according to the depths of the penetration of the tubercular lesion; and secondly, depending upon its character. The vertebral body is commonly the seat of the lesion, the laminæ only rarely, and then mainly in the cervical region of the spine, especially in the first and second vertebra that possess no body.

We shall confine ourselves to consider the lesions in the vertebral bodies. Here the tubercular lesion may penetrate to inconsiderable depth only, not proceeding beyond the cortex of the bone. This may properly be called a superficial type, the spondylitis tuberculosa superficialis. The lesion on the other hand may invest the interior of the vertebral body to considerable depth, even completely excavating it. This is appropriately called the deep form, spondylitis tuberculosa profunda.

The character of the lesion in most cases is that of a granulation tuberculosis. In a certain number of cases, however, this process in itself is not the essential one, for it in turn by pressure on a nutrient vessel, sometimes by destruction of it, causes a so-called tubercular necrosis. We must, therefore, recognize two distinct types—namely, first, granulation tuberculosis; second, tubercular necrosis. As it is at once apparent that both the superficial as well as the deep spondylitis may be in nature of the above two varieties, we should enumerate these four types—granulation tuberculosis (a) superficial, (b) deep; tubercular necrosis (a) superficial, (b) deep. However arbitrary such a classification may seem, it will be seen that it is clinically justified by the symptomatology. The symptoms of tubercular spondylitis in general are the following: First, the constitutional symptoms of tuberculosis in general—i. e., fever and marasmus; second, pain; third, muscular rigidity; fourth, deformity; fifth, so-called tubercular abscess.

Let us now cast a glance at the behavior of the several types above stated with regard to this symptom group.

I. *The superficial granulation tuberculosis.*—1. Constitutional symptoms: If the herds of infection be few in number, fever is slight, not constant, marasmus hardly noticeable; if numerous, we have well marked fever and considerable failing. 2. Pain always present, especially if nidi are numerous. If few herds exist it is not unbearable, but if they be numerous most excruciating. 3. Muscular rigidity varies; now we find it present, it disappears and reappears. As the lesions are slight, not deep, they heal out and rigidity disappears; another set is established and rigidity reappears. 4. Deformity, none. 5. Tubercular abscess: In case there are few herds of infection it may not show; if they are numerous, it is most profuse. It may appear, disappear and reappear.

II. *The deep granulation tuberculosis.*—1.

*Read before the Connecticut Medical Society, Hartford, Conn, May 24–25, 1905.

Constitutional symptoms, fever and marasmus usually well marked. 2. Pain constant, well marked, localized, severe. . Rigidity localized, permanent. 4. Deformity well marked, slowly established. 5. Tubercular abscess. Usually profuse.

III. *The superficial tubercular necrosis* is rare, and usually exists in a single lesion.—1. Constitutional symptoms, practically absent. 2. Pain, short of duration, subsides, may be of all degrees of severity. 3. Rigidity depending upon the seat of lesion it may be absent or present. 4. Deformity absent. 5. Abscess absent.

IV. *The deep tubercular necrosis.*—1. Constitutional symptoms not well marked, not lasting. 2. Pain severe, does not last. 3. Rigidity well marked. 4. Deformity quickly established. 5. Abscess absent.

The varying symptomatology makes it plain that the several types of spondylitis will offer different difficulties to diagnosis:

1. The superficial granulation tuberculosis with the temporary absence of rigidity, the lack of deformity and often absence of constitutional symptoms may be undiagnosed, and even the appearance of the abscess may not clear up the diagnosis. The necessity of carefully observing the patient and of repeated examinations is apparent.

2. The deep granulation tuberculosis is easily diagnosed because it is the one presenting all the symptoms well marked.

3. The superficial tubercular necrosis is easily overlooked and usually goes undiagnosed.

4. The deep tubercular necrosis may go unrecognized till severe pain sets in or till the gibbus quickly establishes itself.

The prognosis of the several types differs markedly: (1) The first (superficial granulation), especially if it goes unrecognized, and, therefore, untreated, is apt to go to extreme marasmus, general tuberculosis, and, therefore, often ends fatally; (2) deep granulation tuberculosis, as it is easily recognized and treated, prognosis should be good, as symptoms string out and make persistent treatment necessary, even deformity can usually be avoided; (3) the superficial necrosis is most benign and recovers even without treatment; (4) the deep necrosis is fairly harmless except for deformity, this because unlooked for and quickly developed is often excessive.

As for treatment, it is easily seen that the superficial forms need immobilization only, the superficial necrotic not even that, could we establish its nature. The deep kind need, beside immobilization, relief from weight-carrying function—that is to say, the deep are most treated recumbent in suitable cuirass, plaster of Paris, bed, or canvas stretcher. The superficial are best treated by brace. The superficial granular, because often multiple and diffuse, may need fixation of cervical spine by head gear, such as jury-mast or head support, to exclude motion of upper region; confinement in above apparatus if lesions be low. The deep forms, if treated by brace, should have head support whether lesions be high or low.

46 *York Square.*

THE OPERATIVE TREATMENT OF TUBERCULOUS RECTAL FISTULAE IN THE TUBERCULOUS.*

By J. COLES BRICK, M D., Philadelphia, Pa.,

In charge of Rectal Department Jefferson Medical College Hospital; Member American Proctologic Society, etc.

The frequent combination of anal fistulæ and phthisis was recognized long before a suspicion of infection was established. According to Cluron, Hippocrates has observed it. The character of these fistulæ was first pointed out by Lachmann and Smith, who demonstrated the presence of bacilli. According to some authors, 5 per cent. of consumptives have rectal fistulæ; according to Hartmann, of 626 consumptives 4.9 per cent. were so afflicted. From the opposite point of view, Hartmann found that of 48 cases operated on for rectal fistulæ, 23 were positively tuberculous, and 2 were undetermined.

The etiology of the tubercle bacillus as a causative factor in the production of fistulæ is by no means demonstrated; the fact that a certain number of fistulæ are tuberculous must be admitted, but whether the fistula is a result of a local inoculation or secondary to a focus elsewhere in the body, is still undetermined. In the very numerous feeding experiments made by Wesener, Baumgarten, Fisher and others, the tubercle bacilli found their way through a perfectly normal mucous membrane into the wall of the gut.

*Read before the American Proctologic Society at its meeting at Pittsburgh, Pa., May 5, 1905.

It is not requisite, however, that they should go on to development at the site of inoculation. The next succeeding lymph glands cannot as a rule be passed without the production of some typical pathological changes. These lymph glands may remain dormant for a long time, possibly for years, when favoring conditions produce activity; an abscess forms, and a fistula results.

Especially in the lower part of the rectum there is frequently a prolonged stagnation, with hardening and inspissation of feces, and the hard masses may excite abrasions into which the bacilli, present in the feces, force an entrance. When the great absorbent capacity and metabolic activity of this part of the gut are considered, the organisms stand an excellent chance of being carried well into the deeper tissues.

Two cases in the service of the rectal dispensary of the Jefferson Hospital led the writer to consider the possibility of the anesthetic being the exciting agent for the production of pulmonary symptoms. The first case was a patient discharged as "disease arrested" from the White Haven Hospital for Consumptives, who came to the clinic suffering from hemorrhoids. He was admitted to the hospital and ether given, and during its administration the writer noted that the quality of the respirations became harsh, and so continued after his return to the ward. Hectic temperature, night sweats and expectoration returned, and on the third day he was advised to return to White Haven, where it was found that three months were required to overcome the irritation of the lung structures produced by the anesthetic. There was no sign of rectal tuberculosis in this case, and the hemorrhoids were of the internal variety.

The second case was a young man who was brought to the dispensary by a physician who took an interest in him, and was found to have a small fistula not over three-quarters inch long and very superficial. He was advised to have it opened under a local anesthetic, as it was of such small size, but having a great fear of pain, requested that ether be given. This was done, and the fistula healed very nicely. Three months later the patient developed a cough and acute miliary tuberculosis, and in six months was dead.

The irritating effect of ether on the bronchial mucosa being well known, it occurred to the writer that an anesthetic which was non-irritating and safe, should be used in all cases where there was tuberculosis, or a possible latency of the disease, and nitrous oxide with oxygen has been used in all cases of fistulæ or known tuberculosis, except when artero-sclerosis, or obstructive cardiac disease was present. The apparatus made by the S. S. White Dental Manufacturing Co. containing two tanks of nitrous oxide and one of oxygen has been used with satisfaction.

The greatest length of time a patient has been under nitrous oxide an oxygen was twenty minutes. In a few cases the relaxation was not as good as under ether, and some difficulty was found in the colored race, as the degree of cyanosis could not be determined; so that the pulse rate and muscular relaxation were the indices of the degree of narcosis. The rule in the treatment of all fistulæ is that the lungs and genito-urinary organs should be carefully examined in all cases, and those with tuberculous lesions were found to be 40 per cent.

The method of operation has been to lay open the fistulous tract, following any lateral ramifications, thoroughly curetting and then searing with the Paquelin cautery. Overhanging, poorly nourished portions of skin are removed, and iodoform gauze packing lightly introduced. The sphincters are interfered with as little as possible, as they are apt to be weak in tuberculous cases, and the less cutting that is done to them, the better the result.

The case is kept in bed for as little time as possible; from two to four days usually being sufficient, and is then sent home with instructions as to subsequent diet and hygiene. Great importance is placed on this feature of the treatment, and the primary object is to increase the surplus vitality by forced feeding and outdoor air, that nature may be helped in overcoming the disease and healing the wound. The class of cases coming to the outpatient department of a city hospital is such that home treatment is the only kind available. It is impressed on the patient that a weekly gain of weight is absolutely essential. Three fresh eggs and a quart of milk must be taken daily, gradually increasing until six eggs and two quarts of milk are consumed in the twenty-four hours. Alcohol is absolutely interdicted.

The ventilation of the sleeping room is explained, so that draughts may be avoided—the expedient of putting a sheet or similar material from side to side of the room being used where the room is small. The door is closed, and the

window put up from the bottom and down from the top. Practieally no exercise is taken, until the normal weight has been regained, when calisthenics and out of door exercise is begun. Sitting in the sun in winter, well wrapped up, is also suggested. The use of tepid or eold water for sponging is ordered, depending on the condition of the patient, and the season of the year.

The method of sponging is explained in detail, as follows: The patient is to be dressed, as far as the lower part of the body is concerned, with the undershirt on; is to take a basin of water, bathing the faee ten or twelve times, rubbing briskly with a eoarse towel until the face is red, and quiekly removing the undershirt; with wash rag or sponge, rapidly bathing the neck, axillæ, arms and chest, as far down as the ribs extend, and then rubbing with coarse towel until the skin is pink. If this reaction does not come at once, and the patient feels eold, he is told it is doing harm, and tepid water must be used. This method soon becomes enjoyable and ean be done in a cold room without discomfort after a few trials. The average gain in weight has been, by this treatment, at home, from 1½ to 3 pounds per week.

In the cases with moist rales and temperature, the expectoration has decreased and then stopped, the temperature fallen to normal, and the rales become fine and decreased in number. One ease of a weaver who had a marked involvment of both upper lobes was found not to be gaining regularly, and on inquiry it was ascertained he was taking too much exercise, but when this was stopped, his weight increased three pounds weekly; his eough and expectoration decreased, and the lung eondition much improved, until he reached his normal weight. Financial reasons compelling his return to the mills, a second fistula developed and he is now going through the same treatment as before, with steady improvement. The first fistula has remained healed.

In another case, a few weeks after operation on a fistula, extending toward the right lobe of the prostate, in a salesman, whose business required walking seventy-five to one hundred squares daily (5 to 6 miles), a dry eough and night sweats developed; but after following the treatment outlined, he has gained twenty-five pounds and the sweats and cough have disappeared, and the lungs are perfectly clear.

In cases where there is much destruction of the perirectal tissue, it is of advantage to perform the operation in stages, a radical removal of the diseased area eonstituting a serious operation and eonfining the patient to bed for a considerable time. The first step consists of enlarging the opening, breaking up pockets and allowing free drainage. At the earliest possible moment, say two days, the patient is sent home and the forced feeding, and pure air treatment is begun. The weight is taken a certain day each week, and the wound is treated according to indications; very light packing or none at all is used. As soon as granulations are well established and the wound begins to close, a secondary operation is done if necessary.

A case illustrative of this type came to the hospital about six months ago. A laborer aged 35, whose best previous weight was 129 pounds, had lost 19 pounds in a year. He had night sweats, cough, and deep involvement of both ischio-rectal fossæ. Lung examination showed a small cavity and moist rales over the upper lobe of the right lung, with beginning involvement of left lung. Nitrous oxide gas and oxygen were given him, and the openings into both ischio-rectal fossæ were enlarged through their fistulous tracts between the sphincters. Part of the left external sphincter was removed. The ent edges were seared with the cautery. Bands and pockets were broken down with the cautery and fingers, and he was sent to the ward. In two or three days he was sent home and forced feeding begun. For two or three weeks he did not gain in weight, but the following week the gain was one-half pound and from then the gain increased to three pounds weekly. Daily attention was given the wound, irrigating with peroxide, and introducing light packing. At the end of six weeks, the total gain was 10 pounds and the cavity was diminished in size, but had contracted at the margins, when a second operation was undertaken to correct this. At this time part of the muscular layer and internal sphincter were removed on the right side, as this seemed to heal more rapidly. A period of about two weeks elapsed when there was no gain, neither was there a loss, when again he began to increase in weight. After the lapse of another month the left side beeame narrowed at the opening, and a third operation under gas and oxygen was done, at which time part of the internal sphincter and muscle layer were removed.

Progress was steady, both in healing and increase in body weight, so that four months

after his first visit, his normal weight had been reached, and the area on the right side had healed perfectly. A month later he weighed 16 pounds more than his best previous weight (145 pounds) and the left side was nearly healed. Four weeks later, which is at present, he has been at work as a laborer in the open air, and his lung symptoms consist of only a few dry rales. The sweats and expectoration have ceased and he is nearly well. He comes to the hospital only once a week, he is rosy and says he feels better than ever before.

On account of the expense of the nitrous oxide, local anesthesia is used in the smaller cases, and the patient kept under observation for a half hour after the operation so that full recovery from the slight surgical shock may occur. The drug used is beta eucaine lactate 9-16 gr. Adrin (Mulford) 3-1000 gr. made up in soluble tablets, so that one dissolved in one dram of distilled water makes a very convenient extemporaneous local anesthetic of the strength of 1 per cent. eucaine and 5 per cent. of 1-1000 solution of the suprarenal gland. Stovaine in 1 per cent. solution with three drops of adrenalin (Park, Davis & Co.) 1-1000 is also very satisfactory, and as far as our experience goes is a new and valuable drug for rectal work.

No new method in the operative work is claimed, but our experience in 25 cases of rectal fistula, both tuberculous and non-tuberculous, in patients some of whom had tuberculosis, and in others of whom there was a probability of its appearance, seems to show that a further trial of this method might not prove inadvisable.

In conclusion: A certain number of cases of rectal fistula develop disseminated tuberculosis after operation; therefore, it is safer to treat all cases as if this would occur.

It is not known whether the tubercle bacilli are already present in the bronchial, mesenteric or other lymph glands, and the traumatism or the irritating effect of ether as an anesthetic is a causative factor in the distribution. There is a possibility that any irritant drug may produce this condition and should therefore be avoided.

A careful examination for genito-urinary or lung tuberculosis should be made in all cases of rectal fistula, and unless there is a clear history of traumatic origin, the anesthetic should be a local one in the small cases, and nitrous-oxide and oxygen in those of greater size.

Forced feeding and pure air especially at night should be insisted on immediately after the operation, until the maximum weight has not only been equalled but exceeded. Examination of the lungs should be made at intervals for physical signs of lung involvement. Careful comparative weekly records of bodily weight should be kept.

In cases where the involvement is extensive the operation should be done in stages, the primary step providing for free drainage, and the later steps according to the indications.

The Paquelin cautery should be used to sear all cut tisues, closing the blood and lymphatic circulations to possible infection.

1210 *Spruce Street.*

BIBLIOGRAPHY.

(1) Cornet, in *Nothnagel's Practice* Am. Ed., 1904, p. 101.
(2) Cornet, *op. cit*, p. 101.
(3) Cornet, *op cit.*, p. 105.

IMPORTANCE OF PROMPTLY REPAIRING LACERATIONS OF THE FEMALE GENERATIVE ORGANS AFTER LABOR.*

By E. C. DAVIS, M. D., Atlanta.

Gynecologist to Tabernacle Infirmary, Presbyterian Hospital, Surgeon to Halcyon, and to McVicar Hospital for Colored Women.

Having been forcibly impressed by the great number of women daily crowding our hospitals, seeking relief for lacerations of the generative organs and their sequelle, I have been constrained to direct your special attention to the importance of recognizing these conditions and promptly relieving them before almost irreparable damage has resulted, or before it has become necessary to sacrifice some of the appendages in order to restore the suffering to health. There are few subjects more important to the general practitioner than this, or that should be given more careful consideration, for upon his care at this time depends both life and the subsequent health of the unsuspecting patient.

Some lacerations occur with practically all primipara, these varying from a simple solution of the continuity of the mucous membrane to a tear entirely through the sphincter and into the rectum. They may be so superficial and tri-

*Paper read before Medical Association of Georgia, April 19, 1905.

vial as to require no treatment except a careful avoidance of infection, or they may require the highest possible degree of skill, in order that they may be restored approximately to their original conditions. Many now present can recall the oft repeated remark of the venerated old teacher of obstetrics, who annually proclaimed to his class that "in the many years of practice and in the hundreds of labors he had attended, he had never had a lacerated perineum." Unfortunately, several now present have had to repair lacerations in their patients in later years, overlooked by him. Between 35 and 40 per cent. of primipara are lacerated sufficiently to require attention after delivery. In multipara, the proportion is markedly diminished, but even with them, approximately 10 to 15 per cent. will be found requiring surgical attention. The reason why lacerations are not attended to often is that the physician is worn out from prolonged attention, perhaps all night or longer, and in addition, the patient is at home, with surroundings not conducive to aseptic surgical work, and in such instances, it is often wiser to defer operative relief until suitable surroundings can be procured for a reasonable hope of success. Again, many physicians seem to forget that the anterior surface of the vaginal vault and contiguous tissues are prone to traumatic injuries and need surgical attention. As to lacerations of the cervix, I must confess that unless the tear is high up and some large blood vessel invaded, I usually wait a reasonable time for involution to begin, and determine then the extent of the laceration and the needs for repair.

My usual plan to detect lacerations is to examine the patient carefully after delivery, and again when patient has been cleansed by the nurse; then if I find lacerations of the perineum or vagina to make proper repairs at this time. From four to six weeks after delivery, I instruct my patients that they should again be examined, to determine whether there are any lacerations of the cervix, and to again see the results of the operations on the perineum, if any have been performed, and if there be existing lacerations, to have them properly attended to at this time.

As to the prevention of lacerations, much can often be done if you can gain the perfect confidence of your patient, and have her carry out your orders carefully. You should begin some months before the time of expected confinement, and advise her carefully about diet, exercise, baths, etc. To enter upon this is unnecessary before this body of physicians. The market is flooded with cheap oils, said to be specifics for easy and normal labors without lacerations, and inasmuch as one woman who used some special oil has had an easy time, she recommends it to all of her friends. These things we know have no virtue above that of a good message with pure olive oil, and instead are often dirty, rancid and irritating oils, making the patient unclean and causing micro-organisms to adhere that would otherwise be easily removed. At the time of delivery, we have valuable means of assistance at hand to avoid these occurrences in ether and chloroform and in manual resistance to the too rapidly descending head. Watch carefully the descent of the head and see that this is retarded until the maternal parts are dilated, and will permit the easy escape of the fœtus. If the descent promises to be too rapid, I do not hesitate to have my patient inhale a little chloroform or ether, thereby in a measure controlling the pains as I wish. In cases in which the perineum shows that it will be torn, I unhesitatingly make lateral incisions in the vagina, in order to enlarge the opening of escape. These can readily be closed after delivery. Again, all supports to the perineum are worthless, but by simply pushing up the head over the perineum and under the pubic arch, much can often be accomplished toward the preservation of the perineum. Above all things, do not allow the head to escape until the perineum has been thinned and the parts dilated. After the delivery of the head, in broad shouldered children, we must watch that the shoulders do not increase a tear and convert a slight into an extensive and serious one. The shoulders must, therefore, be carefully lifted over the perineum: by these simple means, many lacerations may be avoided and much discomfort prevented.

Now, what are the pathogenetic possibilities of neglected lacerations? The first and foremost is puerperal infection. This, as we know, is almost invariably introduced from without. According to a most interesting editorial from Dr. Stanley P. Warren in the *New York Medical Journal*, he states that, "The acid secretions from the vagina are germicidal, and from experiments by Duerssen, Kronig and others, after placing various micro-organisms in healthy vaginæ, the canal was found sterile within forty-eight hours. Streptococci the first, then staphylococci and pyocyani in the order named.

gonococci alone finding this a suitable medium for growth and multiplication. Quite a different condition exists about the vaginal entrance. Here micrococcie life is luxuriant, as might be expected from the environment of these parts, their nearness to the anus, their opportunities for contamination with decomposed urine, cutaneous excretions and soiled clothing and for infection by perineal handling. The integument of the pudendum being partly true skin and partly transitional between skin and mucous tissue provides a natural habitat for such micro-organisms. Even in a healthy woman then the outlet of the birth canal is normally and artificially septic, and that this condition is universal is proven beyond question."

If we accept these statements as facts, we must readily see the great importance of cleansing this area before delivery, and closing these fresh surfaces to minimize the possibilities of absorbing the toxins or furnishing a fine field for the entrance of septic micro-organisms. This to me is one of the strongest possible arguments in favor of an immediate repair, which in this instance is often a life saving measure. Again, in the deep tears, especially of the cervix, it may be necessary to make an effort at repair on account of the involvement of some of the large blood vessels and the free hemorrhage which results. The repair in such cases is usually unsatisfactory, and while it must be attempted in order to control the hemorrhage, we must bear in mind that often it must be done over again, to place the patient in a good or normal condition. When these lacerations have been overlooked or neglected primarily, we often find a patient later present herself for relief for a lack of pelvic support, prolapsus uteri or vagina, rectoceles, cystoceles and the various displacements of the uterus. These conditions are frequently accompanied by numerous nervous reflexes; common among them is neurasthenia, hysteria, etc. Given a patient who informs you on interrogating her that she has not felt well since the birth of her child, without the history of pelvic inflammation, and nine times out of ten you will find on examination some lacerations of the pelvic organs. If these conditions are relieved early, the annoying sequelle which so often accompany these neglected conditions may be promptly relieved and the patient restored to her accustomed health. If neglected, almost hopeless invalidism may result, and the condition of this patient is pitiable beyond comparison.

Just here I wish to state an observed difference in the sufferings of certain women with lacerations. In examining, some women with a very slight tear they appear to suffer greatly; again I have had women present themselves complaining but slightly of the pelvic organs who on examination have been found to have very extensive lacerations with very insignificant symptoms. This latter is especially noticeable in the negro race; the first condition in the highly organized nervous women who seem particularly susceptible to nervous disturbances, and a slight laceration with them often requires more careful attention than a more extensive one in a less sensitively organized woman.

As to the method of repairing lacerations, I would suggest that the entire object to be desired is the endeavor to restore the parts to as nearly their normal condition as possible. We must bear in mind the tendency of the muscular tissues to contract in the direction of their attached portion. Hence, in these conditions, there is a noticeable drawing upward of the torn muscular tissues, and it becomes necessary then to pull down these tissues in order to restore them to their proper position. When lacerations occur in the anterior vaginal vault, I usually study the direction of the tear, and with my patient anesthetized, aproximate the edges of healthy tissue by using several tenacula so as to see how the best approximation is to be secured. This is most satisfactorily accomplished with the patient in Sim's position, using Sim's (or one of the modifications of Sim's), specula to expose the part. Remember always, before attempting any operative measures in this region, the necessity for careful cleanliness and a very careful technique. Rubber gloves are especially advantageous here, and while they may interfere somewhat with the tactile sensibilities, the assurance that they are sterile more than counterbalances these slight disadvantages. Close over the raw surfaces here, and you will avoid the possibilities of subsequent complications in this locality.

Now, as to lacerations of the perineum, the superficial ones can usually be attended to without a general anesthetic, as the tissues are partly anesthetized from the prolonged pressure; and with a manageable patient, these may be readily closed without an anesthetic, or

with a little local anesthesia. It is the complete tears which require skill and care. Here the sphincter must be recognized, the ends brought together, and then the other tissues in their proper relation. The sphincter must be aproximated by the use of three or more chromicized catgut sutures; the intra-vaginal sutures then applied, after locating the direction of the tear, and if needs be, trimming off the tags which have become devitalized. The operation then is very similar to a planned colpoperineorrhaphy, with which I shall not now impose upon you a description. The same holds here of cervical lacerations. These latter two should only be attempted under a general anesthesia, and if possible, with proper assistants.

As to the time for operations, this has already been alluded to, but I wish to repeat that when practicable, they should be undertaken at the time of delivery, but when seen for the first time one or two days after delivery, then by gently curetting the lacerated area and approximating the edges, it is surprising how gratifying the results will often appear. After cicatrization has taken place, we must bear in mind the advisability of removing the cicatricial tissue before attempting the tissue approximation.

I have endeavored in this brief article to impress the importance of attending to these little surgical procedures, while they are simple and easily accomplished; and I trust the day is not far distant when a lacerated perineum will become as rare as the vesico-vaginal fistula, which through the efforts of the great Marion Sims have been practically removed from the list of woman's woes.

MASSAGE.*

By V. ULRICH, M. B., Richmond, Va.

Most lectures and books on massage usually begin with its history, therefore, I suppose that I, too, ought to say something about it. I believe that massage practically is as old as humanity itself. I dare say so, though I have seen no written statement concerning this point as people in prehistoric times did not practise the art of writing. But suppose a child strikes its face or head against a hard object with the result that a big, red swelling, a bump, or to speak scientifically, a suggillation or even a hematoma arises on the stricken part. What will the mother do? She will instinctively take her hand and *press* it against the spot. This is a kind of massage. This treatment, I remember, was practised on myself as a child, long before the word massage was known.

Massage in olden times must, of course, have been in a very embryonic condition, which you will readily believe when you consider in what initial stage of development it is in certain parts of the world in the 20th century. But it not only *has* always been practised, but it will always be practised. Why? Because there are no phantastical speculations in massage as in osteopathy, Christian science, etc.; on the contrary, massage is an exact science, based on anatomy, physiology and pathology, and last, but not least, on experience.

Massage was used in ancient Rome and in Greece, partly as a remedy in certain diseases, partly as a restorative practised in the public baths. Hippocrates is said to have had some very rational conceptions about its efficiency, and Asclepiades, about the birth of Christ, and Galenus, about 150 years later, used it widely in their practice. The Chinese and Japanese have used it for thousands of years. There is a Chinese book, entitled Kong-Foo or something similar, which was written 2,700 years before Christ, and is said to contain remarkably good passages on mechano-therapy. Among the peasants of Finland this treatment has been used with great skill acquired by experience of many centuries. Certain joint diseases, luxations, sprains, rheumatism, etc., were treated with wonderful results by the experts of this people, mostly old women.

Sweden has always been regarded as the cradle of the art of massage, and it is true that it was cultivated there long before other countries took it up as a branch of medicine; but the first impulse to treat diseases systematically by means of manipulations came to Sweden from Finland. It was P. H. Ling, of Stockholm, Sweden, who first of all systematized mechanical treatment. This was some 80 years ago. He used in the treatment of disease the so-called Swedish movements combined with passive manipulations, which later got the name massage. Ling was not a professional man; in fact, he was a fencing master and a poet of rank; but, as you will have observed, it hap-

*Read before the Richmond Academy of Medicine and Surgery, June 13, 1905.

pens very seldom that a professional man invents something that is entirely new, and that often will be in strict contradiction to old, inherited theories which he believes in as in the Gospel. Gunpowder was invented by a monk; the electrical phenomena in a galvanized muscle were first observed by an Italian lady while preparing frog-legs for her husband's dinner. Pasteur, the first great bacteriologist, and thereby, the father of modern antisepsis, was not a doctor of medicine but a doctor of philosophy. Numerous examples could be cited to show that most often the non-professional man is the discoverer of new methods. As always has been the case, he would at first be fought, contradicted, and even ridiculed by the profession, which, quite naturally, is conservative, and, consequently, does not like revolutions.

The same happened with Ling. But the remarkable results of his new treatment soon forced the doctors to pay attention to his methods and to study them. Much was unscientific and fantastic in the teachings of Ling. The same, by the way, could be said of medical science at that time (Ling was born in 1776 and died in 1839). Anyway, to Ling belongs the honor of having been *the first pioneer of medico-mechanical treatment.* His system had been practised in Sweden for some thirty or forty years, and obtained acknowledgment from the medical profession as to its efficiency in certain conditions; but still it was regarded as something below their dignity to bother with.

It was about 1870 when Dr. Mezger, of Amsterdam, became the champion of massage, and that it began to be more generally recognized as a *science,* at least in Northern Europe. He preferably used the passive forms, as stroking, kneading, etc., but he also applied Swedish movements as accessory treatment. For the scientific development of special massage as it is used to-day, the world is indebted to this great practitioner. He introduced, among other improvements, the use of a lubricant whereby he was enabled to apply much more force than when he manipulated without it. It is to be pitied that Dr. Mezger, with the exception of one or two little pamphlets on certain cases, has not given to posterity the great treasure of his knowledge and experience in the form of a textbook on massage; but what he has not done has been done by several of his disciples. Among the latter, I will only mention Drs. Kleen, Helleday and Bergman, of Stockholm, and Reibmayr, of Vienna.

What is massage? A very prominent Southern physician, who died some years ago, is said to have declared, when asked what massage was, "Massage? Oh! that is rubbing." This is characteristic and shows that the doctor had absolutely no idea about massage. In an old dictionary of medicine I found to my surprise that massage was a kind of chapoo! Most people believe that it is a kind of patent medicine that can be best administered by a Swede. Again, there are others who think that it is the rubbing by the attendants in a Turkish bath. Two years ago I received from a gentleman in the country who had heard of a cure I had made of a sprained ankle, a letter asking that I send a sample bottle of my medicine! In the North, e. g., New York, Philadelphia, etc., there are many who believe massage is something immoral.. There exist so-called massage parlors where young, handsome girls perform some kind of manipulations on men. I do not think it is massage!

The word massage, which is the noun of the verb *masser*, is French. It comes from the Greek verb *Massein,* and this again has its origin in the Arabian word *mass,* which means kneading. In this country people like to call it "rubbing," even "rubbing down." This is a horrible misnomer. A horse, a mule or an ass is rubbed down for the sake of general cleanliness and for cosmetic purposes, since the hairs of these animals grow downwards. It is true that the hairs of men also grow downwards, but man's hair is not so abundant or stiff as that of the equine genus. They need no rubbing down. I care not if the public cannot accept the word massage, but I would suggest that in that event, it use the expression "rub up" instead of "rub down," which latter expression is correct, only with refernce to horses, mules and—asses.

A short definition of massage would be the following: It is a mechanical treatment which by certain manipulations, as stroking, kneading, friction, etc., endeavors to restore diseased and weakened conditions of the body to the normal state.

It might, perhaps, be well just here to consider what are these manipulations and the manner in which they are performed. In France, about thirty different manipulations are employed. This is absolutely unnecessary and con-

fusing, but it looks *very elegant.* The Swedish system acknowledges only four chief manipulations which, of course, can be combined with each other, i. e., one may make a stroking and a friction movement simultaneously.

The four chief movements are called *effleurage,* or stroking; *friction,* or kneading against an underlying part, e. g., bone; *petrissage,* or kneading of a grasped muscle; and *tapotement,* a kind of percussion called hacking, slapping, pounding, etc. For my part, I would wish to place friction and petrissage under the same heading, namely, kneading, because I think it is immaterial whether one kneads a muscle against a hard surface or between a pair of strong fingers. The kneading itself is the main thing.

Effleurage promotes the venous and lymphatic flow toward the heart. Kneading, in the form of frictions and petrissage, promotes circulation in the part which is manipulated and acts also stimulating on the tissues. Tapotement, or percussion, is chiefly stimulating, and is very powerful. In paretic conditions, I always use tapotement of the affected muscles with the result that they nearly always respond to the stimulus.

Effleurage is performed by laying the palmar surface of the hand, thumb or fingers on the part to be treated, and stroking centripetally under an amount of pressure determined by the circumstances. In friction, the tip of the thumb or first three fingers is employed and small circular movements are made, sometimes with great force. Petrissage consists in grasping a muscle, e. g., the biceps, and thoroughly kneading it between the fingers. It is a very tiresome performance; therefore, I always avoid it when I can produce the same effect by another method.

Tapotement is performed in various ways. In hacking, for example, one uses the ulnar side of the hand or of both hands; the fingers are kept straight but loose, and the blows are made in quick succession, three to five blows to the second. The motion should always come from the carpal joint just as in percussing, only that in hacking the motion is an ulnar flexion.

With some little training, these manipulations are very easily learned. A good technique is, of course, a good thing; but what is of *infinitely* greater importance is that the masseur should have a clear idea of the condition of the tissues upon which he intends to work and how he wishes to affect them. Therefore, he should have a satisfactory knowledge of anatomy, histology, physiology and some pathology. I believe that 95 per cent. of those people who claim to be masseurs have not these requirements. They are often able to give tolerably good general massage under the instruction of a doctor who knows something about it, but to allow them to take care of special cases is, in my opinion, unjustifiable.

The physiology of massage is, or should be, simple enough for the medical man; but the field of medicine is so wide that he, sometimes, cannot find the small paths which lead through the great field; he has gotten too accustomed to the wide turnpikes. Very often, too, he has forgotten some simple facts of anatomy and physiology, or if he has not exactly forgotten them, they rest latent in his mind. If such be the case, I hope you will permit me to occupy your attention for a few minutes with a review of a few anatomical and physiological facts which it is always well to consider when discussing the physiology of massage. They are the circulation and the effects of mechanical stimulation of a muscle and nerve.

The circulation of the blood is effected by the pumping activity of the heart assisted by the arteries, which, by means of the elasticity of their walls, aid in the propulsion of the blood current; further, by the valves in the veins and lymph vessels which hinder a reflux of the blood they contain. The arteries supply the tissues with the fresh, or better said the oxygenated, blood. From the capillaries, a part of the blood exudes in order to bathe each individual cell or cell product for the purpose of feeding them. The red and white blood corpuscles do not leave the vessels except in pathological conditions, e. g., traumata. The part of the blood that does not exude returns by means of the veins to the right half of the heart.

The exuded part of the blood, the serum, after having performed its function, that of feeding the tissues, enters under the name of lymph, the third system of vessels, the lymphatic. From a minute meshwork of intercellular spaces, the real lymph vessels are formed; they empty themselves in the thoracic duct which in turn empties into the venous system at the junction of the left internal jugular and subclavian veins. A smaller branch carrying the lymph from the head and right arm empties itself on the right side.

In order to understand the action of massage,

it is absolutely necessary to remember the presence of valves in the veins and lymphatics which hinder the blood-flow backwards. This shows how important it is to always massage in the direction toward the heart. If massage is done in the direction from the heart, there will be a stagnation on the venous and lymphatic systems. In some books on massage it is recommended to rub downward; I cannot understand why. Lymph, which is serum that has given off its nutrient material and its oxygen, is at this time, of no direct importance to the economy. It has first to be carried back to the general circulation, and from there to the lungs and intestines in order to be of use to the body.

From your knowledge of drugs you are aware of the fact that small doses of many drugs stimulate or depress, whereas overdoses irritate or even paralyze. Something similar happens in massage. A muscle or nerve worked on for a short time will be stimulated and show greater energy than before; but when worked on for a long time, it will show functional disturbances; instead of being stimulated, it will become tired. This is a point to be remembered in practice because patients always wish to get as much as possible for their fee, i. e., a treatment as long as possible and as powerful as it can be done. That sometimes a light, short treatment, is the real thing, the public seldom understands.

On this occasion there should, perhaps, be mentioned something concerning reflex action in massage. This part of the physiology of the massage is, no doubt, very interesting from a purely scientific standpoint, but for the practitioner it is hardly of any importance. For instance, that gentle rubbing of the inner side of the thigh in the region of the genito-crural nerve will by reflex produce contraction of the cremaster muscle and thereby effect a lifting of the testicles, if of course, an interesting phenomenon; there are numbers of similar reflexes, but I do not think they are of any practical value, at least not at the present time. Perhaps in the future, a massage doctor will treat his patients through reflex action but I doubt that he will cure them.

Many persons, even doctors, think that a massage treatment should last one hour. In general massage, from one-half to three-quarters of an hour is sufficient. In special cases, it may vary from ten minutes to several hours. I have had a case in Richmond which took me two hours to finish as I had to massage nearly every joint. Dr. Mezger seldom spends more than five, often only two or three, minutes on a patient. Still he charges twenty francs a sitting.

It would take too long a time to consider in detail the physiology of massage. Broadly speaking, it acts in three ways: First, purely mechanically; second, stimulating; third, promoting circulation and thereby the nutrition. As an example of the mechanical effect, I might mention removal of exudate in sprained joints, which is effected in an astonishingly short time by massage or the breaking up of adhesions. The stimulating effect is best shown in atrophic and paretic conditions of the muscles, for which there is no better remedy. That massage in the form of effleurage or stroking, will promote the circulation, everybody will understand.

It is impossible on this occasion to mention every instance where massage is indicated and how it should be performed; but it might, perhaps, be well to say a few words about general massage and massage of the abdomen which is so beneficial in cases of chronic constipation. General massage is performed in the following manner: The patient lies on the back. The masseur starts at the lower extremities with the feet which are thoroughly kneaded, though some slap the soles. Then effleurage or stroking of the leg is done, followed by a thorough kneading of each group of muscles, flexors, extensors and the peroneals, and again a short effleurage. This is repeated on the thighs and upper extremities. It is often well to combine passive, active or resistance movements with massage, but this will, of course, depend upon the condition of the patient. If he is very weak and run down, it is better to wait until he begins to respond to the massage.

The back of the patient is treated in the same way, beginning with effleurage, then friction and tapotement in the form of hacking. The last is the most showy part of the whole procedure and will always please the patient, as the sensation is very pleasant. It undoubtedly has a very stimulating effect, and has been compared with that of the faradic current. The head is better left alone. The chest can be similarly massaged, but patients sometimes complain that it affects the heart; I believe this to be imagination. The chest and head have, of course, to be massaged in certain special cases, as intercostal and facial neuralgias.

An important part of general massage is massage of the abdomen. The patient rests on his

back on a hard couch, with the head somewhat elevated and the legs flexed. He is instructed to breathe deeply and to relax the muscles of the abdomen. An ideal position in order to get complete relaxation would be to have the feet in Edebohl's stirrups. The masseur, sitting on the right side, places the tips of the first three fingers on the region of the cæcum and makes small circular friction movements over this part of the large intestine. He works *through the abdominal walls on the gut itself*. The mechanical irritation of the plain muscle fibres forces them to contract. This daily repeated stimulation strengthens them and will produce a better peristalsis. Each square inch of the digestive canal that can be reached by the fingers is treated i nthe same way. The purpose of the massage of the abdomen is *not* the mechanical pressing of the contents of the colon and sigmoid flexure in the rectum, *but the toning up* of the whole intestine.

I would have liked, on this occasion, to speak of the indications and contra-indications of massage, and of different cases that I have treated. However, I will not take up your time thus; but allow me a few moments more. There are many who believe that massage can be given by anyone. This is a great mistake and one-half the causes why massage has not the standing it should have. One of my patients recently informed me that osteopaths considered it an insult if their manipulations were regarded as massage. I give back the compliment. For my part I do not wish to be regarded as a kind of osteopath but simply as a practitioner of scientific massage. Special massage should be administered by the doctor who should thoroughly know its technique and physiology. General massage can be administered by any intelligent person who has a satisfactory knowledge of the tissues upon which he is working and the purpose of the procedure.

It is, perhaps, not out of the way to repeat here what I said sometimes ago in lecturing on general massage to the nurses of one of our hospitals. You may have use for it when employing a nurse in your practice. I told them never to undertake to massage if they had not a clear idea of what they wished to effect; in dubious cases, always to consult the doctor; always to do this in cases of abdominal massage; never to massage when the body temperature is above normal; not to massage in skin diseases; not to give abdominal massage in cases of pregnancy; to use as a lubricant cocoa butter, benzoinated lard or olive oil; but not vaseline—especially the yellow variety—which irritates the skin; always to start gently and only gradually increase the force of manipulations; always, *without any exception,* to massage toward the heart.

It is my firm belief that scientific massage will soon be recognized as an important branch of medicine, especially if the medical profession will employ it more. Its performance is more tiresome than writing a prescription and it does not pay as well monetarily; but often it pays more in the satisfaction given the practitioner to know that he has helped his suffering brother. There are, as you know, many cases in which surgery, drugs, medicine, etc., are of no benefit, but massage is.

An old Roman poet, Horatius, I believe, says: *"Si quid novisti rectius isti, candidus imperti, si non his utere mecum."* A rather free translation of this would be: If you know a better method than this, very well. If not, please use this.

319 *West Franklin Street.*

THE IMPORTANCE OF EARLY DIAGNOSIS OF INTEROCULAR LESIONS.*

By H. R. JOHNSON, M. D., Fairmont, W. Va.

While the diseased conditions to be considered in this paper are of interest chiefly in their last analysis, to the ophthalmologist, upon whom the responsibility for diagnosis and treatment must finally rest, it has, however, been the purpose of the writer to present to this body in a somewhat desultory way certain facts and general principles that will not only interest you as general practitioners, but will impress you with the fact that in order to reach an early diagnosis and obtain satisfactory results in this class of diseases, your responsibility is no less than that of the specialist.

Interocular lesions as a rule are painless in their progress and present no distinctive external manifestations upon which to base a diagnosis, while the deeper and more important structures are becoming seriously involved, and where, from the delicate, sensitive nature of those structures upon which the visual function

*Read before the West Virginia Medical Association, at Wheeling, May 25, 1905

depends, treatment to be effective must be instituted early; less permanent damage and irreparable loss of vision will be the melancholy results.

The general practitioner, as the family medical adviser holds the faith and confidence of his clientele, and in his intimate relations to them, stands next to the home circle itself; hence, in all their ailments and infirmities he is the one to whom they first apply for counsel and relief.

Here it is that the physician must assume his share of the moral and professional obligation to his patients. Faithful is he to his trust if recognizing and realizing the probable seriousness of the case, he summons to his aid all available means in determining the character and extent of the trouble; while derelict to duty is the physician who fails in this, and from wanton negligence and indifference, tells his patient, with a glaucoma, optic atrophy, etc., when seeking his advice and aid, for his failing vision upon mere assumption, that he has cataract, and advises that patient to *"wait until it gets ripe,"* or possibly allows him to fall into the hands of itinerant spectacle peddlars or incompetent opticians, in a vain search for glasses, while destructive changes within the eye are taking place.

Case I.—A. P., age 48. Consulted me for loss of vision. Three years prior to this he had consulted a physician when he first noticed his vision failing, and was told by that physician, without the pretense even of an examination, that he had cataracts, and advised to wait "until they got ripe." I found vision, right eye 20-200, and in left eye, fingers at 6 inch. Ophthalmoscope revealed an advanced case of glaucoma simplex. Broad iridectomy was performed on both eyes, after which vision in right eye improved to 20-120, and remained so, while in left loss of vision continued until light perception was abolished.

Case II.—J. H., age 60 years. Had consulted his physician about one year before coming to me, on account of failing vision, and had his fears lulled to rest on being told it was the result of advancing years, and a change of glasses was all that he required. He fell an easy prey to the spectacle vendors, and finally applied to a so-called "scientific optician" passing through the country for glasses, who, ill-advisedly, instilled atropine in his eyes, which was followed by intense pain and inflammation and sudden and almost complete loss of sight in both eyes. I was consulted two weeks later, and found a case of violent inflammatory glaucoma, with vision reduced to dim light perception, intense pain, and both globes as hard as marbles, both cornea "steamy" and anesthetic. A broad irridectomy was done in each eye, but the result was nil. Vision absolutely lost.

This was evidently a case of glaucoma simplex, when he first consulted his physician, and upon instillation of atropine by a travelling glass fitter an acute inflammatory attack was precipitated, with results as stated. Now, there is reasonable ground for the assumption that had these cases received the same consideration at the hands of their medical advisers, that a case of appendicitis, a pus tube, or cystic ovary would have called forth, vision could have been preserved, and the progress of the disease held in abeyance.

It is scarcely possible to conceive if a more pathetic or pitiable picture than that of these poor unfortunates, who, upon the advice of negligent and indifferent physicians, have become victims of misplaced confidence, doomed to an existence of rayless gloom, debarred from participating in the affairs of life, hopeless, helpless and dependent.

Diagnosis of interocular affections can be made only by ophthalmoscopic examination, and while not expected of the general practitioner that he should be an expert with the ophthalmoscope, he should at least, however, be sufficiently conversant with the normal and pathologfical conditions of an organ, upon the integrity of which so much of physical, mental and moral usefulness and happiness depend, as to properly appreciate the gravity of visual failure, with all probable and possible causes, and follow it up until a logical conclusion, based on facts, rather than *supposition,* is reached that early measures may be made available.

Ocular therapeutics, based upon more definite and accurate knowledge of histology and pathology, has made notable advances in recent years, and has done away with much of the empiricism of former days, and placed the treatment of eye diseases on a firmer and more rational basis.

Certainly as much progress has been made in this as in other fields of medicine and surgery; hence many of the diseases of the deep eye structures that were hitherto placed in the category of hopeless and incurable, under present methods, yield satisfactory and ofttimes most

brilliant results, if employed before serious structural damage has occurred. Notable among this class are:

Glaucoma, either simplex, inflammatory or secondary, which was regarded as hopeless, in so far as arresting its progress, and preventing blindness from supervening was concerned, and the only means offering permanent relief, in many of these cases from the agonizing pain, was enucleation of the offending organ, until the therapeutic value of iridectomy was discovered by Von Graefe, which makes it possible to arrest the progress of the disease, and relieve pain in a large per cent. of cases, but to be of practical value its early employment is absolutely essential.

Optic neuritis, retinitis, in various forms, *toxic amblyopias,* etc., good results are only obtained where early treatment, based on accurate diagnostic observations, are taken advantage of.

Many of the hopeless cases of optic atrophy that come under observation are post-neuritis in origin, and marks the final result of a preceding neuritis. No doubt many of these cases could be prevented from proceeding to the atrophic stage were the active inflammatory stage promptly met.

It may also be worthy of mention that grave constitutional and remote local disturbances not infrequently find their earliest expression in retinal and optic nerve lesions, that are of importance from a diagnostic and prognostic point of view. Thus albuminuric retinitis often appears and is discovered by the ophthalmologist before general disturbances become manifest, and first attracts attention to the condition of the kidney. Diabetic inflammation of the retina is often revealed, with the ophthalmoscope, before the practitioner suspects sugar in the urine.

The diagnosis of brain tumor and abscess is greatly fortified where the optic nerve presents the picture of "choked disc," which condition may antedate any differentiating manifestations referable to the brain.

The writer has endeavored to make clear the importance that attaches to an early diagnosis of all diseases of the interocular structures, and the necessity for prompt and intelligent action on the part of the general practitioner, for if we can enlist the proper interest of the profession, in that more painstaking consideration be exercised on behalf of these unfortunates, it is safe to predict that many sad and disastrous terminations will be prevented, and a large per cent. saved from drifting into the hands of charlatans and false pretenders, to be duped and fleeced to their infinite detriment, as well as to the dignity of the legitimate profession.

IS BILATERAL OPERATION FOR CATARACT EVER JUSTIFIABLE?*

IF NOT, HOW SOON AFTER OPERATION ON FIRST EYE IS IT SAFE TO EXTRACT SECOND CATARACT?

By A. W. CALHOUN, M. D., LL. D. Atlanta, Ga.
Professor Diseases of Eye, Ear, Nose and Throat, College of Physicians and Surgeons, Atlanta.

An exhaustive review of text-books, medical journals, special periodicals and pamphlets revealed a total lack of literature bearing on this subject, and a letter of inquiry, sent to forty-one competent and experienced oculists in different sections of the country, showed the greatest diversity of opinion; about an equal number being on each side of the question.

This paper, therefore, is largely based on a personal and clinical experience of more than fifteen hundred cataract operations.

I can conceive of no circumstances that would justify me in making bilateral extraction of cataract. There are so many sources of infection and so many opportunities for it, that we can never be sure that an eye will not be infected during or after an operation, however careful we may have been in our work, or however perfect the patient's local, mental or physical condition may have been. The difficulty of cleansing the conjunctival sac is well known. Indeed, the assertion has been made that the sac cannot be made aseptic.

The intimate connection, through the lachrymal canal, between the nasal mucous membranes and the conjunctiva, renders the latter peculiarly susceptible to all the irritations and inflammations of the former, and every operator must recall to mind cases of infection traceable to this source. Regardless of the great advance made in the operation for cataract and its after-treatment, in spite of every precaution, suppuration occasionally occurs, and will continue to occur. A distinguished surgeon recently stated to me that he had seen suppuration occur thirty days after a seemingly successful extraction.

---

*Read before the Medical Association of Georgia, at Atlanta, Ga., April 21, 1905.

More frequently an iritis springs up, not necessarily fatal to the eye, but most distressing to the patient, and equally discouraging to the surgeon. Unexpectedly and without apparent cause, an anomaly in the healing process sometimes becomes a menace to the eye, after extraction, adding another danger as to infection, and this would necessarily interfere with the normal process of healing in the fellow eye. I have had cases take not only days, but weeks, for the thorough healing of the corneal wound, there being all the while slight, gradually diminishing seeping of the aqueous through the wound. Some remote or hidden constitutional weakness was no doubt the cause of this. Such a case is a decided disturber of the surgeon's peace of mind, and would be suggestive of grave disaster in a case of double operation for cataract. Therefore the possibility of infection alone should cause the too enthusiastic surgeon to pause and seriously consider before proceeding to the bilateral extraction.

How absolutely helpless a patient must feel, with both eyes operated on at the same time; and if a severe form of iritis or other serious inflammation should set up in one or both eyes, there would certainly be great mental depression; and a cheerful and hopeful spirit is a mighty force in aiding recovery from any ailment.

A certain amount of experience, arising from the patient's peculiarities and from possible complications, is always gained by making the single operation, whether the results be good or bad, and the use of this knowledge would surely be a valuable guide, and increase the chance of success on the second eye. Not unfrequently it has happened to the most experienced and competent oculist that an eye has been lost after extraction through inflammation or other mishap—whereas later on, guided by his first experience, the other eye has been operated on by the same surgeon with perfect success. Now and then it happens that an eye lost through violent inflammation following a cataract operation, requires to be enucleated because of the sympathetic irritation, before we dare proceed with the operation on the other eye. It is easy to predict what would happen to the fellow eye, had bilateral extraction been performed in such an instance. In this connection I would say that sympathetic ophthalmia is not a frequent, but a distinct element of danger, to be reckoned with in considering the double cataract operation.

Accidents and the patient's disturbed mental condition following cataract extraction, are contraindications to the bilateral operation. The unmanageable patient tossing from side to side of the bed, displacing his bandage, striking the eye with his hand, springing suddenly up in bed and by a strain disturbing the corneal wound, coughing, sneezing, etc., are actual occurrences in the hands of every experienced operator.

I once had a patient, who from a violent fit of coughing, sneezing and vomiting had a profuse intraocular hemorrhage with complete emptying of the contents of the ball. If one could be happy under such circumstances, I was reasonably so, when I reflected that the other eye had not been touched. Loss of the vitreous, hemorrhage, panophthalmitis following accidents, glaucoma and possible sympathetic inflammation, with infection from many sources, constitute a chapter of possible accidents with such dreadful results, that I feel warranted in asserting that it would be unwise and unjustifiable to extract both cataracts at the same time.

Mental disturbances after cataract operations are of sufficient frequency to cause the surgeon some concern. Occasionally, after several days of confinement with both eyes bandaged, the patient becomes melancholy, has hallucinations, and, in rare instances, becomes violent and ungovernable. This condition generally passes rapidly away on uncovering the other eye, even though this is practically blind, and getting the patient into the fresh air. One such patient threw himself through a window, carrying sash and glass with him, while in this temporarily perturbed mental state. Another, who had been a sleep walker in his boyhood days, eluded his attendant and climbing through a second story window, leaped to he ground below. Again, I would say, there is some comfort in such cases, when we consider that only one eye has been operated on.

On one occasion Mr. Nettleship, a surgeon of vast experience, after having extracted one cataract under general anesthesia, turned to his class and remarked: "Now, gentlemen, what a temptation the opportunity presents to extract the other. But, gentlemen, never do so until your patient has fully recovered from the first operation."

Looking at it from every point of view, to my mind, the extraction of cataract is one of the most important of all surgical operations, the whole future of the patient depending on its

successful outcome. Answering from the standpoint of the patient, would one of us willingly submit to the bilateral extraction? I would myself unhesitatingly cry out "No!"

The second part of my subject is quickly answered. "How soon after the operation on the first eye is it safe to extract the second cataract?"

There are competent surgeons who maintain that it is not wise to operate on the second eye at all, if good results follow the first operation. There are good reasons for this conclusion. The frequent disturbance of muscular equilibrium, the confusion due to unequal vision in the two eyes, constitute reasonable grounds for advising against the second operation, provided the first has been a success.

My rule, however, is to operate on the second eye if the patient desires it, but I do not urge the operation. Circumstances should always guide us in selecting the time for the second operation, but except for some special reason, I prefer to wait six or eight weeks, when the first eye has recovered from all reaction, and the geenral health of the patient has been thoroughly restored. There can be no rule; each case must be its own law, but I am convinced of the fact that in ignoring the patient's desire for haste, we are but adding to his chances of successful results.

64 *Marietta Street.*

A CASE OF PROSOPALGIA AND THE CURATIVE TREATMENT.

By GEORGE H CANDLER, M D., Chicago, Ill.

A case recently came under the writer's care which serves to illustrate the extreme efficacy of aconitine and strychnine arsenate in a certain variety of neuralgia—that of the tri-facial nerve (*prosopalgia*)—especially when accompanied by (and probably due to) menstrual disorders. The patient, a married woman of 28, who had never been pregnant, had, since her twenty-fourth year, suffered more or less at the monthly periods, but up to three months ago the pain was entirely in the pelvic region and back. No treatment had ever been given, and the woman had grown to look upon the trouble as part of "the trials of her sex."

In December last, however, coincident with the pelvic pain (which always appeared a week prior to the catemenial flow) she experienced the most intense pain over the right orbit; so intense was the pain indeed that she took half a teaspoonful of laudanum—not caring whether it killed so long as it cured. The pain left her, to return with the flow, however, and now the whole regions influenced by the facial nerve were involved. The orbital pain was especially intolerable. The pulse was quick and jerky, eyes red and watery and generally the woman presented a picture of misery. At the same time menorrhagia existed in a severe form—several napkins being used daily. It was on the second day of the attack that I was called in, and gleaning from the breath and tongue that the intestinal tract needed cleansing out, I ordered calomel gr. 1-6, leptandrin gr. 1-6, half hourly, till a grain had been taken and instructed that two hours later a full teaspoonful of saline should be swallowed with plenty of hot water. The bowels having acted freely the woman was told to take ten grains of the triple sulphocarbolates every two hours for six hours and then to repeat the dose after each meal. Guiacol was applied locally, with heat, in the form of hot cloths locally and gelseminin and cannabin tannate exhibited in full doses. Some degree of comfort was obtained during the next few hours but the pain did not disappear as I had thought it would as soon as the *prima via* was clean and rendered somewhat more aspetic.

On calling the next morning I found the woman almost insane—the pain having come on again at midnight; since that time growing, as she expressed it, "more intolerable every hour." The tongue was clean, the breath inodorous and elimination generally good. The pelvic pain had ceased though the flow was still extremely heavy. The discharge was dark, slightly fetid and formed clots, passing as such from the vagina. I decided that aconitine was the remedy for this case, the neuralgia demanding attention first and foremost. One granule was ordered every hour till relief or tingling of the lips or fauces was experienced and, at the same time, strychnine valerianate was dispensed, with instructions to take one granule with every other dose of aconitine till four doses had been taken. In the evening I called again and found the woman in *deshabile* with a pillow behind her head sitting in a Morris chair reading a fashion book. The pain had lessened after the third dose and ceased entirely after the sixth. The

flow, however, was still profuse and I ordered atropine valerianate one granule every two hours for three or four doses to relieve local congestion and equalize circulation. The next morning when I called the flow was about normal in quantity and of better color; so I put her on ergotin two grs. and strych. arsen., gr. 1-67 every three hours with the result that in two days she was well. The flow prior to this had lasted from eight to ten days.

Believing that she was well "for good" the woman refused to take further treatment or submit to examination, with the result that the next month almost the same thing occurred. The neuralgia yielded, however, within eight hours to the aconitine and strychnine valerianate and a thorough cleaning up with calomel and mag. sulph. while ergotin and hydrastin controlled the menorrhagia within five days. Last month the prosopalgia recurred but was easily controlled with aconitine. The woman had been taking the triple arsenates daily for some weeks prior, and therefore was in better physical condition.

This case is reported to call attention to the value of aconitine and strychnine in the reflex neuralgias of women. The general treatment must, of course, be governed by conditions but the single principle will cure the single symptom here every time.

1392 *E. Ravenswood Park.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,

Professor of Principles of Surgery and Clinical Surgery, and President University College of Medicine, Richmond, Va.

LECTURE VI.

Physiological and Surgical Regeneration—Process of Repair in Wounds—Granulation, Vascularization, Cicatrization and Epidermization—Union by Primary and Union by Secondary Intention.

Injuries to the body, whether from accident or disease, are repaired by the same process that effects the normal restoration of cells during the growth and development of the body. Therefore, before considering the method by which wounds heal, or "surgical regeneration," it will be well to review the method by which the normal waste of the body is restored, or "physiological regeneration." The two processes are identical and the different names applied to them are employed not to indicate a difference in kind but in degree.

PHYSIOLORICAL REGENERATION.

The body is composed of cells. The life of a cell is not as long as the life of the body. Some cells are hardier than others, but all cells die from the completion of their natural expectancy of life, or are destroyed earlier from excessive functional activity. In health there must be some provision for the reproduction of cells to replace those that die; else the body would perish. This need is met by what has been termed physiologieal regeneration, which consists in the ability of pre-existing cells to proliferate and form new cells. In this process the law of the legitimate succession of cells is followed, and like cells produce like cells. Thus a muscle cell begets a muscle cell; a nerve cell begets a nerve cell and a bone cell begets a bone cell. During early life cell reproduction is in excess of cell destruction and there is growth of the body. During middle life cell reproduction about equals cell destruction and there is a balance of weight. During old age cell reproduction is usually less than cell destruction and there is senile atrophy of tissue. The cell in an organ which proliferates to form new cells is usually called the *formative cell* of that organ. In connective tissue there are two distinct sets of cells, the fixed cell and the wandering cell. It has been clearly shown that the fixed cell of connective tissue is the formative cell. This has led some pathologists to speak of the fixed tissue cell as the formative cell, and frequently to speak of the formative cell of other tissues as the fixed tissue cell of that tissue. This practice is confusing and should be discontinued. Senn dignifies the formative cells of different structures by different names, calling the formative cell of connective tissue a *fibroblast;* of bone an *osteoblast;* of nerves a *neuroblast;* of muscles a *sarcoblast;* of blood vessels an *angioblast,* etc.

SURGICAL REGENERATION.

All wounds, whatever the anatomical tissue involved, heal by the production of new cells which result from the proliferation of pre-ex-

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

isting cells. The formative cells at the site of the injury are stimulated to unusual activity, and multiplying rapidly, form an immense number of new cells. These cells constitute what is commonly spoken of as granulation tissue. At first the new cells are embryonal and lack the characteristics of their parents; but as they mature they develop into cells identical with those of the tissue from which they had origin. Thus in the granulations covering the surface of a recent wound it is impossible at first to distinguish the embryonal cells resulting from different tissues, but later when they mature or undergo cicitrization the cells originating from connective tissue will become converted into connective tissue; those originating from bone will become converted into muscle. It is a fact that the formative cells of connective tissue have a very much higher vegetative capacity, or power of proliferation, than the formative cells of any other structures; and as connective tissue is practically found everywhere in the body the bulk of the granulation or embryonal cells produce in any wound will have a connective tissue origin, and the development of these cells results in the formation of a fibrous cicatrix.

At one time there was much controversy over the part played in the healing of a wound by the leucocyte or white blood cell. Leucocytes are invariably present among the embryonal cells, but it has been conclusively proven that they take no permanent part in tissue production. They do not undergo proliferation, but disintegration, and their function is merely to produce fibrin for the temporary agglutination of opposed surfaces, and to furnish in an assimilable shape food for the procreating formative cells.

HEALING OF WOUNDS.

The details of the process of repair in a wound can best be studied under the headings granulation, vascularization, cicatrization and epidermization. We will take them up in order.

1. *Granulation.*—This is the process by which new cells are formed to replace tissue lost by accident or disease. All wounds heal by the production of new cells or granulation tissue. If the surfaces of the wound are clean cut and held in close opposition one to the other, the amount of new material necessary to effect vital union is little, the time taken for healing is short and the resulting cicatrix is small. If the surfaces of the wound are not brought into close relationship, the amount of new material necessary to fill in the gap is large, the time taken for union to occur is long and the resulting cicatrix is large. The process of granlation, however, is exactly the same in each; the only difference being the number of new cells formed and the length of time necessary to do so. Healthy granlations are small, firm and pink, and their surface is only moistened with a viscid colorless fluid. If infection occurs they become pale and flabby and their surface may be covered with a membrane or bathed in a purulent discharge. The layer of granlations on the surface of a wound becomes about one-sixteenth of an inch in thickness and then proliferation and the formation of new cells will be arrested unless an additional blood supply is furnished.

2. *Vascularization.*—This is the process by which new cells are formed to nourish the growing granulation cells. At first an increased supply of blood is furnished to the part by the plugging of the cut ends of the capillaries with thrombi and their dilatation from intra-vascular pressure. Later this is not sufficient and new vessels are formed to convey nourishment to the granulation cells. As Senn puts it, vessel formation and tissue proliferation must be initiated simultaneously and keep pace with each other until the necessary amount of granulation tissue has been produced. The new blood vessels formed by the process of vascularization come from the nearest pre-existing blood vessels. A bud appears on the wall of a capillary and increases in size until it is a triangular mass and finally it is transformed into a finger-like projection. It becomes excavated at its base and blood enters from the vessel to which it is attached. When two such formations are contiguous they join each other by the inosculation of their tips and a capillary loop results. This loop, uniting with other loops, permeates the new cells and conveys nutrition which enables them to continue their proliferation. Each loop as it projects towards the surface is covered with embryonal cells and gives a velvety appearance to the layer of granulations. These new vessels are but temporary in existence and are obliterated with the final healing of the wound.

3. *Cicatrization.*—This is the process by which embryonal cells or granulation tissue develop into mature cells endowed with the characteristics of their parents—in other words, the transformation of embryonal cells from fibroblast into connective tissue; the embryonal cells from sarcoblasts into muscular tissue; the em-

bryonal cells from neuroblasts into nerve tissue, etc. If as is rarely the case the formative cells of the various tissues have vegetative or reproductive capacity sufficient to produce enough embryonal cells to repair the defect produced in their respective structures, then on the completion of cicatrization there will be complete anatomical and physiological restoration of the injured part. If, however, as is usually the case, nearly all of the embryonal cells which constitute the granulation tissue originate from the fibroblasts, then on completion of cicatrization there will be substitution in the cicatrix of connective tissue for the normal structure of the part, or a condition known as *metaplasia*. The fact that almost all cicatrices are composed largely of connective tissue, together with the well known contractility of this element, will explain why a scar contracts. The contraction of connective tissue in the healing of a wound is useful inasmuch as it draws the divided surfaces nearer together, makes the external evidence of the injury less, and obliterates by constriction the newly formed blood vessels. This is seen in the every day observation of a scar becoming smaller and whiter with time. The contraction, however, sometimes goes so far as to prove a source of danger, as it may result in deformity of limb if the region of a joint is involved; may cause pain by pinching a nerve, or may produce stricture by diminishing the lumen of some duct or canal.

4. *Epidermization.*—This is the process by which new epithelial cells are formed to cover the granulating area. An external or open wound cannot be said to have completely healed until new skin or mucous membrane forms over its surface. As skin and mucous membrane are composed of epithelial cells the restoration in the loss of their continuity must be by the proliferation of pre-existing epithelial cells. The nearest formative cells of this type are at the margins of the wound and it is from this source that the new material is produced. In the process of epidermization new cells appear at the peeriphery of the wound and creep in to meet near the center. At first these cells do not appear to be attached to the underlyingv granlations but merely lie on them. Later they effect organic union. Occasionally in granulating areas due to a burn, islands of epithelial cells will appear which obviously have not originated from the edges of the wound. They are due to epithelial cells of some hair follicle which, owing to their location, have escaped destruction and act as independent centers of epidermization.

CLASSIFICATION OF HEALING WOUNDS.

Before the introduction of aseptic and antiseptic methods in surgery practically all wounds suppurated, and the old authors, seeing inflammation commonly coincident with healing, thought that it was an essential part of the process. It is hoped that the student will already appreciate the erroneousness of this theory, as it has been the endeavor to impress the fact that regeneration as it occurs in the healing of a wound is but an augmentation of a natural process which is always operative in the body to restore the normal physiological waste of the tissues. The old authors classified healing of wounds nuder three heads: First, direct or immediate union, or healing without the interposition of new material which is an impossibility. Second, healing by plastic inflammation, a term which has no place in modern pathology. Third, healing by suppurative inflammation, which on its face is an absurdity. The present classification of the healing of a wound is simple and consists in dividing the process into healing, first, by primary intention, when the wound is aseptic and regeneration occurs without inflammation; and, second, by secondary intention, when the wound is infected and regeneration is delayed by inflammation.

In union by primary intention the patient has practically no fever and the wound heals nder a single dressing without the local symptoms of inflammation. There is no discharge save the escape of a little blood serum and none of the granulation cells are destroyed but all go to accomplish the end for which they were produced; hence repair is effected with a minimum tax on the system.

In union by secondary intention the patient has fever and the attending constitutional disturbances. The wound is painful, hot, red and swollen. The stitches cut into the skin and the margins gape and become everted. Pus forms, granulation cells are destroyed and there is a profuse discharge which saturates and necessitates the changing of dressings. Healing is delayed until the infection runs its course or is eliminated by antiseptic measnres. Owing to the destruction of embryonal cells these have to be reformed over and over again, thus putting a tax on the patient's system which, together with the fever, pain and long confinement, often causes great debility.

Proceedings of Societies, Etc.

AMERICAN PROCTOLOGIC SOCIETY—SEVENTH ANNUAL MEETING, PITTSBURG, MAY 5-6, 1905.

The Address of the President.

Dr. J. R. Pennington, of Chicago, after customary acknowledgements, referred to the adverse criticism which the organization and continued prosperity of this Society had provoked in certain quarters. Its existence was a logical and necessary step of progress. Special Societies arise by a process of natural differentiation. This differentiation, which is unavoidable, by organization of the resulting groups, makes possible a greater definiteness of structure and function of the medical profession. Special organizations have multiplied more rapidly in the past 30 years than during any previous period, and likewise the advancement in the science of medicine has been greater during the same period. But the subject of proctology had been neglected in the past until the charlatan claimed it as his special field and the profession seems still to be doing its utmost to support the claim. Of the 66 institutions belonging to the American Medical College Association only 8 make any provision for teaching proctology. This College Association has adopted a uniform curriculum consisting of 27 subjects. This extensive course provides for 30 hours to be given each to medical jurisprudence, dietetics, hygiene and public health, 60 hours each to nose and throat, and genito-urinary diseases, and 160 hours to gynecology. No reference whatever is made to the subject of rectal diseases. "In view of the fact that the greatest breach in the science of medicine to-day is, and always has been, at this very point, and that it is proverbially true that because of this breach the charlatan is more securely intrenched in this than in any of the other departments, I fail to see equity in such a curriculum."

It may be claimed by the Association, and those schools that do not include proctology in their curricula, that the chairs of general surgery devote a certain number of hours to these diseases. If so, why are there so many reputable physicians in this country who have never heard a lecture on rectal diseases nor witnessed an ano-rectal examination or operation?" The author concludes that there is a distinct need for this Society—viz., the reclamation of this specialty for ethical medicine, and that the Society will exist, prosper and grow in influence in proportion as it meets this need.

"*Malignant Disease of the Rectum and Its Treatment*" was the title of a paper by Dr. C. B. Evans, of Dayton, who prefaced his remarks with a plea for thorough examination of all cases complaining of rectal symptoms. Many cases of uterine cancer have been termed "change of life," and very many cases of rectal cancer, "piles," because of neglect of this precaution. It is the consensus of opinion that cancer is at first purely local and that early recognition and thorough extirpation will cure a large proportion of all cases. Formerly the author was an advocate of colostomy in these cases, but now believes that this procedure should be reserved for those cases only which have advanced so far as to render the radical operation hopeless. The only contra-indication he would recognize as absolute is fixation of the rectum by extension of the growth to adjacent structures. The perineal and combined abdominal and perineal routes were recommended.

Dr. C. F. Martin, of Philadelphia, presented a paper on "*The Ambulant Treatment of Internal Hemorrhoids,*" in which he strongly defended the injection method. His technic consists of the injection of 7 to 10 minims of a 5 per cent. solution of phenol (Bobœuf) into each pile tumor at intervals of from 2 to 7 days, depending on the effect produced. As a preliminary to beginning the injection the author recommends divulsion of the sphincters under nitrous oxide anesthesia—much of his success with the method being attributed to this procedure. He concluded that there are not more than 15 per cent. of recurrences, and that accidents and complications are by no means so frequent as after the ligature and clamp and cautery operations. In addition, the method is practically painless and the patient is not detained from business.

"*Cases of Fecal Impaction of the Rectum*" were reported with comments by Dr. T. C. Martin, of Cleveland. After giving the symptoms usually complained of by these patients, he emphasized the value of the proctoscope for treatment as well as diagnosis. One of the cases reported was of special interest in that the cause was found to have been a ventral fixation of the uterus, in which the rectum, by means of the utero-sacral ligaments, had been anchored so immovable that the patient could no longer "bear down" effectually.

Urethro-Rectal Fistula was the title of a paper by Dr. W. M. Beach, of Pittsburg. After citing a number of cases and describing his method of treatment the author drew the following conclusions:

1. Urethro-rectal fistula is comparatively rare and very easily overlooked. When in doubt, use the permanganate test.

2. It generally follows prostatic abscess of gonorrhœal origin.

3. It may result from traumatism—faulty use of sound, lithotomy, etc.

4. This is one type of fistula which demands suturing. The suture material should be No. 3 forty day catgut.

5. The care of the wound should never be left to an assistant; no one can possibly know as much about it as he who made it.

6. A certain number of cases of recent urethral origin will heal spontaneously where the stricture is relieved.

Dr. Lewis H. Adler, of Philadelphia, presented a paper entitled *A Further Contribution to the Study of Pruritus Ani, with Special Reference to Its Local Treatment.* In the author's experience the male sex had been affected in about 95 per cent. of cases. In nearly all the cases the patients were more or less neurotic, and in the major portion, of a decidedly bilious temperament. These cases demand the removal of all exciting causes, and regulation of patient's habits of life should precede and attend local treatment. The latter consists in the daily injection into the cavity of the rectum of from 1 to 2½ drams of following mixture:

Ext. Hamamelis Fl....1 fluid ounce.
Ext. Ergot Fl.....2 fluid drams.
Ext. Hydrastis Fl....2 fluid drams.
Tr. Benzoin Comp. Fl.2 fluid drams.

Upon the first visit, if the peri-anal skin is dry and tough, the entire surface should be painted with a concentrated solution of silver nitrate (960 grains to the ounce). This may require repetition several times at intervals of a few days to restore the skin to normal. After this is accomplished the full strength of citrine ointment is to be applied and renewed daily for two or three weeks and thereafter on alternate days or twice a week. This method of treatment may extend over a period of six months or even longer, but in the author's hands it has proved uniformly successful.

Operative Treatment of Tuberculous Rectal Fistula in the Tuberculous was discussed by Dr. J. Coles Brick, of Philadelphia. The frequent association of rectal fistula and phthisis has long been recognized. Some authors claim that 5 per cent. of consumptives develop fistula, and Hartman found that of 48 cases of fistula 23 were positively tuberculous. In the author's opinion the irritating effects of ether are often responsible for the onset of pulmonary symptoms. For this reason he employs nitrous oxide and oxygen when a general anesthetic is demanded. All raw surfaces are seared with the hot iron. When the case is extensive, it is better to perform the operation in stages so as to minimize the period of confinement to bed.

Special stress was laid on the after management of these cases. The patient should be kept in bed as little time as possible, but no active exercise allowed until weight has returned to normal. Forced feeding and outdoor air are recommended, and daily sponging with tepid, or if patient's vitality is sufficient, with cold water, is of great value. A weekly gain of weight is the one standard of favorable progress. In conclusion the author advised that all fistula patients be carefully examined for local and pulmonary tuberculosis, and even though the examination be negative, every case should be treated as though tuberculosis were likely to be developed.

In a paper entitled *Personal Experience in the Employment of Mechanical Vibration in the Treatment of Rectal Diseases*, Dr. W. L. Dickinson, of Saginaw, concluded that this is a valuable method of treatment and deserving of more general use by the proctologist. A number of instances were recounted in which it had been successfully used for the relief of fissure and to accomplish dilatation of the sphincters. But the author thought that its greatest field of usefulness was in the treatment of chronic constipation and gave the technic of its application in such cases.

Office Treatment of Rectal Diseases and Its Limitations was the title of a paper by Dr. Jas. P. Tuttle, of New York. The trend of practice in rectal diseases at the present day is threefold: 1st, toward a more general resort to operative measures; 2d, toward a wider application of local anesthesia; and 3d, toward a great increase in office treatment. These tendencies are due to the following facts: First, the public as well as the profession has learned that non-oper-

ative measures cannot be relied upon for permanent cures. Second, dread of general anesthesia has greatly diminished, due chiefly to improved methods in the use of ethyl chlorid and nitrous oxide, alone, or as adjuvants to ether. Third, dissemination of the knowledge that most of the minor rectal surgery can be done under cocaine or other local anesthetic with as little pain and almost as little detention from business as is occasioned by the non-operative measures which give only temporary and uncertain relief. Fourth, local anesthesia is being more generally adopted because it is safer, can be more quickly applied, simplifies the work, and at the same time, if properly used, permits of as thorough work as general anesthesia. Cocaine, eucaine, stovaine and sterile water, are all reliable local anesthetic agents. One per cent. solution of cocaine, eucaine, and stovaine are as strong as it is ever necessary to use, and usually one-fourth per cent. is sufficient. Stretching of the sphincter has heretofore been the most difficult thing to accomplish under local anesthesia; but the author referred to a method he had devised by which this can be done thus making it possible to operate painlessly on hemorrhoids, fissures, small fistulas, ulcerations, tumors low down and even low stricture. But while these things are possible the author considers certain conditions requisite:

1, Asepsis; 2, careful selection of cases; 3, complicated and plastic operations not to be undertaken; 4, when general anesthesia is necessary it is better to have patient at home or in the hospital, even though it may be possible to do the work in the office.

Contribution to the Pathology of External Piles was the title of a paper presented by Dr. Louis J. Krouse, of Cincinnati. Limiting his remarks to the sanguineous or thrombotic variety, after a review of the literature of the subject and of the anatomy of the parts, the author drew the following conclusions:

First, that the walls of the hemorrhoidal veins must undergo some pathologic change before a thrombotic hemorrhoid can develop.

Second, that these changes being present, any undue pressure may cause an aneurismal dilatation of the veins.

Third, that when the internal coat of the vessel is altered, there is more tendency for coagulation to occur.

Fourth, that sexual activity increases intravenous pressure and thus favors the condition. It is, therefore, a disease of adult life.

Fifth, that the clot is always found in the diseased vessel and never in the peri-venous connective tissue.

A paper entitled *A Summary of Twenty-five Radical Operations Upon the Rectum Under Local (Sterile-water) Anesthesia* was read by Dr. A. B. Cooke, of Nashville. The 25 operations consisted of:

Internal hemorrhoids	15
Prolapsus ani	2
Anal fissure	2
External hemorrhoids	6

From this series of cases the author drew the following conclusions:

First, the method is simple, safe and effective.

Second, pain at the time of operation is exceptional.

Third, post-operative pain is far less than after the old methods.

Fourth, time of detention from business is reduced more than half.

Fifth, it offers a reliable means of extending the benefits of surgery to a large class of cases which would otherwise be unsuitable for operation.

Sixth, it robs these operations of their terrors.

Summing up his personal experience with the method the author stated that it had been satisfactory beyond his fondest hopes, and if the promise of the method is realized in future, he would have need for general anesthesia in rectal surgery only in the exceptional case.

The following officers were elected for the ensuing year: *President,* Dr. Lewis A. Adler, Jr., Philadelphia; *Vice-President,* Dr. Geo. B. Evans, Dayton; *Secretary-Treasurer,* Dr. A. B. Cooke, Nashville.

Executive Council—Drs. J. R. Pennington, Chicago, chairman; T. C. Martin, Cleveland; Wm. M. Beach, Pittsburg.

Time and place of meeting for 1906 to be determined by the Council.

To repel one's cross is to make it heavier. —Aniel.

Editorial.

Medical Society of Virginia.

The thirty-sixth annual session will assemble at Norfolk, Va., Tuesday night, October 24, 1905, and will probably be in session through Friday, October 27. The session promises to be one of the largest ever held. Usual railroad rates for conventions are being secured, and hotel accommodations will be abundant with any number of private boarding houses at very moderate rates. The number of applications for fellowship is already large; and it is confidently expected that by far a large majority of the worthy doctors of the State not now members will have their applications in hand by the time of the meeting. As to the scientific programme, from the titles of papers already in hand and promised by members of known ability, it may safely be predicted that the session will be one of marked success in this respect.

The President, Dr. Wm. S. Christian, of Urbanna, Va., is proving himself by his works to be the right man in the right place. And we are glad to note in this connection that the ex-Presidents and other officers are as actively at work as in other days. The fact that the Society is to meet at Norfolk is an assurance that all will be done by the local profession of that city and Portsmouth and section that may be possible to give the visitors a good time socially.

Members of the Society should not forget that now is the time to instruct Legislators as to matters of medical legislation that it is hoped will become laws during the next session of the Assembly of Virginia. The *Medical Legislator,* edited by Dr. J. B. DeShazo, of Ridgeway, Va., for the Society, is doing good work along the lines for which it was established.

Dr. Stuart McGuire President of University College of Medicine, Richmond, Va.

During the meeting of the Board of Trustees in May, Dr. J. Allison Hodges on his re-election as President, announced that he anticipated that increased personal responsibilities as a practitioner would compel him to resign the honor. His anticipations being realized, he felt it a duty to relinquish the office of President. Accordingly at a called meeting of the Board of Trustees, June 20, Dr. Stuart McGuire, Professor of Principles of Surgery and Clinical Surgery, was elected as his successor. Dr. Hodges will continue in charge of the Professorship of Nervous and Mental Diseases, in which specialty he has well established himself—being in charge of Hygeia Hospital, of this city. Dr. Stuart McGuire needs no introduction to the profession of the South. Under his administration, the institution will maintain its high position among the Colleges of the country.

The University College of Medicine is one of the very few medical colleges South of Pennsylvania which is a member of the Association of American Medical Colleges. Twelve States of the United States have already passed laws which prohibit graduates of Medical Colleges that do not conform to the requirements of this Association from undertaking to practice in their States. Graduates of the University College of Medicine, however, are permitted to appear for examinations before any of the State Boards of Examiners of these twelve States, as also any of the other States of the Union.

Dr. Henry Wireman Cook

Recently moved from Richmond, Va., to Baltimore, Md., where he goes to accept a position on the Medical Staff—in exactly what capacity will not be determined until fall—of the Johns Hopkins University. He has at the present time position as Chief of Medical Clinic in the Hospital, and of the Phipps Dispensary for the Treatment of Tuberculosis. In connection with his teaching next winter, he has planned some clinical research work in the wards of the Hospital.

Dr. Cook, although in Richmond for only two years, had succeeded in making his influence among medical men felt, and his work in stimulating movement for the prevention of tuberculosis, as well as his investigations with the sphygmotonometer of the early recognition of hypertension of the pulse, etc., were well known.

Infection of the Prostate From the Urethra.

In a paper by Dr. F. Bierhoff, of New York, read before the American Urological Association, June 9, 1904, the author deals with the cause of the spread of the infections from the anterior urethra over to the posterior urethra

and prostate, and the cause of the fact that, in the majority of cases of prostatitis, the inflammation runs so mild a course. As a result of the examination of a large number of cases he has reached the conclusion that the determining cause of the extension of the inflammation, in a large percentage of the cases, lies in the existence of chronic congestion of the posterior urethra and prostate, prior to the gonorrhœal infection of the anterior urethra. Tests of the reaction of the prostatic secretion, in a series of cases, showed him that the secretion is almost always decidedly alkaline, and he believes that the *alkalinity of the secretion* is the condition which is responsible for the generally mild course of gonorrhœal prostatitis, in that it temporarily inhibits the activity of the germs and acts as a *natural protection* to the prostatic tissues.

He further discusses the symptoms and treatment of the various forms of prostatitis, of gonorrhœal origin, and gives, in detail, a report upon 62 cases seen by him in private practice.

The University of Virginia

List of *Graduates of Medicine* was given in the June 23rd, 1905, issue of the *Virginia Medical Semi-Monthly.* Since then, we have received from the Registrar announcement of the hospital appointments as follows:

Chief of Clinic at the University of Virginia Dispensary, Dr. K. Bradford, of Montgomery, Ala.

Central State Hospital, Petersburg, Va., Dr. Micajah Boland, Lawyer's, Va.

St. Vincents Hospital, Norfolk, Va., Dr. Fred. W. Barger, Shawsville, Va.

Protestant Episcopal Hospital, Norfolk, Va., Dr. A. W. Tucker, Norfolk, Va.

Philadelphia Polyclinic Hospital, Philadelphia, Pa., Dr. James Tate Mason, Lahore, Va.

Interne University of Virginia Hospital, Dr. C. H. Hogan, Charlottesville, Va.

Externe University of Virginia Hospital, Dr. R. P. Bell, Staunton, Va.

The Medical Examining Board of Virginia

Held examinations June 20-23, 1905, inclusive, in one of the large lecture halls of the University College of Medicine, Richmond, Va. Over two hundred applicants were in attendance, many of them, however, taking only partial examinations. The proceedings, together with the results of the examinations, will be published in the columns of this journal as soon as the report is received. It will necessarily take several weeks for the Secretary to hear from each of the various examiners.

As there seems to be some misunderstanding of the reciprocity feature of the Virginia Board with other State Medical Examining Boards, it may be well here to state that the Medical Examining Board of Virginia reciprocates with the Boards of Maryland, Delaware, Illinois, Indiana, New Jersey and South Carolina in the case only of graduates *who have passed* one of the above Boards *since* June of 1904.

The next meeting of the Medical Examining Board of Virginia will be held in Richmond, December 12, 13, 14 and 15, 1905.

The Tazewell County (Va.) Medical Society

At their regular annual meeting on June 28, 1905, elected the following officers for the year 1905-'06: President, Dr. J. P. Haller, Pocahontas, Va.; First Vice-President, Dr. Isaac Pierce, Tazewell, Va.; Second Vice-President, Dr. R. M. Witten, Graham, Va.; Drs. C. T. St. Clair and W. I. Painter, both of Tazewell, Va., were re-elected respectively Secretary and Treasurer.

The subject for general discussion for the meeting August 28, 1905, is to be *Diphtheria.* Dr. Chas. A. Easley, Bluefield, W. Va., was designated as the leader with a paper on antitoxin.

Vacancy in Position of Surgeon at V. M. I.

The position of Surgeon for the Virginia Military Institute is now vacant, but will be filled by September 1, 1905. Anyone interested should communicate at once with Dr. John N. Upshur, member of the Board of Visitors, Richmond, Va.

Dr. David Webster,

Of New York city, has moved from 327 Madison avenue to 308 Madison avenue.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 8. Whole No. 224. RICHMOND, VA., JULY 21, 1905. $2.00 a Year. 10 Cents a Copy.

Original Communications.

TREATMENT OF BURNS AND SCALDS.*

By E. M. MAGRUDER, M. D., Charlottesville, Va., Local Surgeon Southern Railway Company.

The frequency of burns and scalds in railway surgery and the suffering experienced by the patient during the time of treatment, afford sufficient excuse for the presentation of this paper.

The burns and scalds encountered in railway surgery occur principally among the employees of the company as engineers, firemen, conductors, brakemen, workmen in the shops, etc.; rarely are passengers the victims. In an experience of nearly five years as railway surgeon I do not recall the treatment by me of a single passenger for either of these injuries. Railway employees are, as a rule, men in the prime of life, of sober habits, of good physique, and free from constitutional disease; hence they make good patients and recover rapidly when placed under favorable conditions. They are also almost invariably men of pluck and endure discomfort and pain remarkably well and patiently.

The prognosis, it is generally believed, depends more upon the extent of surface involved than upon the depth of the injury, and I do not dispute it. This is due to two things: (1) The greater the amount of surface injured the greater the amount of shock—as there is a greater proportion of sensory nerve fibres distributed to tht skin than to the underlying parts, these fibres being the agents for the transmission, to the cerebral center, of the depressing influences that cause shock; and (2) the skin being one of the principal excretory organs, the greater the amount destroyed the less the amount of excretion through the surface and consequently the greater the amount of systemic poisoning from retained excrementitious matter. In my opinion, an involvement of one-fourth of the surface places the patient in jeopardy of his life though many so injured recover. Any increase over this amount of injury seriously augments the danger, and when it reaches one-half of the body surface a fatal result may confidently be looked for, although even under these circumstances recovery has been reported—but with what a life in prospect!

When death occurs, it is due either to shock, sepsis, or to that more or less hypothetical condition called *duodenal ulcer*, of which all of us hear but which very few ever see.

The chief features of these lesions are:

(1) They cause great suffering;

(2) They generally involve a large extent of surface;

(3) They generally have a large amount of foreign matter, as dirt, cinders, engine grease, etc., ground into them; hence they are all in the nature of *infected wounds*.

I see no necessity for the division of these injuries into the so-called "degrees" of authors, and I will not attempt it.

The indications for treatment ars:

(1) Relieve pain.

(2) Combat shock.

(3) Cleanse the lesion and keep it clean.

(1) The pain and suffering accompanying burns and scalds are excruciating—more so than in any other injury, being often out of proportion to the extent of the injury, and they demand *immediate* attention. At the same time this indication is the most difficult one we have to meet. A hypodermic injection of *morphine* (without atropine) should at once be given and the patient allowed to inhale chloroform or ether until the morphine takes effect. Then something should be done to prevent the contact of air with the injured part. (The manner of doing this will be described later on.)

(2) The shock attending an extensive burn or scald is sometimes profound; it is also some-

*Read by title before the Association of Southern Railway Surgeons, in session May 2-4, 1905, at Chattanooga, Tenn.

times a factor to be reckoned with in injuries of moderate severity.

In the treatment of shock the recommendations of Crile, who has recently been investigating this condition, seem most rational and practicable and yield the best results. Crile's recommendations are based upon the assumption that in shock it is not the *heart* that is at fault, but the *vasomotor centre* which is in a state of depression and exhaustion, and that the consequent lowering of vascular tension is responsible for the alarming symptoms that follow. The following is the treatment recommended for shock:

(a) Hypodermic of morphine to restore nervous equilibrium, which has been itnerfered with or destroyed.

(b) Compression by means of bandages (I would suggest over sheet wadding) applied to all the sound parts of the trunk and extremities, the object being to give support to the relaxed blood vessels.

(c) Injection of normal salt solution, warm, about one quart, into a vein, the purpose being to raise vascular tone by filling the relaxed and dilated vascular system.

Strychnine and digitalin, on account of their effect in raising arterial tension, may be tried in cases of great severity; however, Crile found them of no benefit, though in mild cases they seemed to be of some service. Atropine, nitroglycerine and alcohol are positively condemned by this observer, probably because they lower arterial tension.

(3) As before stated, all burns and scalds are really infected wounds, and they should be so treated. As soon then as reaction from shock has advanced sufficiently the injury should be *cleansed* as thoroughly as posisble. This is extremely painful and it is often necessary to administer an anæsthetic, which I unhesitatingly advise. The injured parts should then be gently and carefully washed with warm sterile water and some mild sterile soap, all foreign matter being removed and loose necrosed pieces of skin clipped off. The whole surface should now be douched with warm sterile normal salt solution (one teaspoonful to the pint). Weak bichloride of mercury solution (1 to 8, 10, 12 or 16000), or boric acid solution (one teaspoonful to the pint), both warm, may be used only when the injured area is not very large; but they both cause too much pain to be used on extensive areas.

After the parts have been rendered as nearly sterile as possible, any blebs or vesicles present should be evacuated by puncture with a sterile instrument and the uplifted skin allowed to fall back in place as a protection against irritation and infection. The whole surface should now be gently sponged with a piece of dry sterile gauze in order to remove any remaining solution. The injury is now ready for the dressing, and upon the kind of dressing used will depend the future comfort of the patient. There are three requisites for a dressing that is to be applied to a burn or scald:

(1) The dressing should be sterile.

(2) The dressing should be comfortable.

(3) The dressing should be one that does not stick and that can be easily removed without causing pain.

In the treatment of burns and scalds, *making the patient comfortable* is a sine qua non, and is even more important than rendering the injured parts aseptic, though the latter should be aimed at, of course. I am, moreover, positively of the opinion that these injuries cannot be treated comfortably without the use of *oleaginous preparations.* There is always a profuse discharge—at first serous and then sero-purulent which saturates the dressings, then dries, and causes them to become harsh and to stick, especially around the edges, which renders removal extremely painful and exhausting. Now the use of oily preparations with gauze and cotton obviates this in a great measure; but the dressings should be changed frequently as there is still danger of the drying and sticking process.

The best method of dressing these lesions, that I have ever employed or seen employed, is the following:

There is now on the market a preparation, proprietary no doubt, called "emoleo." It is really, I believe, a mixture of zinc stearate and olive oil with the ocular appearances of a thick, white, emulsion that flows with difficulty from the bottle. It is claimed that it is sterile and my experience seems to justify this claim.

"Emoleo" is freely poured over the injured surface and the sound skin for 2 or 3 inches around; it is absolutely non-irritating, pleasant and grateful to the patient. The whole "emoleoized" surface is then covered with a sheet of rubber tissue or oiled silk made sterile by being soaked in a solution of formalin or bichloride of mercury and then wiped dry with

a sterile towel; over this protective covering, which should have slits cut in it for drainage, sterile gauze and cotton or cotton alone is placed and the whole retained by a roller bandage.

In cases with much raw surface there is always more or less suppuration and the dressings should be renewed at least once daily (sometimes twice, as occasion may require): later on it may be done less frequently as the discharge diminishes in amount.

The covering of rubber or oiled silk is non-absorbent, allows little if any drying, and keeps the parts underneath moist; hence there is no sticking of the dressings to the raw surface or skin, and the whole dressing peels off without difficulty and painlessly as soon as the retentive bandage is removed.

It may be urged as an objection that the impervious covering may cause an accumulation of discharge under it and on the raw surface; but this has not been my experience; the discharges flow off under the edges of the covering and through the drainage slits, and are absorbed by the gauze and cotton.

No powder of any kind should ever be put upon a freely discharging surface, as it leads to the formation of crusts beneath which infective agents find a haven and culture medium. Later on when the discharge has almost ceased and the surface has become aseptic, powders are very useful and should be used. I prefer for this purpose pure powdered talcum to all others, as it is drying, odorless, non-irritating and painless.

The first man I ever saw use the impervious protective mentioned above was Dr. W. M. Randolph, of Charlottesville, Va., whose record for good, honest, thorough, successful work in surgery is unsurpassed by that of any man I know.

In the old days a favorite dressing was "carron oil" freely poured on the injured part and covered with cotton or soft rags held in place by a roller bandage. This made a very good, comfortable dressing and one that could easily be removed without pain. With the rise of antiseptic and aseptic surgery, however, it came into disrepute when all dressings of a greasy nature were condemned as non-sterile, germ-entangling and filthy, and because it rendered a wound difficult to keep clean and, in spite of the oily nature of the mixture, the dressings would stick when the discharge was profuse. For my part, I see no reason why carron oil may not be rendered sterile and used with the protective covering and sterile gauze and cotton and retained as a valuable agent in our armamentarium.

Picric acid, so highly recommended, I have tried only to abandon it on account of the smarting pain it causes and the staining of whatever it comes in contact with, the stains being difficult to remove.

The dressing of these injuries by simply dusting with some powder and applying gauze and cotton is too barbarous to be even considered in this connection; and the same may be said of such antistptic washes as bichloride of mercury, carbolic acid, formalin, Creolin, lysol, etc. I have known even boric acid solution to cause intense suffering. Later on, however, in the course of the treatment, after granulation has become well established, the injured parts lose their sensitiveness, and these latter washes may be used.

SOME CLINICAL CASES.*

By PEYTON GREEN, M. D., Wytheville, Va.,
Secretary and Treasurer Southwest Virginia Medical Society, etc.

In lieu of a special paper, which I was unable to prepare for want of sufficient time, I have made a few notes of some cases which have recently come under my care.

Some time ago, I was consulted by Mr. W. R. A. with reference to a child in whose air passages a bean had lodged. The child, a little girl eighteen months old, was brought to my office, after a ride of eight miles from her home across a mountain. The history of the case was as follows: On the preceding day about eight o'clock in the morning, thirty-eight hours previous to the consultation, she was sitting on the floor near her mother who was cleaning some dried beans. Suddenly the little one put her hand into the bucket of beans, and before her mother could prevent her; she had gotten a number of them into her mouth. Her mother attempted to open her mouth to remove them and she began to cry, and during inspiration one of the beans was drawn into her larynx. She immediately commenced to cough and choke and to struggle to get her breath, becoming almost black in the face, as stated by the mother. Dur-

*Read before the Southwest Virginia Medical Society, Pulaski, Va., July 4–5, 1905.

ing this time she was beaten in the back, held up by heels, splashed in the face with water, and subjected to other useless manipulations and indignities. After a while her breathing improved, the resting spell, however, being succeeded by another period of coughing and choking. This condition of alternate rest and spasm of the glottis continued with longer or shorter intervals until she was operated upon. A physician was called, who administered ipecac. This produced considerable nausea and vomiting but no other result. The child's condition grew worse that day, the succeeding night and the following day, and, late in the evening, it was decided to bring her to Wytheville. When I saw her at ten o'clock at night her pulse was 146 and her respiration 45. She was cyanosed, and her breathing was audible a hundred feet away. Auscultation disclosed the presence of a foreign body in the trachea. I made known the gravity and urgency of the case and advised an immediate operation. To my amazement, it was declined. I attempted to impress upon the parents the absolute folly of procrastinating, and the father consented to an operation, but the mother persisted in refusing to have the child's throat cut, as she expressed it. After much valuable time had been consumed and I had despaired of getting their consent, the parents agreed to have an operation done. The child was hastily taken to the Wytheville Sanitorium, and, with the assistance of several physicians, among whom I recall Drs. J. T. Graham and W. S. Sayers, I did a tracheotomy under chloroform. At this time the child was apparently almost lifeless, and the operation seemed to be a forlorn hope. When the rings of the trachea were divided, there was at first no inspiration, and we thought the patient dead, but as soon as some mucus, which blocked the opening, was dislodged, she breathed quite well. The constant irritation of the bean had produced a considerable amount of thick ropy mucus, and when this had been removed from the trachea, the latter was thoroughly searched to its bifurcation, but no bean was discovered. The child made a quick recovery, and is now well and strong. It is probable that the bean was above the opening in the trachea at the time of the section and was coughed up and swallowed when the spasm was relieved by the ingress of air to the lungs.

Mr. R. C. A., age 65, consulted me March 20th, about a sore upon the glans penis, which had first appeared about eighteen months before. He was treated for several months by local physicians, who finally advised him to go to Richmond for treatment, as the case was probably one of malignant disease. At the Memorial Hospital a diagnosis of cancer was made. He was given X-ray treatment by Dr. Ennion G. Williams for six or eight weeks with no benefit, and was then advised to have an amputation done. He refused to do this and returned to his home about ten miles from Wytheville. In the course of a few weeks he came to see me to get some medicine to heal up the sore. Having learned the history of his case and the diagnosis which had been made, I advised him of the utter uselessness of medicine and endeavored to impress upon him the importance of an immediate amputation. He refused an operation at this time and went home, but in about a week he returned to have the amputation done. As the patient had a mitral regurgitation and an emphysema, it was deemed inadvisable to give a general anæsthetic, and the operation was done under cocaine. The pain was only trivial, and the patient was not conscious of when the section was made. The penis was amputated about three-fourths of an inch from the pubes. The corpora cavernosa were cut through perpendicularly, as was the corpus spongiosum, until the uretha was exposed. The urethra was then dissected out and a posterior flap made of the corpus spongiosum. This flap was drawn over the severed ends of the corpora cavernosa and stitched to the dorsum of the stump, the urethra having been drawn through and opening in the flap and stitched to the edges of the opening. There was no involvement of the inguinal glands. The wound healed without infection, and the patient has had no inconvenience since. At no time after the operation was it necessary to use a catheter. The pain, vesical tenesmus and constant desire to micturate have entirely disappeared. Before the operation he had a history of urinating eighteen or twenty times a night. He has increased in weight and strength, sleeps well, has a good appetite and works on his farm. When I saw him a few days ago, he asked if he might use the stump for copulation and remarked that he had had a night emission since his recovery. I negatived the use of the stump.

Mr. J. A. D., aged 48, was injured some time since at a saw mill. While attending to his duties as sawyer, he was thrown backward with

considerable violence and fell upon a large iron roller, striking upon the occipital protuberance. A large scalp wound resulted from the fall, but no external fracture was diagnosed. He was rendered immediately unconscious and remained in this condition thirty-four hours. There was hemorrhage from the nose and each ear and quite a large amount of blood was lost. I did not see him until his return to his home, as he was treated by Drs. Crockett and Cornett, of Max Meadows. When he came under my care eleven days after the accident, there was great prostration, excessive vertigo, tinnitus aurium, a confusion of ideas, deafness in each ear, and an exaggerated divergent and upward strabismus of the left eye. There was also considerable dilatation of the pupil, a partial ptosis and absolute immobility of the eyeball, which was as fixed as if it were ankylosed, were such a condition possible. Under practically no treatment whatever except rest, which was strictly enjoined, and the use of tonics, especially the nitrate of strychnia, this patient has almost entirely recovered. There remains a very slight squint, which is gradually growing less, the tinnitus is seldom noticed, and there is no vertigo, except upon stooping or prolonged exercise.

Last February, while an almost unprecedented sleet was upon the ground, Mr. P. R. K., aged 25, was "snaking" some firewood from the woods to his home. "Snaking," as some of you probably know, consists in dragging saplings and small trees, which have been denuded of their limbs, along on the snow or sleet, instead of using a wagon or sled. Mr. P. had the large or butt end of a sapling on his shoulder and was dragging it down the mountain. It was a piece of green timber, and the butt end was nine inches in diameter. With this weight upon his shoulder he slipped and fell, his face striking the ice and the butt striking him upon the back of the head and making a contusion over the occipital protuberance. Unconsciousness supervened at once and he was found in this condition in about ten minutes by a boy who was "snaking" also and was returning for another load. He was bleeding profusely from the nose and from the left ear, the blood having melted a hole an inch to an inch and a half in diameter through five inches of ice and having burrowed a considerable distance under it after reaching the frozen earth. The temperature at the time of the accident was only twenty above zero, and during the night before the thermometer had registered five degrees below zero. This leads me to suppose that there must have been an enormous hemorrhage for the blood to have melted so much ice at such a temperature. The measurements were made by me in person. When I saw the patient an hour and a half after the accident, he was conscious, but dazed and inclined to be very drowsy. He spoke only when addressed and then in monosyllables. Both eyes were closed; his respiration was deep and somewhat irregular and stertorous; his pulse weak, rapid and thready; his legs were flexed upon the thighs and the thighs upon the abdomen. There was some oozing of blood from the right ear, and this continued until the next night. Upon careful examination no external fracture was discernable. There was a complete ptosis of the left eye-lid and an extreme dilatation of the left pupil, the iris appearing as a mere ring around it. The right pupil was contracted, but responded to light, but the left was fixed and did not respond, even when a candle was held almost against the eyeball. The left eye had a marked divergent squint and was immovable. There was no appreciable deafness in either ear, but there was pronounced tinnitus in the right. The patient had marked vertigo, nausea and vomiting, a severe frontal headache and intense photophobia.

On the day following and for several days afterwards, he suffered with excruciating pains in his thighs and legs of such intensity as to require an anodyne for his relief. With the exception of a bromide and strychnia and subsequently a tonic, he was given no medication. To-day, nearly five months after his fall, he is well, although there is some dilatation of the left pupil. The ptosis, squint and vertigo have disappeared, and the patient has regained his strength and resumed his daily vocations. I have called these cases fractures of the base, because they seemed such to me. I have mentioned them because of the singular similarity of the symptoms and also to emphasize what we all know, that our gravest cases sometimes recover with a minimum of medication.

Mr. W. M. H. called me on the phone some nights ago to come five miles in the country to see his wife who had indigestion. When I reached his house I found his wife was aborting. In a short while I delivered her of a fetus and a placenta, which were extruded almost simultaneously. The patient was apparently

about three months advaneed in her pregnancy, judging by the size of the fetus, which had evidently lost its viability a number of days before, as putrefactive changes had taken place. In examining it I detected a complete knot in the cord, which would most effectually have cut off the blood supply, and it is to this cause that I attribute the death of the fetus. I am fully convinced that the knot did not become tied after delivery. This must be an unusual occurrence, and it is one which has never before come under my observation, nor have I ever read of a similar case. ,

On the 26th of last April, Robert Matthews, a white boy 12 years old, in jumping from a moving freight train, upon which he was a trespasser, was thrown under the wheels and both of his legs were cut off just below the knee. His legs were fearfully mangled, but he received no other injury except a cut above the left eye. When I saw him, I considered his condition practically hopeless, and I only operated because I knew that he must die shortly, if his legs were not amputated. I hastily summoned assistance and had the boy removed to a hotel adjoining the depot, where the accident occurred. In the dining room of the hotel, with the assistance of all the available physicians in town, I hurriedly amputated each limb just above the knee. Thanks to the constant hypodermic stimulation which was kept up by Dr. J. T. Graham, the boy survived the shock, the anæsthetie and the double amputation, much to the surprise of all present, I think. The amputations were done under such antiseptic precautions as could pertain under the circumstances, but infection occurred in each stump, and in about three weeks I had to resect each bone. The patient is now well except some soreness and tenderness of the stumps. He is, however, I regret to say, minus some length in each limb, which I fear is the result of my hurried amputations. Had he been operated upon more deliberately under aseptic conditions, I doubt if infection would have ensued. My only plea is that I did not think he would live whether I operated or not. Probably the next time I will take a more hopeful view of the case.

A month ago, Mrs. J. M. U. sent for me hurriedly, saying she was flooding to death, which came near being literally true. When I reached her bedside she was profoundly prostrated and almost exsanguinated, but rational. I could feel no pulse, and a hurried examination revealed that she was still bleeding. I inserted my right index finger into the cervix and grasped the uterus through the abdominal wall with my left hand. By this time the patient had relapsed into unconsciousness, from which she could not be roused. I was in dire straits, for neither hand could be used for the purpose of administering restoratives. I had sent to an adjoining home for some whiskey and when this arrived about an ounce was forced down her throat. I then recalled that Dr. W. H. Cassell was nearby dressing the stumps of the boy who had undergone amputation. I had him hastily summoned and he administered a hypodermic of strychnia. In a short while the uterus seemed to be very well contracted and I then tamponed the vagina with bichloride gauze through a bivalve speculum. By this time the patient had rallied somewhat and was feeling better but very week. The speculum had been left in situ during the hasty tamponing, and after waiting a considerable time, I removed the instrument, at the same time pressing upon the tampon with considerable force so as to keep it in place, but as a result of the removal of the speculum, the patient again collapsed and her condition was alarming in the extreme. Continuing the pressure upon the tampon, I applied ice to the abdomen and had the strychnia and the whiskey repeated. The patient's condition was so extreme and the prostration so complete, a fountain syringe and an aspirating needle were hastily procured and a quart of extemporized normal salt solution, a teaspoonful to the pint, was injected into the right flank. This acted admirably and the patient soon revived. I saw her again at nine o'clock in the evening, and she was doing well except for the pain following the hypodermoclysis. At eleven o'clock the next morning the tampon was removed from the vagina and with it a fetus and a placenta, the result of ten weeks of gestation.

ACUTE AND CHRONIC GASTRITIS, DIAGNOSIS AND TREATMENT.*

By M. O. BURKE, M D, Honaker, Va.,
Assistant to Clinical Medicine, University College of Medicine, Richmond Va; formerly a Demonstrator in the Microscopical Laboratory, etc.

Of all the organs of the human anatomy none is so much abused as the stomach. The

*Paper prepared for Southwest Virginia Medical Society, at Pulaski, Va., July 4–5, 1905.

higher the type of civilization, the greater the degree of imposition. But we hope that the day is not far distant when the scientists can tell us the exact composition of the different food stuffs, and can trace each step from the corn field, the slaughter house, the garden, and orchard to the preparation, the digestion, the assimilation and appropriation by the different tissues of the body.

If we had a sack of gravel like the chicken, or a compound stomach like the ox, we would have fewer ills from hurried deglutition, and more nights of natural rest.

No chemist would mix as many re-agents in one retort and expect to collect the separate compounds as the human chemist does three times a day. There are so many forms of stomach troubles that it is impossible to consider even the diagnosis of more than two or three in so short a time. We will briefly consider acute and chronic gastritis.

We are all familiar with the distressing vomiting of children during the summer season, with the blanched pinched features, the restless rolling movements followed by that limp, lifeless quiet so like death. And who has not heard the oft-repeated, "I never expect to take another drink, if the Lord will spare me this time."

Before taking up the diagnosis let us glance at the pathological condition of the stomach.

In the acute form we find the surface coated with thick, tenacious mucus; remove this and we find a hyperemic condition. Microscopically we find the crypts filled with mucus, the goblet cells distended, the tubular gland cells swollen, cloudy, often granular, and sometimes desquamated; the tissue between the tubules filled with leucocytes, the capillaries engorged, the sub-mucous tissue swollen.

From this condition you can easily conceive of all symptoms that might arise, from a slight nausea to a violent fit of vomiting. The tongue presents a white velvety coating, the lips are dry, sometimes there is herpes, the breath is heavy, sometimes there is a free flow of saliva, again it is scanty. Generally there is constipation, but there may be diarrhhea; frequently there is jaundice if the inflammation extends to the doudenum. The temperature is generally low but may arise to 102° or 103°. The extremities are cold, especially if there is much pain.

There is generally little trouble in making a diagnosis unless there is high temperature and delirium. The vomited material would aid us considerably both in diagnosis and treatment.

The stomach contents will give a decided acid reaction which is not due to an excess of hydrochloric acid, for the pathological condition is such that the physiological formation of acid is interfered with, while the chemical formation from the stomach contents is facilitated.

It is hardly necessary to test the digestive power of the stomach in this condition.

The treatment should be directed to emptying the stomach, dissolving the mucus, and relieving the engorgement. This can best be accomplished by alkaline irrigations and saline purgatives, followed by the restriction of diet.

The chronic forms of gastritis are the cases that cause the physicians as well as the patients so many sleepless nights.

The stomach being in such intimate connection with all the nervous centres, and in such close proximity to all the vital organs must necessarily share with them both their joys and sorrows. Gastritis, secondary to appendicitis, pelvic troubles, and diseases of the gall bladder is of too much importance to be considered with primary gastritis.

Osler has most cleverly classified the causes of chronic gastritis into three divisions: Dietetic, constitutional and local.

Dietetic. The most frequent cause is eating at irregular hours and as one of my patients says, "He eats like fighting snakes."

"The persistent use of too much fatty foods or of too much of the carbo-hydrates. The excessive use of tea, coffee, tobacco and alcohol"; and let me say here that alcohol even in moderation is a very potent cause of the sclerotic form of gastritis. "The use of ice water during meals plays no small part in causing dyspepsia."

Constitutional causes: All chronic diseases cause more or less gastritis.

Local conditions: Dilatation, ulcers and cancer are always accompanied by catarrh. Anything that interferes with the portal circulation will cause engorgement of the mucous membrane of the stomach, such as chronic diseases of the liver, lungs, or heart.

The morbid anatomy of the stomach in this condition presents the many different pictures peculiar to parenchymatous and interstitial inflammation, from a mild hyperemia to an exaggerated hyperplasia of connective tissue, and

almost complete atrophy of the mucous membrane.

The symptoms of chronic gastritis are as varied as the whims of a child, and as weird as the New York Stock Exchange.

A slight amount of irritation will cause nausea, a greater amount will cause pain, or vomiting, or both; or the nausea and vomiting may be due to absorption and the effect upon the nervous centres.

The surface of the stomach being coated with mucus and the gastric secretion being deficient, especially the hydrochloric acid, digestion must necessarily be retarded; and being retarded without a sufficient quantity of hydrochloric acid, it must undergo fermentation and decomposition generating lactic, acetic and butyric acids, and alcohol and gases.

"Peristalsis is delayed because of the absence of its natural stimulus, and thence follows a further retention of food. The natural consequence of such morbid condition is loss of appetite and even disgust for food, an unpleasant taste, coated tongue, foul breath, discomfort after taking food, nausea and vomiting"; eructations of gas and sour or salty fluid, sometimes pain, always a great deal of distension if there is much gas, diffused tenderness over the region of the stomach, usually constipated, frequently palpitation and shortness of breath, headache, vertigo, disturbed sleep; a depressed dissatisfied feeling, and even suicidal condition is often seen in chronic gastritis.

The chemical analysis of the stomach contents after a test-meal shows a deficiency of hydrochloric acid, pepsin and curdling ferments, and an excess of foreign acids.

From the quantity of the contents we can judge very accurately as to the power of the stomach in emptying itself.

From the odor we learn something of the fermentation and decomposition, from the chemical analysis we ascertain the kinds and quantities of the different acids.

By mixing a portion of the contents with small pieces of boiled white of egg and keeping this at normal stomach temperature we learn the ability to digest albumen.

By inflating the stomach with Hopkin's apparatus we can accurately measure the capacity of the stomach, at the same time we can outline it and diagnose its position.

By administering a capsule of iodide of potash and testing the saliva at short intervals we can ascertain the absorptive power of the stomach.

The diagnosis must be based on physical as well as clinical symptoms, and the treatment must be directed to the cause.

The treatment must be largely dietetic and hygienic. Regulate the habits, restrict the diet both in quantity and quality, stop the pernicious habit of eating so many different kinds of food at the same meal.

Give special directions as to what to eat, when to eat, how to eat.

If there is too much mucus, irrigate with something that will dissolve the mucus. As there is a deficiency of hydrochloric acid and pepsin, give the bitter tonics and stimulants to increase the secretion. Give hydrochloric acid to supply in a measure the deficiency.

Electricity will increase the secretions of the glands at the same time stimulate peristalsis.

Treat the constipation. If the stomach is hopelessly dilated, or if the pyloric orifice fails to let the food pass out, surgery is our only remedy.

In your treatment use few drugs, a little electricity, when necessary resort to the knife, but most of all use common sense reinforced by actual knowledge.

WHEN SHALL WE USE THE FORCEPS?*

By N. H. REEVE, M. D., Bristol, Tenn.

It is not my intention to enter into a discussion of disputed questions, as to the choice between forceps, version, or symphyseotomy, but to give my views in regard to the use of the forceps in ordinary obstetric work. There is a wide difference in the practice of physicians in regard to the time and frequency in the use of the forceps. Some resort to them early and often, while others delay their use until an exhausted patient warns them that something must be done to terminate labor.

When a student at medical college I was taught that lacerated birth-canals were frequently due to the hasty and indiscriminate use of the forceps, and since that time, after more than 25 years spent in the school of experience

*Read before the Southwest Virginia Medical Society, July 4–5, 1905.

and responsibility, has in no wise eradicated the impression that the forceps is a formidable and dangerous instrument. I will assume in these remarks, that the operator is competent, for no other should attempt their use under any circumstances except under the supervision of an experienced operator, and that no positive contra-indication to the use of the forceps is present. To determine when the forceps should be used it is important to consider the course of a normal labor, and the bad consequences of a too rapid, as well as a too slow delivery; that there is a great difference in the duration of practically normal labor, is a fact painfully familiar to the obstetrician.

The duration of labor in primapara, as you know, is considerably longer than in multipara, and the first stage of labor is much longer than the second; an average estimate is five-sixths first stage, and second stage one-eighth of the entire delivery. This relationship, however, is constantly altered; a short first-stage may be followed by a long second stage, reversing the rule. The records of the Philadelphia Lying-in charity show that out of 1,200 cases of natural labor, of which 792 were primipara and 408 multipara, the average duration of labor in primipara, first stage, was 13 hours and 9 minutes, second stage one hour and fifty minutes; while for multipara, first stage 8 hours and 48 minutes, second stage 1 hour and 15 minutes. It was also noticed that in a great majority of these cases, in which the second stage was considerably longer than the average, the perineum was torn, pointing to the fact that a prolonged second stage does not prevent the perineum from being torn. It is more liable to tear on account of the edema which occurs in a prolonged expulsion stage. It is rarely necessary to use forceps in first stage so long as the bag of water remains unruptured; if necessary at all it is to be determined by the condition of the mother. If the pains are so severe and prolonged as to interfere with the rest and nourishment of the patient, and the os does not dilate, nor membranes rupture, anodynes are indicated. If, however, the waters have escaped and no progress is made, and the patient is becoming exhausted, it is proper to dilate the os and apply the forceps. Before entering upon this procedure, however, administer morphine, gr. one-eghth, hypodermatically; this we know to be a most excellent heart-stimulant. Then under chloroform anesthesia proceed to dilate, using fingers and hand for this purpose, even to the extent of introducing the hand up to the thumb into the uterus, thereby not only getting a thorough dilatation, but outlining the exact position of the head, and arranging it for the high application of forceps. The time when this should be done is not to be specified in hours, but is to be determined by the condition of the mother and child. Owing to the injury which may result to the cervix and even to the uterus, their use should be delayed until an increasing pulse or temperature, or nervous exhaustion demands immediate relief. In addition to these conditions it is proper to apply the forceps during the first stage of labor, in case of convulsions and placenta previa.
tions it is proper to apply the forceps during the first stage of labor, in case of convulsions and placenta prev.

The high application of forceps requires much more skill than during the second stage, when the occiput presents close under the pubic arch; but fortunately the high application is rarely found necessary. In normal labor, when the os has become fully dilated the membranes rupture, or should be ruptured, the presenting part advances with more or less rapidity, depending on force of contraction.

The average duration of second stage, in primipara being about two hours, and in multipara about one hour, therefore, when labor is delayed beyond these limits, we must learn the cause for it, and consider the evil consequences of delay to both mother and child. A prolonged second stage is especially injurious to both. In this stage every contraction is attended with involuntary effort, and if unusually prolonged brings about anxiety and exhaustion, and favor post-partum hemorrhage from fatigue of the uterine muscle. Then, too, the experienced obstetritian will consider the long continued pressure of the head upon the soft tissues of the mother; the edema of the parts below the point of pressure reduces the vitality of the tissues, and favors laceration and infection; sloughing, with the distressing sequel of vesico-vaginal fistula. Injuries to the child vary according to the length of time and degree of pressure. They may be trifling, such as extensive succedaneum, and slight asphyxia, or of a grave character, as intra-cranial hemorrhage and death, or fatal asphyxia, from separation of the placenta before the birth of the child; and then, too, we do not know to what extent the

physical and intellectual development of the child may be impaired by a prolonged pressure. A too rapid delivery may be attended by a tear of the birth-canal, while, if too slow it is liable to result in the injuries just enumerated.

We may conclude form these premises, that when the os is fully dilated, all delay beyond the average time for delivery is attended with increasing danger to both mother and child. When labor is delayed beyond the average time, and is at the same time possible in the natural way, it is because of a lack of expulsive force—an insufficient force to overcome normal resistance; but this condition should not indicate the use of forceps, until after a sufficient use of oxytocics. Of these a 15 grain dose of quinine has my preference, and I have seen abundant evidence of its value in stimulating the flagging contractions; some prefer hydrastis canadensis, which is a powerful ecbolic, but its action is of centric origin and like ergot may produce violent uterine tetanus; cotton-root is also open to the same objection. Cimicifuga, fl ext., ½ to 1 dr. doses, will produce normal contractions. Sugar has been added to the list of ecbolic agents, and is said to be effective in 25 to 40 minutes, when given in doses of 1 or 2 ozs. dissolved in water. But I digress; insufficient force to overcome abnormal resistance, when there is an evident disparity between passage and passenger, when the head does not advance nor recede, and we have given the head time to mould, which should not be longer than one-half to three-fourths of an hour, it is proper to employ the forceps.

The first evidence of subsiding pains, increase of pulse or temperature indicate the use of the forceps, and their use should rarely be deferred beyond two hours if the head ceases to advance, and in such casesit should be noted whether the head recedes after a pain, because if it remains stationary for a considerable time, sloughing from pressure may result. If then the head neither advances with a pain, nor recedes after a pain the forceps cannot be applied too soon. To sum up this line of argument, it is a well known rule that each and every case, in every department of a physician's work should be treated on its individual merits, and nowhere does this rule apply with more force than in obstetrical work, but it is desirable to have some general rules to guide us in this work. So, then, our deductions from this paper should be, first, the forceps are rarely indicated in the first stage of labor before the membranes rupture; second, it may become necessary to employ the forceps during the first stage when the waters have escaped, on account of the increasing exhaustion of mother or child, or for accidents heretofore mentioned. Third, in second stage, it is proper to apply forceps one-half hour after the head ceases to advance and there is no disproportion between passage and passenger. Fourth, when there is a tight fit between the child and birth-canal, the use of the forceps should be delayed, but the delay should not exceed two hours after the head ceases to advance; and fifth, if the head neither advances nor recedes, the forceps should be applied promptly.

If you will excuse me, I will refer to the use of the hand as a diagnostic agent. We are indebted to Malcolm McLean, of New York, for some very valuable suggestions on its value in differentiating between normal and abnormal conditions. It is not enough in cases involving doubt or difficulty, to rely upon the mere insertion of the fingers within the vagina. The superior straight and the tissues of this region cannot be studied without the introduction of the whole hand into the vagina, and the moment the hand passes the constricting muscles of the vaginal orifice, the fingers become free to explore in all directions. The first thing to be noted is the condition of the parturient canal below the superior strait; the width, the degree of softness and distensibility, the moisture, etc. Then the pelvic walls may be readily outlined and approximately measured. An estimation of the diameters of the straits can be very satisfactorily made by a systematic manipulation. If the operator will previously ascertain the measurements of his hand in its different positions, he can establish a pelvimetre which cannot be equalled by any mechanical device. To illustrate the idea; the normal internal conjugate of four inches will just accommodate the hand with all the finger joints flexed—this way—the bulb of the thumb being pressed against the second joint of the index finger. If, however, the space between the sacral promontory and pubic symphysis will only admit of the same joints touching these points with the fingers extended, we have a measurement of 3½ inches, with thumb withdrawn, 3 inches; with the index, middle and ring fingers, 2½ inches. The measurements are not all its uses, for the presentation and position of the child can be set-

tled with a certainty obtainable by no other method, and as irregularities in the position of the head constitute a large preponderance of the difficulties in cases of dystocia, it is here that the intelligent use of the hand will do the most valuable service.

Having learned that the parturient canal is normal, the fingers can be carried up about the nape of the neck, and the exact position of the occiput can be learned. If a faulty position is discovered, as for instance, the occiput posterior, nothing would avert more surely a dangerous complication than to use the fingers and gently draw down and rotate forward, by a spiral motion, the occiput to a point where nature may safely complete the labor. In certain face presentations the head may be lifted, the occiput caught and brought down. For the safe application of forceps in the high position, the introduction of the hand is imperative, and many an injudicious application of this instrument may be averted by the timely warning given by the hand. We know that certain objections will be offered to all these manipulations of the hand within the woman's body, but a well trained hand is much safer in the mother's body than any mechanical instrument, and what shall be said when the instrument is in an untrained hand? The danger of introducing septic germs is an objection offered to this use of the hand; to this objection we will say that the operator who is unwilling or unable to sufficiently sterilize his hands for this work, is unfit to be trusted with an instrument of steel; without surgical cleanliness he is a living danger to the puerperal woman.

PHYSICAL THERAPEUTICS.*

By J. C. WALTON, M. D.. Chase City, Va.,
Resident Physician at "The Mecklenburg Hotel and Sanitarium," Chase City, Va.

In the short time at my disposal, it will be impossible for me to more than call your attention briefly to this most important and popular branch of therapeutics; and this paper is more a plea for, than an exposition on this subject.

*Read before the Medical Society of North Carolina during its annual session held at Greensboro, May, 1905.

In the spring of 1902, I introduced a resolution before the North Carolina State Board of Medical Examiners urging upon medical colleges the importance of adding this branch of therapeutics to their curricula. Unfortunately, the average medical student is so imbued with the cutting mania that very little interests him outside of the operating amphitheater. At the New York Post Graduate Hospital I have frequently observed that there would not be standing room in the operating amphtheater, while a master in hydrotherapy, like Baruch, or Morton in electro-therapy, would hardly have a corporal's guard to hear them lecture on a practical subject that would be of the utmost practical benefit to the busy doctor every day of his life. For the relief of many chronic diseases non-surgical in character the tendency is away from the knife. I will refer briefly to three of the most important physical agents, hydrotherapy, photo-therapy and electro-therapy.

Hydro-therapy.—To those interested in this important and neglected branch of therapeutics I refer to my paper at the Hot Springs, N. C., meeting in 1903. It is to be regretted that the charlatan and the quack have usurped this field, owing to the unwillingness of the profession to accord to it the recognition it so justly merits, and to apply to it the same rules of precision and accuracy that they do to other branches of medicine; for hydro-therapy, like all other medicinal agents should be used intelligently, with the greatest care and precision and the minutest attention to every detail.

Water is a very flexible agent and can be used at temperatures ranging from forty to one hundred and ten degrees, and as a change of five degrees in temperatures makes a marked difference in its effect it is apparent what an enormous latitude is offered us for grading its effect on the human system. The effects of water are due chiefly to its thermic and mechanical action and its irritating effect on the neurovascular cutaneous system. In institutions equipped with the Baruch system of baths, which gives the operators perfect control of the temperature, pressure, duration, etc., it is absolutely surprising what results can be obtained in the whole domain of pathology—its effects being tonic, eliminative and alterative—an ideal remedy when intelligently used and as far ahead of drug medication as an electric light is of a tallow candle.

Photo-Therapy or Light-Therapy.—This com-

paratively new agent has made wonderful progress in the last decade, but it is only a recent discovery that light contains chemical as well as heat rays—there being invisible rays at both ends of the spectrum. Those beyond the red are the heat rays, and those beyond the violet are the chemical rays, and stimulate the development of chlorothyl in plants and hæmoglobin in the blood of animals by increasing the oxidation processes in the cells. The composition of the spectrum of light is practically the same, whether its source be the sun or an artificial one. This is very important from a therapeutic standpoint, as sunlight is not always available; and the electric light, both incandescent and arc, is preferable to sunlight, since it contains relatively a greater number of ultra-violet or chemical rays, especially the arc light—the incandescent being used principally for their heat producing effect.

It is humiliating to admit that through all the ages we are just awakening to the importance of light as a therapeutic agent, especially as a remedy against that scourge of the human family, tuberculosis. I have listened to innumerable discussions before this body as to the value of this or that drug in tuberculosis, according to the then prevailing fad, only to find it replaced by another equally as good at the next annual meeting. Visiting some time ago one of the leading and best conducted tubercular sanitariums in this country, the physician in charge, a noted specialist, tersely summed up his treatment as follows: Life in the open air, with an abundance of sunshine and fresh air, plenty of good nutritious food, at least three square meals a day, the Baruch and static baths for their demonstratively proven effects by counting the cells before and after treatment in increasing and restoring the hæmaglobin and blood cells. All other apparatus and devices have been relegated to the garret. Electric light is nearly always available. Its rays being richer in actinic power than sunlight and not expensive, I would suggest their use in all sanitariums for the treatment of tuberculosis and other chronic conditions.

It has been demonstrated that tubercle bacilli plague bacilli, splenic fever spores, tetanus germs, etc., are all promptly destroyed by sun or electric light; and that the removal of poisonous materials including bacteria, is hastened by increasing the eliminations. Koch was the first to recognize the destructive influence of sunlight on bacteria, and Finsen later discovered that the ultra-violet rays destroyed the tubercle bacilli in lupus of the face, and that healing wth but little scaring followed its use, and to him we are indebted for the foundation of photo-therapy. Finsen, in 1898, treated smallpox with red light and found that patients thus treated recovered without pitting or scarring, and further demonstrated that light could be used apart from heat, the heat rays being eliminated with screens, running water, etc.; and that cold light was frequently as effective a therapeutic agent as light from which the heat rays had not been abstracted. t was also demonstrated that light would penetrate and pass through the body—certain rays being absorbed by the tissues; the others passing through and out. The more transparent to light the upper layers of tissue the more intense are its effects on the deeper layers; and all the internal organs are accessible to the influence of light, especially to the actinic rays. The general light bath, to which the whole body is exposed, the head outside, is a cabinet finished in white with a number of sixteen-power incandescent lights with two or more arc lights up to one thousand candle power. The temperature of the cabinet is regulated by increasing or diminishing the number of electric lights.

The light treatment has been found beneficial in a great variety of diseases, including rheumatism, chronic skin and parasitic diseases, anemia, tuberculosis, obesity and all conditions of faulty metabolism. The arc light is used in conjunction with X-ray treatment to prevent dermatitis and burns.

Morton claims by artificially producing flourescence in the human organism that the effects of the X-ray are much more deep and penetrating, and its therapeutic effects are very much enhanced, and frequently cure cases that failed on X-ray treatment alone. Morton's method consisted in saturating the system with a medicine endowed with the property of fluorescence or phosphorescence and then submitting the patient to the action of X-ray, or radium radiation, or high frequency currents, the object being to develop light in the tissues, in the confidence that the well known effects of this agency may be duplicated internally and thus exert specialized effects. He well says "that in science it seldom happens that ultimate truth is arrived at all at once."

Dr. Henry Bence Jones made the remarkable discovery that man and all animals possess in all parts of their body a flourescent substance resembling quinine and named it animal quinoidin. Rhoads and Pepper confirmed these experiments and advanced the original idea, based on blood examination in a number of cases, that a close connection existed between the diminution of animal quinoidin and malarial diseases. They, therefore, gave quinine to increase the flourescence of the tissue to its normal point. It is well established that quinine solution when subjected to light exerts a deadly influence on micro-organisms. Flourescence, then, is the property which substances have of absorbing visible or invisible rays and giving out visible rays. Sun light, electric discharges, ultra-violet light, the Rœntgen and Becquerel —all excite flourescence and phosphorescence. Morton believes that the effects of the X-ray may be due to the flourescence of the tissues themselves. His combined treatment is the X-ray, or radium, radio-active water, and flourescent fluids, and he regards flourescence as essential if one is to obtain the best results in the treatment of cancer, lupus, tuberculosis, Hodgkin's disease, eczema, psoriasis, etc. To produe flourescence, administer from five to fifteen grains of bi-sulphate quinine daily, according to physiological tolerance.

Electricity.—The prevailing prejudices against the therapeutic employment of electricity arise:

1. From the indifferent attention paid to it by the medical colleges.

2. An attempt to use it without the proper knowledge and training and the consequent failure resulting therefrom.

3. Failure from inefficient apparatus and prejudice created by its employment by quacks.

The great improvement in the quality of apparatus and the progressive growth of knowledge in regard to its practical application to therapeutics during the last few years has placed the science upon a plane in medicine equal to that occupied by electricity in the arts and sciences.

The science of electricity in all spheres is an exact science; its laws of action unvarying; a method or treatment or clinical results once demonstrated, it is always possible to duplicate the result in a similar case. Given a correct diagnosis in a condition in which it is indicated, we are never more certain of our prognosis than when applying electricity in an intelligent and technical manner. In therapeutics, we must consider the two features of each electric current, the amperage of current flow and the voltage or tension of the current. Nothing is more unscientific than to speak of electricity from any source as being comparable in its action from a current to another source. The common expression, "I have tried electricity," to the informed physician is meaningless unless the peculiar technique and modality employed has been described.

The galvanic or continuous current is usually employed as a chemical agent for minor surgical procedure, for electrolysis, to promote absorption, as in strictures, and the mercuric cataphoresis of Massey, as employed in the treatment of malignant tumors. Personal experience has thoroughly convinced the writer that more satisfactory results can be obtained from the static machine than from all other electrical sources combined. Of the various actions of these currents of higher potentiality, the first and most important of all is the induction of muscular and tissue contraction or vibration, influencing the removal of local stasis and restoring circulatory drainage and the normal processes in regions where stasis exists; secondly, relief of pain and reflex irritation due to the removal of stasis and congestions; third, the relief of muscular spasm; fourth, an acceleration of local metabolism. The efficiency of the various electric currents in overcoming local stasis and passive hyperemia are relative to their capacity to penetrate the tissues, with the additional quality of the current, by which it induces contraction without reference to the stimulation of motor points. In other words, the current which most effectively influences local stasis is a current of high potential, and a moderate rate of frequency, applied in as close contact as possible with the tissues which are in a state of congestion. The action then of the current is to produce periods of fibrillary contraction interrupted by short periods of rest, charge and discharge.

High frequency renders a current impotent to the induction in tissues of muscular contraction, except of a character which is entirely imperceptible and relatively inefficient for the purpose of relieving the grosser conditions of local stasis. For such an action an energetic force is demanded, *avis-a-tergo.* A current of lower frequency, other things being equal, ren-

ders the amplitude of the discharge capable of penetrating into the deeper tissues involved in congestive processes, thereby overcoming the conditions which act as a bar to recovery—and induration for which nature has but feebly provided a means for removal. No measure has proven so valuable in my experience in the treatment of these conditions as the static wave current, applied directly over the local condition, followed by the brush discharge or sparks when indicated.

Snow, has demonstrated that in the earliest stages of acute inflammatory affections due to local infections, such as abscesses, boils, tonsilitis, felons, etc., the processes will be aborted by the early application of the proper electrical modalites—the action being due not only to the removal of local stasis but also to the induction of a more active local phagocytosis, which disposes of the infectious element, thereby relieving the tissues.

I regret that lack of time prevents my reporting a number of cases of acute and chronic sciatica, chronic prostatitis, asthma, neurasthenia, insomnia, rheumatism, gout and a variety of nervous and painful conditions which were relieved by the application of the wave current, brush discharges and sparks.

Authorities referred to: Baruch's Hydrotherapy; Snow's Static Electricity; Morton (Lectures) N. Y. Post Graduate Hospital; Cleaves (Lectures) N. Y. School of Phy. Ther.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE VII.

Vegetative Capacity of Tissue; Repair of Tendons, with Description of Tenorrhaphy and Tenoplasty; Repair of Muscles—Muscle Suturing; Repair of Surface Epithelium, with Details of Three Methods of Skin Grafting.

The different tissues of the body vary in their ability to effect repair after injury. In other words the formative cells of some tissues have a greater power of proliferation than the formative cells of other tissues. On this fact is based the estimate of a tissue's vegetative capacity. As it is important for the surgeon to know the probability of repair after accidental injury, and to be informed so as to plan his incision in operative work with reference to the ability of the tissues to heal promptly and with a satisfactory cicatrix, the regeneration of special tissues is a subject of practical interest.

The vegetative capacity of a tissue is dependent largely upon two factors, first on the richness or paucity of its blood supply, and second on the high or low development of the cell that enters into its formation. Other things being equal, the more bountiful the blood supply the higher the vegetative capacity, for while the cellular elements of the blood never take an active or permanent part in tissue production, the blood plays an important role in providing fibrin by which the surfaces of the wound are temporarily agglutinated and in supplying nourishment to the formative cells whose multiplication results in the final restoration of the part. Thus, for instance, owing to the difference in the blood supply, wounds on the fingers heal more quickly than wounds on the forearm, and wounds on the face more quickly than wounds on the neck. Again, tissues composed of cells of low development have higher vegetative capacity than tissues formed of cells more complex in structure. As is well known to students of histology some tissues are composed of cells so simple in form as to be almost elemental, while other tissues are composed of cells exceedingly complex. It is natural to infer that cells of simple structure would be more rapidly reproduced than cells of high development, and such is the case. Wounds inflicted on the skin or fascia heal much more readily than wounds inflicted on the nerves or muscles. It is a practical fact that under favorable circumstances injuries to surface epithelium and all connective tissues, such as fascia, tendons and bone undergo perfect repair, while injuries to the brain, nerve trunks, striated and unstriated muscle tissue and glandular structure are usually restored by metaplasia, or the substitution of connective tissue cells for those of the original structure.

REPAIR OF TENDONS.

Tendons are composed of white fibrous connective tissue and are designed to economize

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

space in the attachment of muscles. Tendons, while much smaller than their respective muscles, are the stronger of the two structures. Tendons are encased in a fibrous sheath and move without friction owing to lubrication with synovial fluid. If a tendon is cut, there is temporary or permanent loss of the function of the muscle with which it is connected. Tendons have high vegetative capacity and frequently there will be restoration of continuity when the divided ends are separated as much as one or even two inches. When a tendon is cut the divided ends retract in their sheath and hemorrhage occurs sufficient to fill the gap with a cylindrical clot. The formative cells or fibroblasts on the inner wall of the tendon sheath and on the cut end of the tendon proliferate and form embryonal cells or granulation tissue which infiltrates and permeates the blood clot. These cells undergo vascularization and later cicatrization. The blood clot is ultimately replaced by white fibrous tissue.

TENORRHAPHY.

Primary tenorrhaphy consists in the suturing of a tendon shortly after it is cut. It is done by exposing the retracted ends of the tendon and uniting them by means of chromicized catgut. The part should then be placed in the position calculated to give least tension on the sutures and immobilized in a plaster dressing. Secondary tenorrhaphy consists in the suturing of a tendon some weeks or months after its division. Owing to the contraction that has usually taken place the operation commonly necessitates tenoplasty or the resort to expedients to lengthen the tendon. The part should be rendered bloodless by means of an Esmarch's bandage, and the ends of the tendon sought for and exposed. If they can be brought together without undue tension they should be revivified and sutured. If such is not the case a flap should be cut from each end and the flaps united to each other. If a tendon is not severed, but simply contracted, it may be treated by splitting it lengthwise and cutting through each half on opposite sides and then suturing the resulting extremities.

REPAIR OF MUSCLES.

Muscles are of two types: The unstriated and the striated, the first not under control of the will and doing the work or organic life; the second acting in obedience to volition and performing animal functions. It is unnecessary to go ito the histological structure of the two cells. All that is necessary for present purposes is to say that the long, fusiform unstriated fibres are arranged in broad sheets and envelope the hollow viscera, such as the stomach and intestines, while the cylindrical striated fibres are gathered into bundles and form the skeletal or muscles of locomotion. A muscle being composed of cells of a high order of development is a tissue of low vegetative capacity. In fact, for a long time it was not beleived to have any regenerative power but it was thought that injuries inflicted were repaired exclusively by the production of connective tissue and the formation of a fibrous cicatrix. More careful investigation has shown, however, that muscle tissue both striated and unstriated has a limited power of reproduction, and the formative cells demonstrated to exist are termed sarcoblasts. When a muscle is cut, and the ends retract for a distance of one or two inches, the amount of new material necessary to bridge the gap is too great for the vegetative capacity of the structure to supply, and repair is effected by metaplasia, or the substitution of connective tissue. If, however, the cut surfaces are brought together and maintained in apposition the sarcoblasts proliferate and form new cells sufficient for repair; and the cells undergoing vascularization and cicatrization, there is ultimate healing with anatomical and physiological restoration of the part. When a muscle is ruptured or cut it is as much the duty of the surgeon to suture the divided ends as it is his duty to unite a tendon or reduce a fracture. An incision should be made if necessary; the surfaces of the muscle brought together by mattress suture of absorbable material, and the union made secure by separate stitches in the fascia. The part should then be placed in a position to relax the sutured muscles and immobilized by a suitable mechanical appliance.

REPAIR OF SURFACE EPITHELIA.

The skin and mucous membrane are formed of epithelial cells. As the cells are simple in structure and as the tissues are bountifully supplied with blood, their vegetative capacity is high. Repair after injury takes place by the proliferation of the nearest formative cells and the production of new cells. The nearest cells are either in the margins of the wound or at the base of hair follicles, which is superficial injuries, such as a slight burn, often escape destruction. If the formation of epithelium be watched on a granulating surface the new cells

will be seen creeping in from the margins of the wound, and occasionally developing as islands from buried deposits of pre-existing epithelial tissue. The new cells are at first pale and resemble the "skin" of an egg, but later undergoing cicatrization become transformed into true skin or mucous membrane. If the area to be covered is small, repair is usually rapid and complete, but if it is large repair often progresses to a certain point and then ceases. In the one case the capacity of the formative cells is sufficient to meet the demands made on them; in the other the amount of material required is more than they can produce. When the destruction of skin is so extensive that the normal reparative power is insufficient to cover the granulating area with epithelial cells, recourse must be made to skin grafting. It has long been known that bits of cuticle properly planted on fresh wounds or healthy granulating surfaces would become adherent and grow. The application of this fact has enabled the surgeon to heal wounds quickly and certainly which otherwise would be slow to close, or perhaps become permanent ulcers.

SKIN GRAFTING.

Skin grafting, when practiced on newly made wounds, is called primary grafting. When practiced on granulating surfaces it is called secondary grafting. If the surface be a fresh one care must be taken to perfectly arrest hemorrhage before applying the grafts; otherwise bleeding will detach them. If the surface be an old one care must be taken to stop suppuration before applying the grafts; otherwise pus germs will devitalize them. Skin grafts may be obtained from the patient and then are called autografts; they may be cut from another person and then are called heterografts; or they may be secured from an animal and then are called zoografts.

There are three recognized methods of skin grafting: Reverdin's, consisting in cutting small particles from the superficial layers of the skin with scissors and planting them at intervals over the surface to be covered. Thiersch's, consisting in cutting broad strips from the superficial layers of the skin with a razor and placing them so as to completely cover the wound area; and Wolfe's, consisting in the dissection of a piece of skin the entire thickness of the structure and fitting it to the defect to be remedied. The dressing after any of the above methods consists of a lattice work of strips of rubber tissue over which is placed a pad of gauze wet with normal salt solution. This should be removed and replaced at the end of the third day. The instruments required for skin grafting are so few, the operation itself so simple, and the results secured so immediate and satisfactory that the surgeon who does not avail himself of it in suitable cases does an injustice both to himself and to his patient.

Primary skin grafting should be employed after the removal of an epithelioma or other superficial growth, provided infection can be prevented, hemorrhages arrested and ligatures and sutures avoided. Secondary skin grafting should be employed when ligatures are used to arrest bleeding, or sutures to secure partial coaptation; where infection is likely or already exists, or where the excavation is deep and a large amount of granulation tissue is necessary to fill it.

1. *Reverdin's method* should be employed when the area to be covered is small, and where the administration of a general anesthetic is contra-indicated. The surface to be grafted and the site from which the grafts are to be taken should both be properly prepared. The skin is then elevated into a cone by means of a sharp tenaculum and a small piece snipped from its superficial layer by means of a pair of curved scissors. The fragment is at once transferred to the area to be grafted and carefully seated on the granulations, care being taken to prevent the edges from curling inward, thus preventing apposition of raw surfaces. This is repeated until a sufficient number of grafts have been planted to thickly stud the bare area. The operation of cutting the grafts can be made painless by the use of the chloride of ethyl spray. The above method is very satisfactory, especially in weak nervous patients, where a more formidable operation would have had a bad effect. The space between the grafts is rapidly covered and the resulting scar is good.

2. *Thiersch's method* should be used when the surface to be covered is large, and when the patient is either under an anesthetic or its administration will be compensated for by the more rapid recovery it promises. The grafts are obtained by making the skin tense and flat either manually or by special hooks, and cutting off the superficial layers by a "to-and-fro" sawing motion of a sharp razor. The larger the size of the grafts the better. Usually they are an inch in width and four or five inches in

length. Care should be taken to remove only the upper layer of the skin, otherwise the wound inflicted may prove as difficult to cure as the wound the surgeon is endeavoring to remedy. As the grafts are cut they are dropped into a basin of warm saline solution. Afterward they are carefully placed on the area to be grafted, the edge of one layer overlapping that of the adjacent one. Thiersch's method of grafting is the one most frequently practiced and the one that gives the mose brilliant results. The objections to it are that it necessitates the use of an anesthetic and the site from which the grafte are cut is painful and takes some days to heal.

3. *Wolfe's method* should only be employed in exceptional cases. The surface of the area to be grafted should be thoroughly revivified and the margins made fresh and vertical. All bleeding should be completely arrested. The new skin to be used as a graft must be dissected from some other site. The entire thickness of the skin should be removed but no subcutaneous fat taken with it. The outline of the incision should preferably be an ellipse to permit of closure of the defect by sutures. The skin removed should be one-third larger than the defect to be covered to allow for shrinkage. The graft after having been placed in its new position may be retained by sutures or reliance placed on overlying dressings. The method is uncertain in results but may sometimes be used with advantage.

In addition to the recognized methods of skin grafting just described occasional reference will be found to grafting wounds with the skin of an egg, with the pellicle of a blister and with dry epidermal scales, such as scrapings from callosities or dandruff from the head. These expedients usually yield unsatisfactory results. The only reasonable sources from which to obtain vital epithelial tissues are the skin of the patient, autografts; the skin of another individual, heterografts; and the skin of a lower animal, zoografts.

1. *Autografts* are usually cut from the patient's thigh or shoulder. They furnish the material most likely to prove successful and should be employed except in cases where the patient's general condition is bad or where the area to be grafted is very extensive.

2. *Heterografts* are obtained from another individual, from amputated extremities or from fresh cadavers. They usually grow well and should be employed when they can be secured from a satisfactory source. They entail the danger of infecting the patient with syphilis, tuberculosis and other diseases which must be carefully guarded against. The question of the necessity of the grafts being of the same color as the skin of the patient on which they are planted is still unsettled. It is claimed that a negro's skin grafted on a white person will lose its pigment and that a white skin grafted on a negro will become pigmented.

3. *Zoografts* are obtained from one of the lower animals, the frog, chicken, pig, dog, cat, rabbit or guinea-pig being most commonly used. They do not grow as readily as grafts from the skin of a human being and they should not be employed when other sources of supply are available. Still there are certain conditions where they are not only useful but are the only means by which a patient can be cured.

Analyses, Selections, Etc.

Pegnin: Its Employment in the Feeding of Nurslings and of Persons with Gastro-Intestinal Diseases.*

Dr. Eduard Honigschmied, Weistrach, says that pegnin is destined to cause a revolution in infant feeding; its administration seems indicated also in persons suffering from gastro-intestinal diseases, who, although requiring a milk cure, are unable, as a rule, to tolerate milk.

The albuminous elements of milk are caused to curdle in extremely fine flakes, even outside of the body, by the addition of pegnin—a pepsin combined with sugar of milk—thereby preventing their coarsely flocculent separation in the stomach, and the deficient assimilation caused thereby. In order to produce the curdling of about one liter of milk into fine flakes, within two to three minutes, we require about 8 to 10 grams or an even tablespoonful of the preparation. Curdling of the milk having taken place, it becomes necessary to distribute the curds in the milk by shaking or heating. The result depends upon the correct carrying out of this procedure. In every instance in

*Translated especially for Virginia Medical Semi Monthly from Die Heilkunde, VIII Jahrg. 7 Heft, July, 1904.

which complaints were made regarding a failure, directions were not strictly adhered to in the preparation of the pegnin milk.

Absolutely undiluted milk is first boiled for thirty minutes in perfectly clean glass vessels, allowing one-third of empty space after the milk is poured in; the milk is then cooled to the temperature of the body (about 37° C.) or 98½° F., and pegnin added. The casein is nearly precipitated after two minutes. If we shake the milk now for the purpose of distributing the coagula, the desired end would be attained only incompletely, since the casein is not yet entirely precipitated, and thus complete precipitation would be prematurely arrested. On the other hand, if the milk is allowed to stand too long after the addition of pegnin, the precipitated casein becomes too coarsely flocculent and too hard, reduction into small pieces takes place very slowly upon shaking and it is probable that a complete distribution, a thorough dissolution, no longer occurs.

The correct time for shaking milk after addition of pegnin is four minutes, no less and no more, and the results will be satisfactory in every instance.

Other authors, including Dungern, Siegel, Langstein, Brunning, Hirschfeld, Palladino, Fischl, and Levy, have experimented with curdled milk in an undiluted condition, whereas the author's tests in the feeding of nurslings were undertaken with milk dilnted in proportion to the age of the infant, as promulgated in text-books on pediatrics, and no deviation should be permitted from these rules.

Even in feeding adults with curdled milk, he always diluted at first with boiled or mineral water, up to one-half or more of the quantity of milk used, until the patients were accustomed to the milk diet. His experiences were favorable throughout; in fact, he believes that curdled milk, when properly prepared, is digested more easily than mother's milk. The proof of this was furnished by the observation that, regurgitated or vomited mother's milk that had remained in the stomach of an infant for some time, was thrown up, in a curdled condition, whereas curdled milk which had remained in the stomach as long or longer, was always discharged in a non-curdled state in case regurgitation or vomiting happened to occur. This demonstrates that a curdling of pegnin milk, a precipitation of casein from the same, does not take place in the stomach.

Children, whom he caused to be nourished with pegnin milk, were in part such as were breastfed before the introduction of this method of feeding, but who suffered from dyspepsia, and where mother's milk would not agree with them, or such as were affected with dyspepsia or with gastro-enteritis as a result of artificial nutrition.

According to the severity of the existing affection, the pathological symptoms, such as vomiting, diarrhea, flatulency, colic, pain, etc., would disappear after varying periods. It was possible in favorable cases to obtain fairly good results after three days' use.

Future experiences and observations will determine which method is the preferable one to follow in the nourishment of infants, whether with small quantities of undiluted, or with correspondingly diluted and curdled cow's milk. This much is certain, however, that both methods of feeding can record excellent results. Pegnin milk should be given to nurslings for at least three months.

Before reporting the histories of some cases, the author formulates the directions which must be most carefully observed when adding pegnin to milk:

1. All vessels must be scrupulously clean. Vessels and stoppers must be boiled in a weak soda solution, and then rinsed with boiled water.

2. The boiled out stoppers must be left in the sterile fluid until they are needed.

3. Undiluted milk must be boiled in a vessel—best in a glass bottle—which will hold one-third more.

4. The milk must then be cooled to about the temperature of the body: the temperature should in no instance be above 40° or below 34° C. (104-92° F.)

5. Then follows the addition of pegnin. For one liter of milk, use an even tablespoonful; for a 200 gram Soxhlet bottle, use an even coffeespoonful. Incidentally every bottle of pegnin is provided with a small measuring spoon and exact directions for use.

6. The milk must be left standing for four minutes after the addition of pegnin. The contents of the bottle are then thoroughly shaken until the precpitate is most finely distributed.

7. If the pegnin milk is not prepared fresh for each feeding, but for the whole day at once, it must be warmed to, at most 37° C. (98½° F.) by placing the vessel in warm water, before

it is used. Warming it to a higher degree causes a renewed formation of flakes.

8. If it is necessary to dilute the milk the addition of previously boiled and correspondingly cooled water must be made immediately before the administration of the milk.

9. In the preparation of pegnin milk, cow's milk that is as fresh as possible should be used, as this will curdle in very fine flakes, whereas old milk which is left standing for some time after milking, curdles in coarse flakes.

W. U., four weeks old, continued to emaciate in spite of being breastfed, assumed a senile appearance, cried much, suffered from colic and frequent vomiting, and had six to eight diarrheic movements daily. The abdomen was tympanitic, and the abdominal walls were thin. The character of the feces was mucoid with coarsely flocculent admixtures resembling chopped hard boiled eggs, and of a greenish color.

Since the mother, an intelligent woman of 27 years of age, was healthy and strong, and had a sufficient amount of milk, it was difficult for her to resolve upon a different method of feeding her infant. She was given exact directions as to the required diet, and the feeding of the infant was stipulated to take place every three hours and to last, instead of 15 minutes, as heretofore, only eight minutes. Tannigen was administered to restrict the secretion of the intestinal canal.

After eight more days, the pathological picture became more and more intensified—the number of the movements increasing, and the baby having lost 900 grams in weight, the author decided upon prescribing pegnin milk, in the proportion of 1:3, i. e., one part of milk and three parts of water. Tannigen in a mixture to be shaken was continued.

Vomiting, which was not quite as frequent even on the first day, ceased entirely after three days, the contents of the intestine assumed a more pulpy condition, and the flocculent stinking feces, which resembled hard-boiled, chopped eggs, became more normal. The number of movements were reduced to three or four.

The boy was completely well after eight days. After being fed, he slept quietly until the next meal; he did not vomit any more, the tympanites disappeared, the colics did not recur, and the fecal motions assumed a beautiful yellow color and buttery consistency.

The milk was gradually given in a more concentrated form. The baby thrives excellently and shows no symptoms of disease whatever. If regurgitation happened to occur, the pegnin milk was never curdled, whereas, formerly, the vomited mother's milk always contained casein in flocculent precipitation.

The mother stated that she would never again suckle an infant, as artificial feeding entails no difficulties, and nothing, save exactness, is demanded in the simple preparation of pegnin milk.

The other patients, before they came under treatment, were all fed artificially with more or less diluted cow's or goat's milk, with an occasional administration of flour pap, and they were in various stages of dyspepsia and catarrh. Improvement was remarkably quick in all cases in which directions as to pegnin milk were carefully followed. Whenever there were accidents, it was possible always to demonstrate mistakes in the preparation of the pegnin milk; when these were corrected, the complaints of apparent failure ceased and the infants after fourteen days at most lost the diarrheic condition of the feces, as well as the other symptoms of dyspepsia.

As therapeutical expedients, according to the condition of the case, tannigen, chamomile, cascarilla, hydrochloric acid, tinct. Darelli and opium were employed. The principal requirements for milk used in the artificial feeding of infants are, however, healthy cattle, rational feeding, and cleanliness in the stable; if these are present, the strict directions as to sterilization may be silghtly modified.

Cecilia E., 45 years of age, suffered for some time from chronic catarrh of the stomach and gastric ulcer. Vomiting and hematemesis occurred often and became so intense that all kinds of food were vomited, resulting in a condition of high graded debility. The only food not vomited was about a coffeespoonful of raw, most finely chopped meat, which, however, soon became nauseating to the patient; therefore, had to be discontinued. Milk was not borne either in a diluted or in an undiluted form. Pegnin milk was prescribed, which was to be mixed, immediately before taking it, with equal parts of Geisshubler water; about 100 grams of this mixture were administered every two hours. The other therapeutical measures remained unchanged.

On the following day the patient said that milk was well borne, and that vomiting had

occurred but rarely. Gradually increasing the addition of milk, he succeeded, after fourteen days, in administering curdled whole milk, 200 grams of the same being taken every three hours. This was well borne. In the further course of treatment, the patient was able, by gradually increasing the quantity, to take several liters daily. To-day the patient is well, her appearance is blooming, and she has gained considerably in weight; but she is obliged to avoid absolutely any kind of dietary error, as this will be followed by a recurrence of the disturbances.

Besides in cases of gastric ulcer, and of chronic catarrh of the stomach, curdled milk has rendered good service in carcinoma of the stomach, being well borne in this malady and not exciting vomiting, provided it is administered in very small quantities.

According to his observations and experiences, the author highly recommends pegnin to the profession for further trials.

Book Notices.

Modern Clinical Medicine—Infectious Diseases. Edited by J. C. WILSON, A. M., M. D., Professor of Medicine, Jefferson Medical College, Philadelphia, etc., *Authorized Translution from "Die Deutsche Klinik" under General Editorial Supervision* of JULIUS L. SALINGER, M. D. *With 2 Colored Plates and 60 Illustrations in the Text.* New York and London. D. Appleton & Co. 1905. Cloth. 8vo. Pp. 925. Price, $6.

This is a book that takes a foremost rank as an exponent of existing knowledge of infectious diseases. Its authors are the leading clinicians of Germany—than whom no students of medicine are more painstaking, accurate in investigations, or more entitled to be considered authorities as to the subjects on which they write. The names of Klemperer, Liebermeister, Brion, Lichtheim, Furbinger, Ortner, Loeffler, Heubner, Eichhorst, Leyden, Jurgensen, Hoppe-Seyler, Nicolaier, etc., are among those who are contributors to this great work, and are all men of eminence in their special fields of study. Drs. J. C. Wilson and Julius L. Salinger, of Philadelphia, are the only non-German writers in this volume; they have written on subjects in general—better known in this country than abroad. The work takes up each one of the infectious diseases noted in medical text books, and deals with each disease in a thoroughly systematic manner—from nomenclature to treatment. It is a book for the *practitioner;* and if he does not secure it and studiously read it, he will often find himself behind the times in speaking of, or in diagnosing, or in the treatment of the infectious diseases. A very perfect index assists in ready reference to a subject treated of in the work.

The series of *Modern Clinical Medicine,* as announced, and of which the work on *Infectious Diseases* is the first volume, is to be composed of several volumes. The second volume, now in preparation, will be on *Constitutional Diseases and Diseases of the Blood.* The third volume will be on *Diseases of the Digestive Tract.*

The Doctor's Window. Vol. V of *The Doctor's Recreation Series.* Charles Wells Moulton, General Editor. By INA RUSSELLE WARREN. With an Introduction by WILLIAM PEPPER, M. D., LL. D. 1904. The Saalfield Publishing Co. Chicago, Akron, O., New York. 8vo. Pp. 288. Gilt top. Cloth, $2.50; half Morocco, $4.

This is a book of poems by the doctor, for the doctor, and about the doctor. There are poems for every mood, so that—no matter what the frame of mind one is in—he may find lines to accord with practically any humor.

Transactions of the American Pediatric Society. Vol. XVI. Session held at Detroit, Mich., May 30-June 1, 1904. Reprinted from *Archives of Pediatrics.* 1904-'05. Edited by LINNEUS BEDFORD LA FETRE, M. D. Cloth. 8vo. Pp. 296. Copiously illustrated.

As this volume was published by E. B. Treat & Co., New York, "the get up" is stylish and print good. Such a pretentious volume as this needs an index, as well as a table of contents. Messrs. Parke, Davis & Co. were, as usual when medical meetings are in Detroit, very popular hosts.

Progressive Medicine. Edited by HOBART AMORY HARE, M. D., assisted by H. R. M. LANDIS, M. D., of Philadelphia. June, 1905. Published by Lea Brothers & Co., Philadelphia and New York. Paper. 8vo. Pp. 346. $6 per annum.

This number of the "quarterly digest of advances, discoveries and improvements in the

medical and surgical sciences" is, as usual, a most valuable one. The annual subscription is moderate for a publication of such constant utility to the practitioner—presenting in the form of a digest (beside original articles) the more important advances of the past few months.

Diagnosis of Diseases of Women. By PALMER FINDLEY, B. S., M. D., Assistant Professor of Gynecology and Obstetrics, Rush Medical College, Chicago. *Second Edition, Revised and Enlarged. Illustrated with* 222 *Engravings in the Text,* and 59 *Plates in Colors and Monochrome.* Lea Brothers & Co., Philadelphia and New York. 1905. 8vo. Pp. 588. Cloth, $4.75 net; leather, $5.75 net.

The exhaustion of the first edition of 1903 has given the author the opportunity, of which he has availed himself, of thoroughly revising it, and of bringing this second edition up to date. Nearly 100 pages have been added, and a number of subjects not discussed in the first edition are duly considered in the present edition. While it is a treatise for students and practitioners, it is of special value to the latter in many a difficult case for diagnosis. Dr. Findley's was the first book in English that confined itself to so important a subject as gynecological diagnosis, and it helps most materially in unravelling many an obscure condition of the female abdomen and pelvic contents. His descriptions, already plain, are made even more intelligible by the well selected drawings used so profusely throughout the book. The work covers practically the diagnosis of every disease peculiar to women. So that any attempt at detail description is useless. Beside the full tables of contents, the 16 double column pages of index serve as a means of ready reference to any subject that one wishes to consult.

Manual of Acute Poisoning, together with Methods in First Aid to the Injured. By JOHN W. WAINWRIGHT, M. D. New York. E. R. Pelton. 1905. Cloth. 16mo. Pp. 96. Price, 75 cents net.

This is a useful *manual* to any doctor, who may be hastily summoned to a case of acute poisoning or accident injury. It gives the classification, varieties and individual substances usually met with in emergency poisoning, with special symptoms, simple tests, chemical antidotes, physiologic antagonists and treatment. Besides, it reminds the practitioner of his duties when called upon to render first aid to the injured. Ready reference is greatly aided by a good index. Every doctor, from time to time, should carefully read such a book as this, and thus be ready to respond intelligently to a case of emergency—whether of poisoning or accidental injury.

Editorial.

The Southwest Virginia Medical Society

Met in the Opera House, at Pulaski, Va., July 4 and 5, and much interest was manifested by the thirty-five or forty members present. A number of papers were read and discussed. Drs. R. W. Martin, of Lynchburg, and J. Shelton Horsley, of Richmond, were in attendance, and each was elected a Non-Resident Honorary Member. The next meeting will be held at Bristol some time during January, 1906, the exact date being fixed later by the Executive Committee.

Officers for the ensuing year were elected at this session, as follows: President, Dr. Elliott T. Brady; Vice-Presidents, Drs. George G. Painter, of Pulaski, and John C. King, of Patterson; Secretary and Treasurer, Dr. Peyton B. Green, of Wytheville.

The following preamble and resolutions regarding expectoration and its relation to tuberculosis were adopted:

Whereas, From experiment and observation the propagation of tuberculosis (consumption) does not depend upon contagion from one individual to another, but largely upon the expectoration of those who have the disease, and which contains the microbes or specific germs of the disease, the expectorated matter drying upon the streets and floors, especially of public buildings, stores, etc., is pulverized under the feet when it becomes dry and in that condition floats in the atmosphere of a room, is inhaled, and in those predisposed to the disease finds a nidus in the lungs, intestines, or abrasions of the skin and there is established a case of tuberculosis;

Resolved, That the attention of the judges of the courts of the several counties and cities of the Ninth Congressional District of Virginia, as well as the judges of all the courts of the counties and cities in the State, keepers of stores and public houses, be called to the facts of the above recited preamble, and that they are

hereby requested to institute and enforce some measures to abate the nuisance and danger so freely indulged in of spitting upon floors of public buildings and in other public places, and that more thorough hygienic rules be enforced in the jails.

Resolved, That a copy of these resolutions be furnished the Hon. R. C. Jackson, judge of the 21st Judicial Circuit of Virginia, and that they be published in the Richmond, Va., medical journals, and that all papers in the State of Virginia be requested to copy.

Dangers of Official State Journals.

Nothing could more strongly impress the dangers of ownership and publication by a State Society of its own journal than a recent occurrence in connection with the *California State Journal of Medicine.* In its May, 1905, issue, it says of the *New York Medical Journal:* "Its advertising pages are notoriously an abomination of desolations, and even its editorial columns have been bartered for coin." The attorney for the New York *Journal* promptly wrote the Medical Society of the State of California, stating that his "client has a cause of action against you by reason of the publication of such false and libelous statements. While the person who wrote that article bears all the ear marks of a malicious and irresponsible individual, he at the same time represented the Medical Society of the State of California. * * * On behalf of my client I therefore demand the immediate retraction of the said statement with the same prominence of the said libel, and in the same journal in which the said libel was printed. Before taking any further proceedings in the matter, I shall wait a reasonable length of time to hear from you."

The Secretary of the California Society replied in substance that neither his Society nor members of its Publication Committee have the remotest desire to libel anybody, and asked "which of the expressions objected to, you consider libelous and offensive to your cient; and also that you give me an idea of the nature of the statement which your client would like to have us publish?"

The New York *Journal* attorney replied, after calling attention to his former letter: "I assume that you have sufficient ability to write that such statement so made by you is false and untrue, without my sending a form of retraction for you to sign. You know that the statement is false, and that when it was written the writer of the same knew it to be false, and what we demand is that you say so in plain English."

Hence in the July number, 1905, of the *California State Journal of Medicine,* the following occurs, after some reference to advertising: "Consequently, we fully, freely, and unqualifiedly retract, and withdraw the statement quoted."

Such is an awkward position for any reputable State Medical Society to be placed in by the writer for the editorial pages of the journal "owned and published" by the Society. Many an individual editor is recklessly fearless of consequences to self; but no man in an editorial chair has the right to place an organization he represents in such a position as to be compelled, under threat of law, to "fully, freely and unqualifiedly retract and withdraw the statement" which had previously been published.

It is all rght for a Society to adopt a journal as the medium of its publications. But unless the Society well knows the temper of editor of the journal "owned and published" by it, it should have a wise, conservative, and well remunerated Committee on Publications, before whom every article intended for its pages which even remotely attacks persons, or corporations should be submitted for approval.

We must commend the *New York Medical Journal* for its firm, but conservative manner in dealing with this matter; and we trust the affair will serve as a lesson to those State Medical Societies who own and publish their respective medical journals.

If journalizing Transactions is to be the order of the day, it would be far better and safer for Societies to contract with, and adopt some established reputable journal as the medium for its publications than to subject the organizations to the dangers of suit for libel because of an intrepid editor. Then the Society cannot be held responsible—whatever damage suits the rashness of an editor and proprietor of his own journal may bring upon himself. The case in point in these remarks is an illustration of the dangers of a journal "owned and published" by a most excellent and worthy State Medical Society.

Yellow Fever in Panama

Continues to be a stumbling-block in the way of successful sanitation on the Isthmus, reports of the Public Health and Marine Hospital Ser-

vice indicating that it has been very prevalent for several months past, though now it seems to be on the wane.

A New United States Pharmacopoeia

Has just been gotten off the presses by The J. B. Lippincott Company for the Committee on Revision for the period of 1900-1910. Among the noteworthy changes that have been made, especial attention is to be called to the fact that the strengh of *tincture of aconite* has been reduced from 35 per cent. to 10 per cent., and *tincture of veratrum* from 40 per cent. to 10 per cent. *Tincture of strophanthus* has been increased from 5 per cent. to 10 per cent.

These changes have been made in order to conform to the standards adopted by the International Conference on Potent Remedies held at Brussels in September, 1902, the object being to make uniform the strength of potent remedies in all parts of the world. The changes will officially go into effect on September 1, 1905.

The Board of Visitors of the University of Virginia

At its meeting July 20, 1905, elected Dr. Richard H. Whitehead, of the University of North Carolina, Professor of Anatomy—vice Dr. Wm. G. Christian, resigned—and also Dean of the Medical Department. The University is, indeed, fortunate in securing the services of a so able and widely known anatomist. The election of a successor to fill the Chair of Obstetrics, Gynecology, Surgical Diseases, and Abdominal Surgery, until recently held by Dr. A. H. Buckmaster, will be filled at the next meeting of the Board.

The Virginia Pharmaceutical Association

Adopted a somewhat unusual plan for their meeting July 10-15, 1905, in that the annual sessions were held on board an ocean steamer between Norfolk and Providence, R. I., with a short stay at the latter place visiting sights of interest, etc., as guests of the local Pharmaceutical Association. There were about ninety persons in the party, all of whom enjoyed the trip immensely.

The Virginia and North Carolina Press Associations

Met in conjoint session at Kenilworth Inn, Asheville, N. C., July 4-6. It was an occasion long to be remembered, because of the cordial receptions, the excellence of papers and discussions looking to the betterment of journals in their editorial and business management. The proprietor of "the Kenilworth" cannot be excelled in the management of a hotel, nor in the constant "looking out" for the pleasure and comfort of guests. The citizens of Asheville tendered a banquet, and placed Mr. Copeland, of *Times-Dispatch,* Richmond, in charge as toast-master. No adequate conception of Asheville and its surroundings as a health resort can be formed until the visitor has spent awhile at such a place as Kenilworth Inn—high up on the top of a hill, with mountain peaks as backgrounds and as front views. The route of reaching Asheville from Washington, Richmond, etc., is by way of the Southern Railway, with well provided trains and courteous officials.

The Seaboard Air Line Railway Surgeons

Held their third annual convention July 12 and 13, 1905, at the Chamberlin Hotel, Old Point, Va., the President, Dr. J. M. Burke, of Petersburg, Va. in the chair. Dr. Southgate Leigh of Norfolk, delivered the address of welcome, which was responded to by Dr. J. W. Palmer, of Alley, Ga. After the President's address, the reports of various committees and other routine business were disposed of. The Association afterwards listened to the reading of papers by several prominent Southern surgeons. Atrip about Hampton Roads in the steamer Pennsylvania with luncheon, aboard was an enjoyable feature of the second day.

The National Medical Society,

On organiation of colored physicians of the United States, will hold its next session in Richmond, August 22, 23 and 24, 1905. The officers are: President, Dr. John .E Hunter, Lexington, Ky.; Vice-President, Dr. R. E. Jones, Richmond, Va., and Secretary, Dr. John Kenney, Tuskegee, Ala. A trolley ride on the street car line and an excursion on the C. & O. railway are said to have been arranged among other things for those attending.

Dr. John P. Davidson

Left Richmond, July 13, for a trip to Europe where he will tour in an automobile with a friend until his return home about September 1st.

Dr. Wm. M. Randolph,

Of Charlottesville, Va., who has been extremely ill, is now reported to be convalescing.

Obituary Record.

Dr. Wm. H. Lyne,

Of Richmond, Va., died after an illness of several days on July 15, 1905. He was born in this city in 1873, received his academic education at Richmond College, and graduated in medicine at the Medical College of Virginia in 1896. He passed the Medical Examining Board of Virginia at its June session, and joined the Medical Society of Virginia the following year, 1897. Dr. Lyne practiced medicine in this city for a while after his graduation, but owing to ill health, moved away for several years. About two years ago he resumed his practice here. During his residences in Richmond he was at various times an adjunct to the Chairs of Operative Surgery, Therapeutics and Hygiene, at the Medical College of Virginia. Dr. Lyne was a man of fine promise, and was universally liked by those who knew him. Resolutions of respect were adopted by the Faculty of the Medical College of Virginia, as well as by the Richmond Academy of Medicine and Surgery, a called meeting of this latter body adopting the following resolutions:

Whereas, It has pleased Almighty God to remove from our midst Dr. William Henry Lyne; and

Whereas, We recognized him as a faithful and loyal member of this body; a man of exalted character and high ideals, and a skilled physician, therefore, be it

Resolved, That in the death of Dr. William Henry Lyne, the Richmond Academy of Medicine and Surgery has lost a most promising and valued member, whose aim in life was always to elevate and ennoble those with whom he came into contact, as well as to alleviate their sufferings; and

Resolved, That the profession at large in the city has suffered a profound loss in the death of so capable a colleague, who was always pleasant, kind and ready to respond to any call that might be made upon his time and ability; and

Resolved, That a copy of these resolutions be spread upon the minutes of this body, published in the *Virginia Medical SemiMonthly, Old Dominion Journal of Medicine and Surgery, Richmond Journal of Practice,* and the daily papers of this city, and a copy sent to his family.

(Signed) Wm. P. Matthews, M. D., Greer Baughman, M. D., Truman A. Parker, M. D., Committee.

Dr. Robert Dunn McIlwaine

Died at his home in Petersburg, Va., after an illness of about three days. He was born in Dinwiddie county, Va., about 41 years ago. His academic education was received at McCabe's University School and at the University of Virginia, from which latter institution he also graduated in medicine in 1885. He passed the Medical Examining Board in 1886, and was elected a member of the Medical Society of Virginia the same fall. He gradually rose to prominence, and at the time of his death was one of the most popular and successful of the physicians in his section. He was surgeon to the City Hospital of his city. Dr. McIlwaine is survived by his wife and four children. The Medical Faculty of Petersburg, of which he was a member, adopted resolutions of respect, and attended the funeral in a body.

Dr. Lynn E. Vaughan,

Of Independence, Va., who was accidentally shot in the abdomen July 11, 1905, by a boy who was carelessly handling a gun, died in a hospital in this city July 15, 1905. Dr. Vaughan was forty-five years of age, and was well-known and popular in Grayson county, where he lived. The day before his accidental shooting his home was burned, and his little boy was badly injured.

Dr. J, C. Mundy,

Aged seventy-five years, one of the most prominent residents of Amherst county, Va., died suddenly July 13th at his home on Allen's Creek. He is survived by his wife, six sons and two daughters, one of the latter being the wife of Dr. J. Page Massie, of Richmond.

Dr. Edward S, Wood,

Of Boston, Mass., died July 11, 1905, at his summer home at Pocasset, where he had been ill for several months from cancer. He was born in 1846. Dr. Wood was Professor of Chemistry at Harvard University.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 9.
Whole No. 225.

RICHMOND, VA., AUGUST 11, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

TREATMENT OF TYPHOID FEVER.*

By GEORGE F. JEWETT, M. D., Britton, S. Dakota.

As it is the object of the physician to restore the previous physical condition, so it should be his aim to know and combat those conditions which cause or intensify the phenomena that go to make up the clinical history of disease. Until recent years the treatment of typhoid fever consisted solely of attacks upon its phenomena, after their development; now we seek also to prevent or limit their development. If the older plan of treatment were not still in vogue, there would be no excuse for this paper; that it is so is amply attested by current medical literature and mortality rates.

Though we now know the bacillary cause of this disease, we are yet unable to eradicate it. Though we know that the bacterial poisons are responsible for most if not all of the manifestations, we are yet to produce the serum or remedy that will counteract the effect of these poisons.

The object of this paper is to bring to the attention of this Society a plan of treatment that seems to me most worthy of adoption, pending the development of an efficient antitoxin, or, better still, the discovery of the agent that will destroy the bacillus within the host. This plan of treatment consists of antithermic, antiseptic and eliminative measures.

Since the advocacy of water in continued fevers by James Currie, this agent has been applied externally by various methods for the reduction of temperature. Hot, warm, tepid, cold, iced water have all had their advocates. Having learned from my preceptor's practice that the sponge bath accomplished all the good, and was followed by none of the bad results of other external hydrotherapeutic measures, I have used no other. The choice of warm, tepid or cool water should be left to the patient. One portion of the surface after another should be sponged while exposed to the air until it no longer feels hot to the attendant. The trunk will require more than the extremities. The head and neck may be kept constantly wet, and evaporation accelerated by fanning, if necessary.

There is one use of cold water not referred to in any of the standard works in my possession, that will reduce temperature and ameliorate the symptoms attending high temperature more rapidly than any other, and at the same time with less annoyance than any of those uses capable of producing prompt results. I refer to cold water enemata. The first mention of this procedure, as far as I can ascertain, was by Dr. Buchman, in the *Medical Record,* Sept. 28, 1889. I had then been using it for six years. He thinks that from one to three quarts of cold water can be easily and safely passed into the colon, which will rapidly lower a high temperature. He also claims for it the relief of tympanitic distension and the prevention of putrefactive changes in the bowel contents. As an example of what can be accomplished by this means, I will relate one of my first experiences with it in the fall of 1883:

I found the patient had been left in charge of his blind sister since morning, and it was now 3 P. M. Patient unconscious, muttering, picking at bed clothes, temperature 105°, could not be aroused. I immediately gave a cold water enema. Before I had finished, he opened his eyes, looked at me, and said, "Good morning," from which time he was able to carry on conversation intelligently, though his replies were at first somewhat tardy. Before leaving him I took the temperature again, and found it 103°, two degrees less than before the injection.

The water should be allowed to enter the rectum very slowly from a fountain syringe in order to favor its retention, but it fortunately turns out that the greater the urgency of the

* Presented to the South Dakota Medical Society during its annual session at Deadwood, July 5 6, 1905.

conditions demanding its use the less is the necessity for precaution to insure its retention. As much should be used as the patient will tolerate, and this amount will increase with the patient's experience. The injection may be repeated after three hours, if necessary, but it is not often necessary so soon. It has been found that, when needed twice a day, from 12 to 2 and from 6 to 8 P. M. give best results. Those must be exceptional cases, in which the use of cold water in this manner will not curtail the external applications for heat reduction 50 to 100 per cent.

Heat reduction by this means is not to be accounted for by the heat capacity alone of the water introduced. The water thus used becomes loaded with toxins as well; and by whatever avenue it may escape from the patient must escape also its load of toxins—thus influencing the temperature indirectly by removing a cause. If a bowel movement results, then is temperature still reduced by removal of causes in shape of bacilli and fetid fecal matter. Besides, the presence of cold water in the lower bowel has the further effect of lessening the congestion of the mucous membrane of the whole canal, thus favorably affecting the specific lesions.

As temperature is only a phenomenon of the disease, though so prominent as to furnish that part of its name that has not been supplanted, so the reduction of temperature is only a symptom treatment. So long as we cannot eliminate the ultimate cause, may we not do better than *reduce* temperature? Can we not limit the production of fever by lessening its proximate causes? If we could sweep the bacteria from the alimentary canal or limit their multiplication we could suppress or limit their poisonous products—the chief if not sole cause of fever as well as the other phenomena of the disease. This can be done, I believe, by catharsis. Not only this, but by the use of hydragogue cathartics the hyperemia may be diminished and all the later lesions rendered of lesser gravity. This measure was one of those advocated by a Civil War surgeon in 1863, or thereabouts. His results were so favorable, covering a period of twenty-five years, that I was led to adopt his routine. He used the compound colocynth powders as a cathartic and spirit of nitrous ether as a diuretic or diaphoretic—in the latter dissolving quinine for its tonic effect. For several years I followed his routine with none but the happiest results. At the same time plenty of water was given, not only because it was necessary to the success of the remedies, but for its antipyretic effect, for which latter purpose it was used also externally and by rectum as required.

In my fruitless search for his article I came across the treatment of Dr. George M. Ramsay, Surgeon 95th New York, in the Medical and Surgical History of the War of the Rebellion, Part Third, Medical Volume, page 550. The medication was so similar, and the results so surprising that I quote his words: "To allay the fever give one grain of quinine in half a drachm of sweet spirits of nitre three or four times in twenty-four hours. To restore the secretions and excretions use the following pill, one or more, or less than one daily, so as to obtain one movement of the bowels every twenty-four hours: A half grain each of iodide of mercury, ipecac and extract of hyoscyamus, and one grain each of camphor and compound extract of colocynth, with syrup as an excipient. The fever will abate, the tongue clean off and the appetite return within forty-eight hours after this treatment has been commenced."

"I adopted this treatment at Belle Plain, Va., in 1862'03, but before I had become fully satisfied of its potency I permitted a patient to sink into the typhoid condition; pulse 110, tongue dry as a chip, much swollen, black-brown in the centre, concave on its dorsum and curled up at its edges. I gave him a dose of the solution of quinine in nitrous spirit and repeated it in fifteen minutes. In ten minutes more I gave him a third dose, and in five minutes after this last dose the tongue had become moist and rounded. Then I ordered tea and toast, of which he ate sparingly. Under the continued use of quinine and nitre drops three or four times daily, and the pill as described, this patient steadily improved and was returned to duty in ten days.

Several cases of typhoid fever were treated in shelter-tents at Sharpsburg, Md., during very inclement, rainy and cold weather. Under the treatment as specified the cases terminated favorably in ten days.

Again, in the winter of 1863, a most aggravated case was treated in the regimental hospital. The command had marched to Raccoon Ford, ten or twelve miles distant, and returned to its old camp the next day, where I found that this fever case had been without shelter from rain and cold for twenty-four hours, the quartermaster having taken down and

carried away the hospital tent. As a result, the patient had become much worse; he muttered and was incoherent; pulse 100, and weak. It was feared that he was beyond recovery, but, under the treatment described, his tongue became moist and clean in forty-eight hours, and convalescence progressed rapidly. After twenty years of civil practice I continue to place implicit reliance on this method of treatment."

I am aware that these statements will appear extravagant to many, but, with my own experience with the routine above referred to, so nearly identical, I do not believe he has overdrawn his account. Patients very soon began to complain of the quinine-niter solution, and this complaint was an infallible indication of an all-round improvement.

The fear of aggravating the local lesions and causing hemorrhage by a rational administration of cathartics in typhoid fever certainly has no foundation in experience. Some recognized leaders in the profession say they never give cathartics and advise against their use. It seems to me that the advice of one who never did is not worth much. Graham, in Sajous' *Cyclopedia of Practical Medicine,* says, from personal observation: "That, in a number of cases, the temperature falls to normal or nearly so within twenty-four hours after free purgation is induced; second, that cases at the end of the second or in the third week, when the patients are in a low toxemic condition—as shown by the dry cracked tongue, sordes, low, muttering delirium, and meteorism—have experienced decided and favorable change within twenty-four hours after free purgation. The writer is quite aware that such practice may possibly tend to the onset of hemorrhage, but he considers the dangers from the latter to be less than from the poisoned condition of the system."

He says that he is aware that such practice *may possibly* tend to the onset of hemorrhage. That such is not the case is proven by the extreme rarity and mildness of hemorrhage in cases to whom cathartics are given as compared with cases not so treated. I have not only continued the treatment in the event of the slight hemorrhages that have occurred under it, but have, in consultation, advised its adoption in cases with considerable hemorrhage, and have never had occasion to regret doing so. Whatever danger may be impending will certainly be diminished by depletion of the wall and lumen of the gut, and the muscular activity involved is just as rationally desired in case of hemorrhage as in other organs where such action is invoked for its arrest.

When salol came into use as an intestinal antiseptic I added it to my routine, but could not see that any better results were obtained. I found that tablets and capsules of salol passed without apparent loss, and this led me to believe the crystals did the same. This was due, no doubt, to the cathartics.

When the Woodbridge remedies were put upon the market I dropped other cathartics as well as my quinine-niter solution, and began the use of tablet No. 2, which I have used in every case I have had since. These are given every hour at first. As soon as they may be given less frequently and still keep the bowels active, I begin the use of guaiacol carbonate alone or with turpentine, eucalyptus and thymol..

I have never omitted the rectal injections of cold water except in those cases seen early enough to be aborted by purgative and antiseptics.

As to diet, it has been my rule to allow what was desired by the patient. If asked to advise, I suggested well-cooked gruels, eggs rare or thoroughly done, milk with a cereal to prevent large curds from forming, dried beef to be chewed until only a white string is left, and that spit out, and last, but best of all, buttermilk. Only once did I have occasion to regret the laxity of my rule when three patients in the same house had an abrupt rise of temperature after partaking of fish. Once I hesitated at the patient's request, when she would have crout or nothing. The patient was my landlady, and tired me with her thrice daily importunities until I told her to eat it, but that she must assume the consequences. She did eat it, and progressed finely.

Treatment of typhoid fever along these lines has been so gratifying that nothing remains to be desired but some agent of which one may administer one dose, and, presto change, the patient is well. When patients are placed under the treatment outlined during the first week, the typhoid state and complications become an unknown quantity and the duration is shortened by half if not actually aborted in a few days. At any stage of the disease the patient may be put upon this treatment with immediate advantage, except in the solitary event that makes the case one for the surgeon or undertaker.

STRICTURE.*

By ROBERT C. BRYAN, M. D., Richmond, Va.,
Professor of Descriptive Anatomy and Genito-Urinary Surgery, University College of Medicine.

The general subject of stricture is too exhaustive and comprehensive to be thoroughly taken up in the time allotted. I, therefore, shall ignore, among other features, the spasmodic and inflammatory strictures, the detailed examination of their respective sub-divisions, and consider only that variety which so frequently confronts the surgeon as well as the physician, the organic stricture, as a sequence to gomorrheal invasion, with its etiology, pathology, symptoms and complications.

Definition.—A pathological, concentric encroachment upon the lumen of the urethra, produced by adventitious tissue formation.

The organic stricture may be congenital or acquired. It is the latter variety that concerns us, and among some of the exciting etiological factors may be mentioned cicatrices resulting from chancre or chancroids, tuberculous ulcer, periurethral neoplasms, urethral abscesses and follicultitis, unskilful instrumentation and medication, laceration by a calculus, rupture of a chordee, traumatic injuries (from without, from within), the introduction of foreign bodies, scleroderma, phagedena, keloid, and last, but not least, gonorrhea, which constitutes 80 per cent. of all cases.

It is only an intimate familiarity with the pathology of this condition that allows of skilful treatment, and since (for brevity) we have supposed the patient to have an organic, pathological stricture of gonorrheal origin, those varieties, the simple, the soft, the resilient and the irritable will be dismissed without any further consideration or reference to their pathology and symptoms.

The mucosa of the fossa navicularis is of the squamous variety; the epithelium of the rest of the urethra is of the cylinlrical type, under which is a layer of cubical cells. The gonococcus is unable to penetrate the laminated epithelium, and hence the period of incubation is in direct proportion to the progress it makes over the squamous to the cylindrical mucosa (usually two to six days). Arriving on the cylindrical epithelium, the gonococcus multiplies rapidly and penetrates downward between the cubical cells as far as the upper layer of the connective tissue. By this act, the epithelium is shed and a mucous degeneration occurs. The toxic substances eliminated by the gonococccus irritate the mucous membrane and incite a reactive inflammation; the blood vessels of the sub-epithelial connective tissue are dilated, and a stream of pus cells and serum flows towards the surface.

At all those small points of intense reactionary inflammation, there is a change in the mucous lining from the cylindrical to the squamous epithelium. This gives origin to the granular urethritis of some authors. The protracted inflammation and irritation which the gonococcus excites, produces now a proliferation of connective tissue built from mononueclear cells, which soon become densely organized, and dependent upon the virulence of the exciting cause, personal idiosyncrasies and response. The condition more or less rapidly merges into the chronic cirrhotic replacement fibrosis, with the production of a cartilaginous stricture, which, in turn, may be linear, annular, irregular or tortuous; single or multiple.

There are three physiological constrictions in the normal urethra—First, the posterior boundary of the fossa navicularis; second, the bulbo-membranous junction; third, the internal sphincter of the bladder. It is at (2), the bulbomembranous junction, that 67 per cent. of all strictures occur; and it is within the first two and a half inches of the canal that 17 per cent. of all strictures are located, the remaining 16 per cent. of cases being irregularly scattered throughout the anterior urethra—a gonorrheal stricture of the prostatic urethra being unknown.

One need not go far to explain the large percentage of strictures at the anterior-posterior junction. It is here that the canal is at its most fixed point; is normally stenosed and non-dilatable. It is suspended and immovably swung below the sub-pubic ligament—the anterior and posterior urethra moving about this point as an axis. It is here that the blood supply becomes narrowed and congested; it is here that the various traumata of childhood and venery are impacted. It is at this point that the urethra is in its chronic state of spasm, giving way only to the forceful impact of the column of urine; it is here that the floor of the canal is loose, especially in the pocket of the bulb, which by gravitation, favors chronic congestion; and since posterior urethritis develops in 70 per cent. of

* Read before the Richmond Academy of Medicine and Surgery, June 27, 1905.

all cases, the irritating products of a gonorrheal prostatitis are in intimate contact with this point and further stimulant to reactionary overgrowth, inflammatory thickening, and to the formation of stricture.

A stricture is the immediate result of a subcutaneous infiltration, in the corpus spongiosum, of embryonal cells of greater or less density and extent. The mucous membrane over the stricture is at first congested and its epithelium thickened; later, there is a building up of the cuboidal cell layer, the superficial cylindrical being replaced by transitional cells or flat pavement epithelium. The mucosa is now covered with fungoid granulations or a muco-purulent secretion. The urethra in front of the stricture has a lessened calibre, and usually presents several stenoses, which become of large size as the meatus externus is reached. It is the stricture from the meatus which is always of smallest calibre, giving rise to the distressing subjective symptoms; and it is this stenosis, the first contracture that he urine meets in its passage, that we shall now exclusively consider—the remaining multiple anterior strictures being always of greater calibre, more elastic and of less pathologic significance than that which is situated at or about the bulbo-membranous junction.

The anterior urethra is also anemic and atonic, the mucous lining white and thinned out; there is atrophy of the submucous follicles and connective tissue; between the strictures, moderate dilatations and pocketing of the tube are seen. Areas of localized desquamation and ulceration may be noted here and there. The organ feels hard, intense and inelastic, as the result of the submucous infiltration throughout its extent, only more marked at the site of the stenosis.

The urethra behind the stricture presents the same picture only to a more marked degree. At first, there is an hyperplasia and reinforcement of the mucous, soon supplemented by a compensatory hypertrophy of the submucous structures (nature's method of sustaining the urine). This, however, sooner or later, proves to be inadequate; the pressure of the column of urine acts as a sound; there is an absorption of the infiltrated cells and the urethra becomes atonic, weakened, distended and thinned out. The constant pressure of the decomposing and irritating column of urine now involves the crypts and follicles of the posterior urethra; there is a dilatation of their excretory ducts, retention cysts follow, and the atrophy of pressure is inaugurated. A similar condition involves Cowper's glands, the ejaculatory ducts, and the substance of the prostate.

It is only now a question of time that the weakened walls of one of these cysts will give way; urine is extravasated into the surrounding tissues and follows the line of least resistance, governed by the anatomical point of its escape. If in the pendulous urethra the penis becomes swollen and œdematous, fistulæ are established, which leak only *during* the act of urination. If the extravasation occurs in the bulbar portion near the anterior layer of the triangular ligament, its escape is governed by the attachment of the deeper layers of the superficial fascia—Colle's fascia—and burrowing into the scrotal tissues, it goes later upward between the pubic spine and the symphysis until it reaches the abdominal wall. If the escape is between the two layers of the triangular ligament, the direction of the urine is determined by which wall first gives way; *if the anterior,* the extravasation is similar to that of a bulbar rupture; *if the posterior,* the course is that of a prostatic outlet, where it may be posteriorily to the rectum and peri-anal structures or anteriorily, and working its way through the pubo-prostatic ligament, it spreads to the space of Retzius and properitoneal connective tissue, establishing abscesses in the hypogastric region. In the latter three routes, the escape of urine is constant and independent of the act of micturition.

The muscular walls now of the bladder undergo a compensatory hypertrophy, and its capacity is diminished concentrically. It remains thus only a short while, for eventually, under the continued backward pressure and constant straining, it becomes dilated and thinned out, its walls atonic, flaccid and weak, and pouches and sacculations are formed, usually in the floor of the bladder just posterior to the inter-urethral bar, this being the physiological weak point of the viscus. In these retention pockets, large quantities of urine are held, which soon break down and gives rise to an intractable cystitis, which condition may now reincite an inflammatory reaction with injection of round cells into the submucosa. The walls become much thickened, the epithelium is heaped upon itself and covered with ropy, sticky, muco-purulent matter in which are embedded particles of phos-

phatic grit or even calculi; and the hard, cirrhotic, non-dilatable, cricket-ball bladder is the outcome.

The ureters, whether the bladder is concentrically or eccentrically hypertrophied, become dilated, tortuous and thickened, and this, in turn, reacts upon the kidneys. The pelves, at first, dilate, the pyramids are flattened and atrophied, the medulla and convex compressed and sclerosed, and hydronephrosis is established. Eventually, infection occurs from the bladder, pyelitis supervenes, numerous pus foci are present, the substance of the kidney is attacked, and the condition known as "pus or surgical kidney" develops.

When we remember that it is at the bulbomembranous junction and on its floor that 67 per cent. of all strictures occur, and when we recall that the veru montanum in the posterior urethra is in close proximity to this point of predilection with its highly organized ganglionic cells, its vascularity, distensibility and physiologic valve-like action; and when we remember that the posterior urethra is an actual integral part of the bladder reservoir; that the internal sphincter is drawn up into and obliterated on distention of the bladder, and that the prostatic urethra is normally ballooned out with urine, the anatomical landmark of the internal cut-off muscle being temporarily lost, the train of subjective symptoms which necessarily follow a pathological invasion of this part of the tube, must necessarily be profound and distressing, interfering markedly with its elasticity and normal functions.

The earliest subjective symptom which attracts the patient's attention to his own condition, is a slight muco-purulent or watery discharge which appears usually in the morning, and in more profound cases, at intervals during the day. At this stage, the urethra and bladder are compensating; the patient noticed no frequency in urination, and consults the physician only for relief from the soiling excretion. There is usually associated with incipient stricture a slight smarting, tickling or burning sensation, which is referred to the site of the stenosis or to the end of the penis. This may be constant or dependent upon the act of urination; if the latter, it occurs *during* the act, and is referred to the site of the stricture contracting the pain felt after the act, when stone in the bladder exists, or with tuberculous ulcers of the floor of the bladder, and before the act when due to prostatic enlargement.

If the discharge and pain are indifferently regarded by the patient, or of insufficient severity to prompt medical intervention, another train of symptoms is added, due now to the pouched urethra behind the contracture, the rapidly advancing atony and dilatation of the bladder, and to the hyperemia, congestion and irritation of the veru montanum, as already mentioned, the essential seat of sexual excitation. The patient's attention is attracted to a diurnal pollakiuria in contrast to the nocturnal frequency of prostatic hypertrophy, for the levator ani muscle during the day is in constant contraction and relaxation, and since it festoons and holds the prostate in its hammock-like grasp, an actual massage is constantly being carried on, venous congestion relieved, and the increased frequency of micturition minimized.

With the further organization and contracture of the stenosis, the patient's condition becomes more distressing, and the calls for urination greater; and besides the discharge, which even at this stage may disappear for a few days or alternately become more profuse, there are other symptoms added; the initial signs of a weakened and atonic bladder-wall fighting a losing battle against the increasing resistance of the stricture. He now notices that it takes him longer to urinate and effort must be used in bearing down; the stream is distorted, twisted or split; it has no projectile force, falls abruptly to his feet, and that dribbling at the end of the act, indicating a deficient expulsive power, is protracted and annoying.

Again, I believe this pollakiuria is not dependent upon a cystitis— for, in many instances, the urine is still acid and uninfected— nor upon a reflex irritation around the neck of the bladder; nor upon the distention and atony of the bladder, for that viscus, in the early stages, is still able to overcome the mechanical obstruction of the stricture; but upon the irritation, congestion, stretching and injury to the caput, the controlling valve and key to the external urinary system.

Retention of urine, acute in onset and demanding immediate surgical relief, is another symptom which may develop at any time during the first, second or third stage from congestion at the stenosed point.

That train of peculiar nervous phenomena which develop about this period, and, strange to say, particularly with strictures of large calibre, may be the first factor to compel the patient to seek medical examination. They vary

in intensity and locality, but are usually described as one of the following: neuralgic pains in the loins, in the small of the back (I have rarely seen this absent in strictures of the deep urethra), pains in the inguinal region, spermatic cord, testicles, perineum and rectum; also malaise, nervous irritability, hypochrondriasis and general depression.

These nervous phenomena are seemingly independent of the calibre or duration of the stricture, being at times much more pronounced in a single stenosis of large calibre rather than in the tighest multiple strictures.

With the increasing distention and atony of the bladder, the condition rapidly merges into that of a constant dribbling, and the forceful and repeated attempts at urination only further overstrain and dilate the already weakened and atonic bladder wall. It is now that the ureters give way; that hydronephrosis or surgical kidney is established, and with the development of uræmia or speticæmia, the tongue becomes red and glazed, there is anorexia, dyspepsia, constipation and hiccoughing; an irregular fever is present, the face becomes pinched and sallow, the eyes sunken, rapid emaciation and profound prostration supervene, the patient goes quickly into collapse and dies.

The symptoms of stricture, then, may be tersely summarized under three heads or stages: First, discharge and slight urethral pain or tickling; second, discharge, pollakiuria, dysuria, dribbling, nervous phenomena, particularly the pain in the back; third, the incontinence of overflow, profound constitutional involvement, uræmia.

The *complications* of stricture may be arbitrarily divided into, first, those arising from the presence of the gonococcus; second, those arising from the mechanical obstruction to the passage of urine; third, those arising from the systemic absorption of urinary products; fourth, the complications due to the gonococcus are by the *a, ascending route,* cystitis, urethritis, pyelitis, pus kidney, perinephritic abscess. By the *b, descending route,* prostatistis, vesiculitis, cowperitis, vas deferitis, epididymitis, proctitis, epidymo-orchitis, abscess of the prostate and Cowper's glands, folliculitis, adenitis and lymphangitis. *c, General,* gonorrheal arthritis, myalgia, neuritis, peritonitis, pericarditis, endocarditis, meningitis, keratitis, pneumonia, metastatic abscess, pyæmia.

2. Those arising from mechanical obstruction are hydrocele, varicocele, external and internal hemorrhoids, prolapsus ani, proctitis, perirectal phlebitis, hernia, aortic and mitral lesions, hemiplegia.

3. Those arising from systemic absorption, or the classical symptoms of uræmia.

It may not be inappropriate at this time to refer to strictures of the female urethra, for I do not believe that this condition has received the attention which it justifies. In the female the urethra is peculiarly rich in follicles, its mucous lining being the same as in the male. Spasmodic stricture in the female is more frequent than in the opposite sex, probably due to the greater reflex susceptibility of women.

When we recall that the female urethra is prolific with follicles and highly vascular; that it is the essential seat of gonorrheal invasion; is frequently injured by local applications, vaginal irrigations and traumata, and is damaged to a more or less extent in every child birth, the occurrence, development and pathologic growth of an organic stricture is seemingly easy to explain. The pathology is necessarily the same.

There is a submucous round cell injection, which generally becomes more and more organized, but unlike the male, the site by preference in the female is, one, at or near the meatus externus, and two, the neck of the bladder. The stricture may be, as in the male, single or multiple, annular, tortuous, large or small calibre.

It is the long-standing gonorrheal urethritis, with its chronic and soiling discharge, the dysuria, pollakiuria and nervous phenomena which force the patient to surgical aid. The urethra may be rolled under the finger like a thickened artery. It is inelastic and hard. Pressure emits a mucopurulent discharge; the meatus looks swollen, red and carunculous, and on questioning, the history of an irregular stream and post-urinal dribbling can nearly always be elicited.

In selected cases of dysuria and frequent urination, the condition of stricture should always be borne in mind, as a possible cause of the trouble, remembering, however, that it is the stricture of a large calibre and not the small which gives rise to the most annoying and intractable subjective symptoms.

The Chesterfield.

DIAGNOSIS AND TREATMENT OF STRICTURE OF THE URETHRA.*

By LAWRENCE T. PRICE, M. D., Richmond, Va..
Instructor in Surgery, Medical College of Virginia.

For convenience, the diagnosis of stricture is divided into subjective and objective signs. First, a close inquiry is made into the habits and diseases which the patient may have had during his life—if he has ever been in the habit of riding a bicycle, horseback, or following any kind of vocation which would possibly irritate the urethral canal, particularly if the patient has ever had urethritis of any kind, a sore in his urethra, any severe traumatism in the region of the perineum or penis, and if ever he has been a masturbator.

The patient will, in all probability, complain of pain existing only during the act of micturition, which varies in degree and location according to the location of the stricture. He will tell of a sensation as if the urine came down to a certain point and stopped; great difficulty to begin the act after some minutes of straining, and when he succeeds, the urine may be preceded by a small amount of gleety or bloody discharge. The stream will, in most cases, be changed in character, depending upon the nearness of the stricture to the meatus. If the stricture is far back in the urethra, it may exist for a variable amount of time without giving any evidence in this respect. The stream may be small, even the size of a pinhead or less, may be double, fanshaped, flat or gimlet. Later on, there will be diminution in the expulsive power of the bladder, due to atony; also dribbling of the urine, which is due to retention and overflow. Retention may be caused by congestion of the mucous membrane covering the stricture, or as a late symptom dependent upon the obstruction offered by the stricture itself.

The amount and kind of discharge from the meatus and preceding micturition is a disputed question. Otis and Morrow claim 50 per cent. of all cases which came under their observation had more or less gleet, and a great many more had epithelial shreds, pus corpuscles and mucus in the urine.

Congestion of a stricture during coitus may cause great pain, premature or delayed ejaculation or dribbling of semen after the act has been completed.

Constitutional symptoms do not exhibit themselves until late, and then are caused by complications or sequelæ.

Objective signs are the most valuable for the diagnosis of stricture, and are determined by the use of instruments, bougies and sounds, the bougie a boule being of greatest service, and made entirely of metal, or the shaft of flexible material and the tip metallic. By the use of this instrument, the depth from the meatus, length, calibre, resiliency and number of strictures can be determined. The size to be used can be determined by Dr. Otis' scale, which gives the circumference of an instrument which may be used in a normal urethra. The largest size possible which can be made to pass a stricture is the one to be used because of less likelihood of causing spasm of the urethra. The instrument is passed, resistance is felt and noted on the shaft of the bougie by a mark corresponding to the urethra; then the instrument is passed on into the bladder. Upon withdrawal, when resistance is felt, another mark is made upon the shaft. This is done in the same manner for single or multiple strictures, though if the anterior stricture be the smaller, little information can be ascertained about the others.

There are three conditions which may be mistaken for organic stricture—namely, the normal narrowings at the meatus, middle of the penile portion and the membranous urethra; second, spasm of the urethral canal, which is almost always experienced in the membranous urethra. This spasm will, in all probability, if steady pressure is kept up wtih the instrument, allow it to pass in a few seconds; the resistance, unlike that of a stricture, begins gradually and decreases gradually. Third, an enlargement of the prostate. To eliminate this condition from the diagnosis, the patient may be past middle age; history of incontinence or retention of urine; if a sound be passed, the length of the canal will be found to be not more than six and one-half inches long; the instrument has to be depressed further to make it enter the bladder; examination per rectum will reveal the enlargement.

The recognition of large strictures may be quite difficult, especially if they are situated in the spongy portion or are very deep. Strictures of small calibre may be readily recognized, but if multiple and the most anterior one is the smallest, little can be discovered in regard to those deeper unless of smaller calibre.

* Read before the Richmond Academy of Medicine and Surgery, June 27, 1905.

Results of stricture.—Unrelieved obstruction of the urethral canal, if allowed to continue for any length of time, will inevitably produce in addition to the local condition, changes in the urinary tract posterior to the lesion. Under long and continued pressure, the urethra becomes enlarged and pouched, the mucous membrane thinned and projecting into and between the muscular fibres forming diverticula; finally, leaking, extravasation, abscess or fistula may result, and along with these may be symptoms of septicæmia. If extravasation occurs, the signs of the condition resulting will depend upon the location of the rupture.

If obstruction from stricture be sudden, the bladder walls may at once become thinned and atrophied; if gradual, the capacity decreases, the muscular fibres of the wall become contracted, and stand out in ridges allowing the mucous membrane to become sacculated. The ultimate result is a severe cystitis, with the possible formation of calculi.

The ureters become dilated at or about the same time as the bladder trouble begins, partly from backward pressure of the urine, and partly from compression of the vesicle ends during the repeated acts of micturition. Hydronephrosis is the next condition to follow, and, from infection, sooner or later, pyelonephritis develops.

Other conditions, as retrovesical fistula, vesical calculus, impotence, sterility, etc., may result from stricture. Dr. Hunter McGuire recorded a number of cases of stricture of long standing preceding paralysis, apoplexy or some form of cerebral disease and spinal troubles. He thought that persistent irritation of one or more nerve centres set up pathological changes.

Prognosis.—Longevity depends upon the stage which has been reached, and the amount of secondary organic changes which have taken place. Relief of the condition and proper after treatment will, in those cases where no secondary conditions have taken place. in most instances cure or show marked improvement.

Authorities do not mention the prognosis of moderate and severe cases accompanied by complications. Fenwick emphasized as one of the chief causes from complications the hypertrophy of the vesical walls followed by urethral hypertrophy, kidney complications, and, finally, hypertrophy of the heart and its complications. He also says that no definite formula can be laid down to indicate the amount of damage done to the kidney; but he states that it may be safe to assume that if there is as much as five ounces of residual urine, sufficient damage has already taken place in the kidney to cause anxiety as to the effects of any intercurrent inflammations or diseases. Ten ounces residual urine would be sufficient evidence to make an internal urethrotomy contraindicated and a grave prognosis of the ultimate effects. In young adult cases, where healing is sluggish and tendency to relapse frequent, fatty and senile changes are apt to take place. In cases which have less than five ounces residual urine, initiation of recovery is quick and cure ultimately results provided the full calibre of the urethra is maintained.

Treatment.—A convenient division of the method is as follows: First, dilatation, which may be intermittent, rapid, forcible or continuous; second, urethrotomy, either internal or external, or a combination of the two; third, perineal section; fourth, miscellaneous methods.

Dilatation (rapid and forcible dilatation is hazardous and not now practiced).—This treatment may be applied to the following conditions: Any stricture when the use of instruments does not cause rigors or urethral fever; or when complications, as fistula, abscess or extravasation of urine does not exist. In stricture of large calibre located in the pendulous urethra, if very recent or soft; and all strictures of small calibre located at or beyond the bulbo-membranous junction, if they are not irritable and contractable.

The instrument used in gradual dilatation are filiform and flexible bougies and metal sounds. If the stricture is so tight that no instrument can be admitted, the patient may be relaxed by the use of morphine and hot hip baths. The urethra is filled with warm, sterile olive oil. With one hand the meatus is tightly closed, and with the other the urethra is stripped downwards, forcing some of the oil past the stricture. Then by successively trying one and then another filiform bougie at the same time, one may be gotten past the stricture. The rest being removed, over the remaining filiform a tunneled catheter is passed. The sizes are gradually increased until a flexible bougie or metal sound can be introduced. The passing of sounds should be at intervals of about three days; in most instances from one to five numbers French can be gained at each sitting.

In continuous dilatation, the largest instrument that can be introduced is left in place for twenty-four hours, and after an interval of

twelve hours, a larger size is introduced and left in the same manner, and so on.

Internal urethrotomy.—All methods of doing this operation accomplish the same end. The stricture may be cut from either before backwards, behind forward, or upon the floor or roof. Indications for internal urethrotomy are as follows: When time is an object, when the stricture is at the meatus, navicular or pendulous portions, and will not yield to interrupted or continuous dilatation, in strictures when the use of instruments causes rigors, fever or great prostration, stricture which rapidly contract after having been dilated, especially those which are very large and dense; strictures which have become impacted with calculus, where there is a fistula of the urethral canal, which will not heal and there is a stricture in front of it; if there is a complication of enlarged prostate, or a lithotomy is intended and a grooved staff cannot be introduced, or if there is a perineal abscess.

If the stricture is at the meatus or in the navicular region, an ordinary blunt-pointed tenotome is the only instrument needed, making the incision upon the floor of the urethra. For stricture located further back, and only a filiform bougie can be passed, an instrument after the pattern of Maisonneuve's, or Keevan's modification, is used, cutting the stricture from before backward upon the roof up to the full size, and afterwards, passing sounds until healing is complete. If it is desired to cut from behind forward, the stricture will have to be dilated. Gross' urethrotome requires dilating up to No. 5 F., Otis' and Gester's to 10 to 12 F. The cutting is done upon the roof from behind forward, and the use of sounds as described before is required. Strictures in the membranous urethra are cut upon the floor.

External urethrotomy.—Indications are as follows: Tough, fibrous strictures, which will not permit proper dilatation; resilient strictures, which recontract after dilatation; hard, narrow strictures associated with deep, perineal induration, and do not respond to dilatation; strictures complicated with fistula and which will not heal after dilatation or internal urethrotomy; traumatic strictures, which are hard and resilient; strictures behind which extravasation of urine has occurred; strictures complicated with cystitis, and continuous drainage is desired; strictures associated with enlarged prostate, and not yielding to dilatation; stricture complicated with retention of urine or with incontinence of overflow; stricture in which renal congestion or nephritis is known to exist.

The operation of external urethrotomy is done after Syme's method, making use of his grooved staff upon which the incision is made, and then Teale's probe gorget is introduced into the bladder and some kind of continuous drainage tube passed into the bladder over the gorget.

The combined internal and external urethrotomy has the advantage that the urethra is at absolute rest and relieved of all irritation due to the passage of urine over a raw surface.

Perineal section.—This method is indicated when a stricture is deep seated and impassable by all instruments. Wheelhouse's method is to pass a Wheelhouse staff until it comes in contact with the stricture, bulge out the perineum, cut down on the point of the instrument, and then by use of a gorget, enter the bladder.

Cock's operation.—Introduce the forefinger into the rectum to the apex of the prostate gland; then, with a double-edged knife, make an incision down and towards the finger into the bladder, care being taken that after the incision or plunge with the knife has once begun not to remove until the object is accomplished.

Miscellaneous methods—Excision.—This operation has been practiced with various results, principally on those strictures of traumatic origin. The stricture is removed entirely, and then the two ends of the cut urethra are brought together and sutured.

Excision with transplantation of mucous membrane has also been done. The stricture is removed and afterwards mucous membrane is transplanted. A dressing of soft gauze covered with vaseline is applied, which is removed at the end of the third or fourth day. This method is practiced when the cicatricial area is extensive and the ends of the urethra cannot be brought together on account of the distance.

Electrolysis.—The use of electricity has not met with sufficient success to cause it to be adopted or recognized as a cure.

Divulsion.—This method, once very popular, is only mentioned to be condemned on account of the likelihood of rupturing the mucous membrane or sub-mucous tissue at uncertain points.

Water and air as dilating agents have been used successfully in some cases, water being the better agent, as it acts by pressure, which is continuous and gentle, and the hot water used has a tendency to relax the stricture. Following this,

instruments can be introduced and the treatment followed up by thir use.

Massage has been used with some benefit, but the cases have been very limited.

Cauterization is hazardous, and has gone out of practice.

715 *East Franklin Street.*

THE NOSE.

By G. MARSHALL BURTON, M. D., Lexington, Va.

The nose is one of the most important and most neglected parts of the human anatomy, i. e., from the respiratory standpoint. A normal nose has about twenty-six square inches surface of mucous membrane which is about four millimeters thick and contains a network of veins, giving it the general construction of cavernous tissue.

Beneath the mucous membrane on the superior, middle and inferior turbinated bones are large plexuses of blood vessels known as "swell bodies," and these assist to a great extent in preparing the inspired air for the lower air tract. There are five of these "swell bodies," located as follows: One each on the posterior end of the superior turbinates; posterior end of the middle turbinates; free border of the middle turbinates; free border of the inferior turbinates, and posterior end of the inferior turbinates.

The chief function of these "swell bodies" is to humidify and temper the inspired air, so that its presence in the lower air-tract will not excite irritation. This is controlled by the vaso-motor nervous system in such a way that the inhalation of cold, dry air, causes an engorgement of the venous plexuses. In a normal nose the engorgement is not sufficient to cause nasal stenosis, but just enough to favor a rapid transudation of the serum, and an additional elimination of heat sufficient to raise the temperature of the inspired air to within one or two degrees of the body-heat.

During the inspiration of moist warm air, the "swell bodies" contract and throw out less heat and moisture. Ordinarily from fifteen to twenty ounces of serum are thrown out in twenty-four hours. This is absorbed by the warm and expanded air, and carried to the lower air-tract, where it is needed for physiological purposes. The trachea and bronchial tubes are supplied with but few glands, and are dependent upon the moisture thrown out in the nose.

Certain morbid conditions interfere with the full performance of these functions, and lead to a train of symptoms more or less common in catarrhal conditions of the larynx, trachea and bronchial tubes. The absorption of gases in the air-vesicles of the lungs is also modified, and may lead to very serious nervous and nutritional disturbances from auto-intoxication.

The morbid conditions which we might mention are: Deflected septum, spurs, ridges, exostoses and hypertrophied turbinals. Partial closure or obstruction of the anterior nares by these abnormalities causes the air back of the obstruction to be rarefied during inspiration, much as the air is rarefied in a syringe upon the sudden withdrawal of the piston-rod and valve. The blood in the mucous membrane of the nasal walls rushes in to fill the partial vacuum and *hyperæmia* is produced. The overplus of blood leads to over nutrition of the parts, or hypertrophy. The character of the secretions is changed and finally a low grade of irritation results, which may, in extreme cases, lead to the formation of elastic fibrous tissue, and then to a true sclerosis. During these changes we have a fine field for germ accumulation and promotion. Not only this, but we have also the preliminary conditions for sinusitis, and even deafness due to closure of the Eustachian tubes. The trouble does not stop here, but on account of the inspired air not being properly filtered, moistened, and warmed, it goes to the lower air-tract as an irritant.

The mucous membrane of the larynx, trachea and bronchi are irritated and manifest a catarrhal tendency. The epithelial cells, of which there is but a single layer lining the air-vesicle, become irritated also. The cells at first swell, and then pile up until they are two, four, six, eight and even twelve layers thick. Because of this thickening a deficient amount of oxygen is absorbed by the blood. Faulty oxygenation of the tissues or faulty metabolism results. The half-way products of oxygenation, as uric acid, etc., are freely formed and circulated through the system. Another result of the thickened vesicle-walls is the retardation of the elimination of carbonic acid gas. In other words, car-

bon dioxide is accumulated in excess in the blood, and this is destructive of the leucocytes.

If we but pause and recall the train of results following chronic irritation of the epithelial lining of the air-vesicles, it becomes apparent that physical malformations and nervous symptoms must of necessity largely make up the clinical picture of defective nasal or mouth breathing. Deficient oxygenation of red blood corpuscles leads to imperfect metabolism. Excess of carbon dioxide leads to impairment of function of white blood corpuscles. Malnutrition results in physical imperfection. The scavenger function of the leucocytes being impaired allows the accumulation of irritants in the blood, which in their turn cause peevishness, inattention, restless nights and quick temper. The impairment of the leucocytal function renders the patient an easy prey to microbic infection, and it augments the nervous symptoms just enumerated.

Therefore it is well not to make too hurried an examination of patients and thus neglect a thorough investigation of the nose. In removing the spurs, ridges, turbinals, etc., do not sacrifice the mucous membrane, but resect it, and thus hasten better results.

We might ask, what is a normal nose? There are but few of them, but in these few, we will find them to differ as do the external noses of individuals. However, keep this point in view: Always see that your patients have normal breathing space and then you will be on the right track. If they haven't it, make it for them.

THE MATRIMONIAL ASPECT OF TUBERCULOSIS.*

By A. B. GREINER, A. B., M. D., Rural Retreat, Va.

Prior to the discovery of the tubercle bacillus as the real inciting cause of tuberculosis the much discussed idea of inherited vulnerability occupied the attention of medical writers, and was regarded as the most important factor in the production of this disease. The knowledge of inherited susceptibility as applied to the disease in question dates back to the earliest writers, and has ever since been the subject of much study and interest; but since the discovery of the germ inherited predisposition it has been much less insisted upon.

Looking for the real inciting cause, and being elated over the magnificent success of finding it—such things have so absorbed our attention that the profession has in the past few years been inclined to neglect the formerly attractive and the none the less important subject of predisposition. Although we may have specific knowledge of the real causative agent, permit me to suggest that if inherited predisposition has at all anything to do with the production and propagation of the disease—whatever that influence is—it is just as potent a factor and exercises the same determining influence now as it did when the earlier writers discoursed upon it.

I am very strongly inclined to think that medical thought which so long and tenaciously clung to the idea of inherited susceptibility has undergone too great a reaction, and that the pendulum is swinging, not unduly far to the side of the tubercle bacillus, but so far as to cause us to neglect important contributing factors.

So great has been the reaction that some authors now consider such tendency a negligible quantity. I would not detract attention from the great importance of the germ; because it deserves the honor, if honor it be, of having so great power; but I am only endeavoring to emphasize the role of the ever-present hereditary tendency.

Let us at least accord it the position of a tributary cause, as to discard it in the face of recent authoritative statistical knowledge would be inconsistent with the facts.

The chief argument, and the one of weight in favor of vulnerability by inheritance lies primarily in the fact that some form of tuberculosis is very commonly met with in the ascendants of those affected. It has been stated that an hereditary influence may be found in from twenty-five to thirty per cent. of all cases of consumption if inheritance from parents alone is taken into consideration, and in about sixty per cent. when phthisical grandparents are concerned in the transmission. We cannot say just how much of this comparative greater excess of tuberculosis in the offspring of consumptives can properly be placed to the account of heredity, but the mere statement that there is an excess not accountable for in any other way

*Read before the Southwest Virginia Medical Society, Pulaski, Va., July 4–5, 1905.

stamps it as a *prima facie* fact that heredity plays its part, and hence cannot be ignored.

Let me further state my personal convictions, that were it not for suitable soil produced by heredity, a soil so eminently fitted for the growth and flourishing of the germ, there would be few cases of tuberculosis; for when the suitable, unconscious candidate for this disease is removed from our midst where will the germ find lodgement? Many very careful investigations bearing on the subject of heredity have been conducted, and in some of them the tubercular taint could be traced for four, five and six generations. While taking into consideration all the facts concerning these matters, let us not forget that children show the tendency to inherit from their parents all the good traits of the latter—physical and moral, especially the physical; but never let us overlook the additional fact that the traits productive of evil in the parents are more inclined to manifest themselves and in a much greater ratio.

So in the estimation of the marriageable fitness of individuals, the hale and robust physique of the man is not to be regarded as a sufficient counterbalance for the woman's frail tubercular history; no more can the physically perfect woman sufficiently compensate for the frailty of the man that there will be removed the very strong probability of defective issue. One author who has made some collective investigations says that heredity does not seem to manifest itself in more than one-half of the cases. But even if no more than one-half the cases thus result, would not the prevention of that one-half be a stupendous advance toward the elimination of the disease, and if the other one-half is due to germ infection (as it most assuredly is), occasioned by unhygienic and unsanitary living, the greater the hope of eradicating tuberculosis.

Remove one prominent inciting cause—the suitable soil—and you have left only one inciting cause, the germ, which can do little or no harm, for the soil essential to its growth and activity is not to be found. Even if hereditary vulnerability as an inciting causative factor plays its part in only one-half the cases, that half in the interest of humanity and posterity should be prevented. There are only two ways —education of the public mind and compulsory legislation—the latter unpopular though efficient; the former far preferable if there could be established the certainty that individuals would heed the teaching.

Direct hereditary bacillary transmission through the placenta is rare, but it certainly cannot be denied. There are on record about forty cases in which such occurred while the child was still in utero, the cases having been established beyond a shadow of doubt. As this occurs so seldom, we must look for something else, and what can it be but that requisite biological peculiarity which makes the offspring more prone to tuberculous disease? and from whence can this come except through the parents?

The two effective means, and the only two at our command, to control the spread of tuberculosis and finally rid ourselves of it, are those mentioned above and advocated by this paper.

Civil control of marriage of the tubercular or the tubercular history giving, will certainly be effective, and who can doubt but that the percentage of tubercular predisposed individuals would be greatly decreased.

Just here arises the question of personal liberty. I am of the belief that those who oppose legislative intervention to so great a degree in the prevention of disease, advance personal liberty infringement as the chief argument in their opposition, for there seems to cling to these two words a peculiar satisfied sense of defense and invincibleness.

Every one cherishes liberty and resents infringement upon those singular inalienable privileges accorded thereby, but if there were no laws to prevent crime brought about by too free indulgence of these privileges, we might as well declare personal liberty the law of each individual, and the only defense, for nothing can be more comprehensive.

The great need is to establish in the minds of the people the almost absolute certainty of defective progeny from defective parents, and to classify such wilful infliction of child injury along with some of the other crimes on the statute, and that punishment may accordingly be expected. I must confess that these measures are radical, but the best way to determine what is most appropriate and best in prevention is to consider the most stringent.

Let us see if we cannot establish the union of the tubercular or those predisposed as a crime in the ordinary acceptation of the term.

If one of you with knowledge aforethought should disfigure or slay another, punishment would be meted out according to the severity of the crime. If tubercular individuals who should know—and whom the law will not ex-

cuse if they do not know—unite in producing a family of diseased children, can we not classify such conduct as a crime against society, against the State, and against the individual so diseased? Better were it that the child had never been conceived than that it should suffer and most probably die, not having had happiness while living and contributing nothing for weal to others, and most probably a great deal for woe.

If the production of such deficients could be prevented, there naturally would be fewer to transmit to others the disease in the same way. Classify, then, such conduct as a certain degree of crime; cause in some way the people to take the same view of it, and thus distinctly lessen tubercular disease.

Those who are authorized to perform the marriage ceremony do so frequently without a thought of existing diseases or the probable inherited susceptibility thereto. Suppose the contracting parties have tuberculosis, or are intensely predisposed to it, there can be no other solution of the question than that from twenty-five to fifty per cent. of the offspring at a more or less early age will manifest undoubted signs of the disease. Let these, if they are so fortunate as to live, in their turn marry and produce, and where will the disease dissemination end? Each generation would spread the disorder in an ever-increasing ratio. Most assuredly it will never terminate its own dreadful but successful career.

No wonder that so few families are devoid of tuberculosis taint when there is no civil control and exceedingly little moral. The profession now, as a rule, does not give its consent to the marriage of tuberculous individuals; but I have seen reported some supposed mitigating circumstances on account of which union should be permitted, and appended to these extenuating circumstances was the statement that it is clearly the duty of the physician to inform the husband of the great danger to the wife and child if conception should occur before the complete recovery of the wife. If conception should occur, the teaching in the past permitted surgical interference, but in the light of our present knowledge such a procedure is no longer justified.

Yet another measure; that of prevention of conception, is to-day advocated, and every one is well aware of the difficulties attendant upon interference with this important natural function. Now, instead of permitting such conditions as these to arise, necessitating such radical measures of treatment, why not anticipate such and apply the safest preventive measures?

Education of the masses is certainly an important item in effectually carrying out the application of vigorous preventive measures, and this teaching should be done by the physician, the clergy, the more intelligent populace, and the press, emphasizing the baneful effects of heredity.

The writer offers no apology for reading in your presence the above article, which is so directly and intimately connected with one presented for your consideration at the last meeting of this Society; but being interested in the subject, these few additional thoughts are advanced as they are somewhat more specific than those formerly presented.

If this paper should provide a hearty discussion pro and con, its aim shall have been accomplished, and its author gratified.

SURGERY OF TYPHOID PERFORATION.

By EDMUND A. BABLER, M. D., St. Louis, Mo.

Perhaps the most formidable and seldom or late diagnosed complication of typhoid fever is perforation of the bowel. Previous to the valuable and inspiring memoir of the worthy V. Leyden[1] this complication was seldom recognized, and these patients were permitted to die unaided. V. Mikulicz[2] was the first surgeon to fully appreciate the assertions of Leyden and to possess the necessary courage to operate. On April 7, 1884, Mikulicz performed the first recorded operation for the relief of the symptoms of perforation of the bowel. A median incision revealed potato floating in the patient's belly. Convalescence was tedious and protracted, but recovery eventually complete.

To Professor J. T. Wilson[3] is due the honor of having been the first American to call attention to the subject and advise early operation. His painstaking and persistent labors are worthy of the highest praise. His prophetic words will be referred to later.

In 1887 Bontecou[4] operated 36 hours after perforation but the patient died. One year later Wagner[5] reported a successful case. Escher[6], Senn[7], and Van Hook[8] recorded cases

about this time. Some writers maintain that Van Hook reported the first successful American case. Gradually the profession has come to appreciate the fact that every case of typhoid fever must be closely watched and that perforation is an ever-present danger of the greatest significance.

FREQUENCY.

Perforation is of more frequent occurrence than most of the members of the profession have appreciated. It is quite probable that many cases have been diagnosed as intestinal hemorrhage. Dr. Osler[9] states that 25 per cent. of the fatal cases of typhoid fever are due to perforation, while Dr. Briggs[10] places the figure a trifle higher. Sir Mackenzie agrees with Dr. Osler, while Dr. Fitz[11] maintains that 6.58 per cent. of all cases of typhoid fever suffer perforation. In order to find the number of cases of perforation that have occurred in this city during the past six years, I consulted the city's statistics, which revealed the fact that during the past six years 1,230 persons had died from typhoid fever. During these years 6,832 cases of typhoid have been reported to the Health Department[12], but this figure is too small since many cases are not reported. It is certain, however, that there have been 1,230 deaths. Now, if Dr. Osler's assertion be true, it is then evident that more than 300 of these cases died from perforation!

Assistant Health Commissioner Francis[13] has informed me that he does not remember ever having seen a death certificate with the diagnosis of perforation of the bowel as a cause of death. I then wrote to perhaps 30 of the busy practitioners of this city, and also searched all available literature for reported cases, to see how many of these 300 had been diagnosed, but was able to collect only 35 cases. During a recent discussion at a meeting of the City Hospital Alumni Medical Society, several prominent physicians[14] with a very large private and consulting practice stated that they had seen very few, and in some instances, no cases.

In 685 cases of typhoid treated at the Johns Hopkins Hospital, Dr. Osler found perforation in 34. In 1,555 cases at the Presbyterian Hospital[15], perforation was found in 47. The records of the Mullamphy Hospital during the past five years do not contain a case.

PREDISPOSING CAUSE.

Race.—It is worthy of mention that only five or six cases of typhoid perforation in the negro have been recorded. It seems certain, however, that race, *per se,* is not a predisposing cause.

Age.—Typhoid fever is a disease of youth and early adult life. Dr. Holt[16] has never seen a case of typhoid under five years of age. Dr. Jopson's[17] patient, in which perforation occurred, was about six years of age. Dr. Elsberg[18] has reported a similar case. It is very questionable whether age is a predisposing cause. Personally, I believe that more cases are seen during early adult life simply because typhoid is more frequent at this time of life.

Sex.—Without doubt females are less susceptible to perforation than males. Dr. Finney[19] states that perforation occurs three times more frequently in males than in females. Harte and Ashhurst consider that 80 per cent. of typhoid perforations occur in males. These statistics are of very great significance when we remember that typhoid fever, as a rule, occurs as frequently in females as in males. Dr. Fitz collected 100 cases of perforation in 71 of which the patient was a male.

Intestinal parasites may predispose to perforation. Virulent cocci or bacilli may induce a secondary infection resulting in inflammation and necrosis. A severe inflammatory process in one of the ulcers may follow an invasion, and perforation follow.

Stage of the disease is an undoubted predisposing cause. By far the greater number of perforations occur during the second, third and fourth weeks. It may occur at any time but especially during the latter part of the second and beginning of the third week—at the height of the disease—as pointed out by Dr. Osler. Perforation may occur before the patient feels sick enough to go to bed or during convalescence when every danger seems past.

Of 353 tabulated cases perforation occurred as follows:

	Week of Disease.						After 6th Week.	After Relapse.	During Convalescence.	Total.
	1	2	3	4	5	6				
Platt 20	..	16	33	..	..	..	....	....	..	49
Shattuck, W. & O., 21	..	..	5	8	4	1	..	....	....	18
Harte & Ashhurst, 22	6	59	103	44	25	6	16	15	11	286

It is thus evident that perforation is greatly influenced by the stage of the disease.

Severity of the Disease.—The severity of the individual attack is an important factor. Drs. Keen[23], Platt, Fitz and others contend that there is absolutely no definite relation between the severity of the individual attack and the oc-

currence. Dr. Osler maintains that perforation occurs more frequently in the severe cases. In half of the cases of perforation occurring at the London Hospital the attack, according to Sir Mackenzie[24], was mild. In 15 of the 18 cases reported by Drs. Shattuck, Warren and Cobb, the attack was also mild. It must be remembered that when the attack has been mild the patient is frequently permitted to act indiscreetly thereby favoring perforation. A careful study of the pathology would seem to indicate that during the height of a severe attack perforation is especially likely to occur.

Intestinal hemorrhage lowers the patient's vitality and causes increased peristalsis. Dr. Nietert[25] believes that intestinal hemorrhage is an indication of a rapid ulceration and that these cases are worthy of the most careful attention. Personally, I do not consider perforation and hemorrhage coincident. It is true that it is not uncommon to have perforation follow a severe hemorrhage. The depth of the necrosis may have just extended through the coat of the blood vessel; hemorrhage will then accompany or follow the separation of the necrosed tissue.

Season cannot be considered a predisposing cause. More cases of perforation occur during the summer and autumn simply because typhoid is more prevalent at this time. Season, *per se,* is not a predisposing factor.

EXCITING CAUSE.

The exciting causes are chiefly mechanical. Any undue exertion causing a sudden involuntary contraction of the abdominal muscles may be the exciting factor. May be due to undue straining at stool, or during urination. Sudden spasm of cough may induce it. In one of Dr. Nietert's cases it followed the removal of the patient from her residence to the hospital. Nondigested food was the exciting factor in one of Dr. Dalton's[26] cases. Numerous cases have been reported in which corn-bread, graham-bread, oatmeal, and other coarse and irritating foodstuffs have induced severe intestinal hemorrhage—in some of which perforation was perhaps the cause of death. It is almost beyond cavil that placing a typhoid patient in a too cold tub-bath may be the cause of perforation, by the sudden, almost involuntary, contraction of the abdominal muscles thus induced. When perforation occurs while the patient is sleeping it is probably due to the extensive necrosis.

SITE OF PERFORATION.

Perforation may occur in the gall bladder, appendix, cecum, colon, ileum, Meckel's diverticulum, or any part of the intestinal tract. In by far the greater proportion of cases, however, it occurs in the last foot or eighteen inches of the ileum. In 220 collected cases it occurred in the last eighteen inches of the ileum in 168, while in a very few it was more than three feet from the ileo-cecal valve. Dr. Fitz has found that perforation occurs in the ileum in 81 per cent. of the cases.

SIZE OF PERFORATION.

As a rule the perforation is quite small, but Dr. Maclagan[27] mentions cases in which the hole could more fittingly be described as a sloughing of all the coats of the intestine. In Dr. Stewart's[28] patient it was as large as a silver quarter. Dr. Osler has found that the higher in the bowel the more likely is the perforation to be in a small ulcer without much infiltration or necrosis of the wall; the earlier the peroration the closer the valve and the greater the risk of a widespread necrosis of the mucosa. Cases have been reported in which the opening was so large that resection was necessary. Of 180 collected cases the perforation was less than one-eighth inch in 79; less than half an inch in 88, and more than half an inch in the balance. In ambulatory cases the perforation is usually large. It is seldom that an entire Peyer's patch sloughs away; it is more common to find a pin head size perforation.

SHAPE OF PERFORATION.

Frequently oval with ragged edges. May appear as a black spot. As a rule the perforation is oval or round—when it occurs in the cecum it is usually oval or oblong, with undermined edges. In ambulatory cases there may be five or six perforations, and of various sizes and shapes. In some instances there is a slit-like opening; such cases are usually regarded as due to traumatism.

PATHOLOGY.

In typhoid fever the pathological lesions are especially prominent in the lower part of the ileum. In the cecum and ascending colon may be found extensive lesions. At the beginning there is a hyperemic condition of the mucosa and follicles of the lower ileum. The great increase and accumulation of cells of the lymph tissue may be so extensive that the adjacent mucosa and muscularis are also infiltrated; the

blood-vessels becoming more or less compressed causes the follicles to assume a whitish, anemic appearance. There may be an appreciable round-cell infiltration. If the so-called medullary infiltration does not resolve, coagulation-necrosis follows and the affected area becomes discharged into the bowel. The process is aided by the direct action of the typhoid toxines and also by the ischemia due to the altered blood supply. Recently, the typhoid toxines have been regarded as the agents producing the agglutination thrombosis of the erythrocytes in typhoid. It has also been stated that the thrombosis predisposes to sloughing. When the medullary infiltration involves the entire thickness of the bowel it is evident that a perforation will occur when the necrotic area is separated. The slough may only involve the mucosa, or as is the more common, involve the tissues down to the muscularis. The slough is cast about the end of the second or beginning of the third week. Separation begins at the edges of the necrosed area. It is quite rare to find an entire Peyer's patch slough away, or to find a perfectly ovoid ulcer directly opposite the mesentery attachment. When the ulcer fails to heal and gradually deepens, as it approaches the peritoneal coat it may induce more or less plastic peritonitis. As a rule, however, it is rare to find adhesions, and even if present, are usually very feeble. A tag of omentum may be adherent to the bowel at site of perforation. Such a case has been recently reported by Dr. Brown[29]. If the process continues, an abscess may form and necessitate subsequent incision. Dr. Holmes[30] has reported such an instance. In one of Dr. Bernay's[31] cases an abscess had formed. Monad and Van Verts[32] have seldom or never found firm adhesions when the ileum was the site of perforation. Patches of lymph often surround, and may even obscure the opening. Dr. Thayer[33] has found that the mesenteric lymph glands usually correspond in their size to the degree of intestinal inflammation, for hyperemia, edema, fatty degeneration, suppurative softening or resolution in the nodes usually follow similar changes in the patches. The nodes first affected lie in the angle between the lower end of the ileum and the ascending colon; later on those near the root of the mesentery are involved; peritonitis may follow from suppuration in them.

"PREPERFORATIVE STAGE."

By this term, Dr. Cushing[34] referred to the whole period from the first involvement of the serosa with the customary formation of adhesions at that point, until these adhesions, which may for a time constitute the floor of the ulcer after the serosa has given away, have themselves become broken down and a general extravasation has taken place. This period may last a longer or a shorter time and is associated with pain and tenderness, and a possible rise in leucocytosis owing to the localized peritonitis. He regards the "preperforative stage" as the time when operation should be performed. The researches of Drs. Shattuck, Warren and Cobb tend to favor the existence of a "preperforative stage." They conclude that in the majority of cases of perforation certain premonitory symptoms will be recorded at a time more or less remote from the severe symptoms which induced the consultation. Drs. Wilson and Ross, Shoemaker, and McCrea, have reported cases in which there seemed to be a "preperforative stage." Personally, I do not believe that a "preperforative stage" will be noted in those cases in which the medullary infiltration has involved the entire thickness of the bowel. I believe that it is in these cases that the perforation occurs suddenly and while the patient is resting quietly. In those cases where the ulcer gradually deepens, inducing a plastic peritonitis the "preperforative stage" *may be observed.* Dr. Osler does not pin much faith in the "preperforative stage." Drs. Harte and Ashhurst doubt whether it can be recognized as a pathological any more than as a clinical entity, because so often there may be a certain degree of peritonitis without any microscopic evidence of a perforation.

SYMPTOMS.

There are no pathognomonic symptoms of typhoid perforation. In some instances there may be no symptoms suggestive of perforation. Drs. Dandridge, Murphy, Deaver, and others have reported cases in which the patient presented practically all of the usual manifestations of perforation, but celiotomy failed to reveal any evidence of same. As a rule, however, the closely-followed and carefully-attended cases will present certain symptoms by means of which a diagnosis can be made. Among the important and more or less constant symptoms of perforation are the following:

Pain.—Sensory nerves are distributed to the peritoneal coat, and it is quite probable that pain will be present if perforation occurs. In

fact sudden, severe pain in the lower right quadrant of the abdomen is one of the most frequent and important symptoms of typhoid perforation. It may be referred to the penis, rectum, or umbilicus, and is usually paroxysmal and stabbing in character. In one reported case the pain was confined to the penis and the night orderly catheterized the patient; the pain subsided but within a few hours there appeared severe, paroxysmal pain in the abdomen accompanied by the usual manifestations of peritonitis. In several instances the sudden pain followed straining at stool but was limited to the rectum until peritonitis had developed, when it shifted to the abdomen. Drs. Shattuck, Warren and Cobb do not deem it possible to too forcibly emphasize the fact that abdominal pain, especially if localized, complained of by the patient in the mild or moderately severe type of typhoid, is not a frequent occurrence unless it means peritoneal infection, localized or general. By pain, is not meant the discomfort or uneasiness complained of as a result of meteorism or distention by gas. When the pain occurs during a quiet sleep, or during a bath, or as a result of severe straining, it will be very severe (in many cases at least).

Pain may be not complained of owing to the obtunded condition of the patient. Below will be found a summary of the collected cases in which pain was a prominent symptom:

	Abdominal Pain.			Referred Pain.		
	Sudden and Severe.	Gradual and Not Severe.	Slight or None.	Referred to Rectum.	Referred to Penis.	Total.
Allyn, 35	1	....	....	....	....	1
Barrs & Thompson, 36	1	....	....	....	....	1
Bartlett, 37	1	....	....	....	....	1
Baumgarten, 38	....	1	....	....	....	1
Bennett, 39	1	....	....	....	....	1
Bowley, 40	1	....	....	....	....	1
Bernays, 41	....	2	....	....	....	2
Briggs, 42	3	2	....	1	....	6
Brown, 43	2	....	....	....	....	2
Cutler & Elliott, 44	1	....	....	....	....	1
Cushing, 45	8	4	....	....	....	12
Davis, 46	1	....	....	....	....	1
Dalton, 47	2	....	....	....	....	2
Drury & Taylor, 48	1	....	....	....	....	1
Elsbery, 49	15	....	....	....	....	15
Finney, 50	3	....	....	....	....	3
Hawkins, 51	1	....	....	....	....	1
Hays, 52	7	....	....	....	....	7
Hill, R., 53	3	....	....	....	....	3
Heuston, 54	1	....	....	....	....	1
Jones, 55	1	....	....	....	....	1
Jopson*	1	....	....	....	....	1
Le Conte, 56	2	1	....	....	....	3
Mallett & Deansley, 57	1	....	....	....	....	1
McCrea, 58	7	3	....	....	3	13
Mackenzie*	68	6	2	....	....	76
Manges, 59	14	2	....	....	....	16
Maclagan*	1	....	....	....	....	1
Miller, 60	1	....	....	....	....	1
Munro, 61	9	6	....	....	....	15
Nietert*	4	....	....	....	....	4
Platt*	2	....	....	....	....	2
Pentry, 62	1	....	....	....	....	1
Ricketts, 63	1	....	....	....	....	1
Reder, 64	1	....	....	....	....	1
Sayer, 65	1	....	....	....	....	1
Stewart*	6	....	....	....	....	6
Saleesby, 66	1	....	....	....	....	1
Shoemaker*	1	....	....	....	....	1
Steer, 67	3	....	....	....	....	3
Thornton & Godwin, 68	1	....	....	....	....	1
Wilson & Ross, 69	1	....	....	....	....	1
Total	181	27	2	1	3	214

*Previously quoted in article.

Note.—Since writing the above Dr. Behrens reports three cases in which there was sudden, severe abdominal pain. Drs. Brown and Kirchner have also each recorded a case.

Vomiting is not a constant symptom of perforation, being present in only about 22 per cent. of the cases. In Dr. Shoemaker's patient it was present several hours before perforation occurred—in fact Shoemaker mentioned it among the symptoms of the "preperforative stage" which seemed to be present. It seems that there may be some direct relationship between the severity and persistency of the vomiting and the quantity, virulency and location of the escaped bowel content. Persistent vomiting associated with sudden, paroxysmal, abdominal pain is a serious symptom and deserves the most careful and thorough investigation, and constant attention. When the perforation is very minute and very little or no feculent, slightly irritating, material has escaped there may be no vomiting until peritonitis develops. When the perforation is large, any scybalæ and liquid feculent material has escaped into the peritoneal cavity, vomiting is usually severe and persistent. In reviewing the literature I have been impressed with this finding. As before stated, persistent vomiting is a very grave symptom. Its absence, however, must not be con-

sidered as indicative that no perforation has occurred.

Temperature.—There is usually a sudden change in the temperature. A sudden rise or a sudden drop, or a drop followed by a rise or *vice versa,* is of great significance and demands the most careful consideration. In two of Dr. Briggs' cases the temperature presented no sudden change, while in fourteen of Dr. Finney's cases there was a decided fall noted. Dieulafoy[71] regards a sudden fall in the temperature an infallible sign of perforation. Dr. Le Conte considers a drop of frequent occurrence in perforation. In Dr. Reder's case, the sudden pain was accompanied by cold extremities and cold, clammy sweat. It is worthy of note that any sudden change in the patient's temperature should be reported immediately to the physician, who should at once make a thorough examination and watch the patient closely.

There may be a change in the *solubility of the bowels,* as noted by recent writers. If the bowels have been constipated, they are now loose; if previously loose, they may become constipated. This seems to be a very uncertain sign and demands further observation.

Pulse.—The pulse is a valuable landmark. As a rule it shows a change in quality and rate soon after perforation. Increased rate, however, does not always follow within a few hours. Sir Mackenzie considers it very significant if the pulse during a few hours following the attack of pain, becomes more rapid, running, and feeble. Increased pulse rate was present in twelve of Dr. Mange's sixteen cases; in Dr. Briggs' six cases; in one of Dr. Miller's and in twelve of Dr. Munro's. It was a prominent feature in many of the cases recorded in the literature, and Dr. Briggs considers the pulse an indication of the greatest importance and deserving of special consideration. If associated with sudden pain, or change in the temperature, it becomes of vital importance. In every instance a sudden increase in the pulse rate should command careful investigation and the patient should be constantly watched.

Delirium may be present before perforation occurs. As an indication of perforation it seems of little value. In reviewing the literature we do not remember of having met an instance where delirium followed immediately after perforation. It must be remembered, however, that the patient may be so severely obtunded that the usual manifestations of perforation may be readily overlooked. Delirium may be a symptom of the peritonitis induced by the perforation.

Facial Expression is ever a valuable indication of the patient's condition. Any sudden change in the facial expression demands careful consideration. In some instances the change is quite marked and readily detected. The patient whom we left an hour ago, looking cheerful and in apparent good spirits is now restless; the expression is anxious and it is evident that something wrong has happened: the features may be pinched, the eyes sunken, or the lips pale. In four of Dr. McCrea's cases there was a prominent change in the facial expression. In Dr. Salecsby's patients the expression was drawn, anxious and distressed. In delirious patients the change may not be so characteristic or at least not so readily noted. In many cases the changed expression seemed to accompany the perforation, while in a few it developed a few moments later. This was especially prominent in all of Dr. Roland Hill's cases.

Rigidity.—It must be remembered that the surgeon and the physician have different ideas as to the meaning "rigidity"—they are practically two different things. The rectus abdominalis does not have to be as rigid as in suppurative peritonitis before rigidity can be detected. Rigidity is a very important sign and is usually present early. Dr. Briggs, and others, regard it as the most important of all the physical signs. Muscular spasm is certainly a valuable finding. It may not develop for several hours after perforation has occurred; it may be due to pleural pain and indicative of pneumonia. In some instances rigidity has not been observed. To detect rigidity it seems needless to say that the entire palmar surface should be in contact with the abdominal wall—the fingertips alone should not be employed.

Tenderness, according to Sir Mackenzie, is next to the most frequent accompaniment of perforation. If complained of previous to the onset of abdominal pain, it becomes intensified. In some instances the point of greatest tenderness is in the region of the perforation while in others it is variable. The position of the terminal loop of the ileum would seem to explain the fact that tenderness is usually most severe on the right side. In one of Dr. Brown's patients there was an area of great tenderness on the

left side of abdomen, and at operation the perforation was found in the latter situation. When the tenderness is associated with pain and muscular spasm, and has not previously existed, it becomes of especial importance.

Dullness is a very uncertain sign of perforation. Suddenly developed changeable dullness in the flanks is a sign of great significance but its absence does not mean that perforation has not occurred. A diminution of the area of hepatic dullness in the axillary line may be due to the distention of the bowel, but when there is a sudden "ballooning of the abdomen," as it were, shortly after the onset of severe abdominal symptoms, the area of hepatic dullness may be almost obliterated, and the presence of free gas in the peritoneal cavity is a fact. Dr. Connell's method for the detection of free gas in the cavity cannot be recommended. The dullness may be noted in the left lower quadrant of abdomen, and when accompanied by pain and tenderness, the perforation has probably occurred in this area.

Altered respiration is usually a late sign and is indicative of the subsequent peritonitis. As an early sign it has seldom or never been observed.

Collapse.—Until recently collapse was described as an early sign, but it is now regarded as due to the peritoneal infection. Dr. Murphy[79] maintains that there is little or no depression immediately after perforation, and no collapse. He considers the collapse as a late manifestation, and an expression of the "blistering" of the peritoneum and absorption of the products of infection. In some cases where the patient is severely obtunded and weakened, and there is a quantity of virulent bowel contents poured out into the peritoneal cavity the degree of shock will be quite severe.

Leucocytosis.—To be of the utmost value an hourly blood count should be made in all patients presenting any symptoms indicative of impending perforation, or in which a perforation, is feared. Of course the general practitioner cannot do this. In well-regulated hospitals, however, there is absolutely no reason why it should not become a custom. In typhoid, there is a leucopenia but just as soon as an inflammatory complication arises there results a leucocytosis. Some authorities doubt whether perforation itself causes any change in the white count, but Dr. Keen attaches considerable importance to the increased white count. Dr. Osler contends that in well-followed cases there will be found a rise; a decided drop of the reds might indicate hemorrhage. Dr. Cushing has reported an interesting case of dysentery in which perforation occurred. One hour previous to perforation the white count was 47,000; one hour after it was 41,000, and one hour thereafter it registered 30,000. He thinks that a decrease is of more serious import than a rise. A single blood count after perforation is not satisfactory, since in some cases a rise and in others a fall, while in a few, no change has been noted. It may be stated, however, that a white count of more than 15,000 is indicative of the utmost significance, and if associated with pain, and high pulse rate, demands exploratory incision. It is to be hoped that these cases will be more closely studied as to the blood changes, since more complete data is needed.

Edema of the abdominal wall has been noted in a few cases, but its absence is of no import. In fact it cannot be designated as an important or constant sign. Cases have been reported in which it was an accompaniment of pancreatic abscess.

DIAGNOSIS.

In some cases a positive, early diagnosis is impossible. It is quite probable, however, that many cases have been seen in which the early symptoms were not duly appreciated. Personally, I believe that if the general practitioners would insist upon the taking of careful, constant, and complete bedside notes in every case of typhoid fever, a far greater number of these cases would be seen by the surgeon, and at a time when surgery promises so much. It is here that I would urge the general practitioners to teach the common sense mother or friend of the patient how to take the pulse and temperature, and to record the same every three hours —and immediately if there occurs any sudden change in the patient's condition; the quantity and character of nourishment; the character and quantity of the excreta; any change in the patient's condition; duration of sponge bath, and the effect of the latter; hours of sleep. In a word, teach her to be ever on the watch, and to record everything that has been done for, by and to the patient. By so doing the patient's progress can be noted at a glance and greater care and attention will be accorded the patient, while the relatives will readily see that the phy-

sician is doing everything possible—his sacred duty. *I plead for the bedside notes.* Dr. Keen believes that i pain, fall in temperature and a rise of leucocytes to 15,000 or even 50,000 be present, then you ought to conclude that there is a perforation. Drs. Shattuck, Warren and Cobb conclude that pain, associated with local tenderness and muscular spasm, and a rising leucocyte count, points, in most cases, to an operation; in all to a surgical consultation. Dr. Osler maintains that sudden pain increasing in intensity and recurring in paroxysms, associated with an increase of the pulse rate, distention of the abdomen, increasing pain on pressure, and a rise in the leucocytes, a probable diagnosis should be made.

A hasty diagnosis should never be made. Every symptom and sign must be carefully considered, and tenderly yet thoroughly investigated. The patient should not be unnecessarily fatigued or excited, because, if perforation has occurred, it simply causes further pouring out of the intestinal contents. All of the usual symptoms must not be expected to be present in an individual case. In Drs. Cutler and Elliot's patient the prominent symptoms were constant pain, pinched expression and marked rigidity. Sir Mackenzie contends that if it be found on examination that there is no tenderness, that the abdominal wall is flaccid and soft, and moves freely with respiration, that the liver dullness is normal in extent, and that the flanks are resonant, then one may rest assured that, as yet, no perforation has occurred. This statement is worthy of careful consideration. In making a diagnosis Dr. Briggs relies mainly on the presence of pain, sensitiveness, muscular resistence, altered respiration, alteration in the rate and volume of the pulse, and evidence of systemic shock. It is well to remember that systemic shock may be very slight and transitory. As before stated there seems to be a direct relation between the degree of shock and the virulency and quantity of the escaped bowel content. The patient's general condition must also be remembered.

BIBLIOGRAPHY.

1. V. Leyden, Deutsch Med. Woch. 1884 (q. by Fitz and many others).
2. V. Mikulicz, Volkmann's Samm. Klin. Vertrag. Ibid.
3. Wilson, Phil. Med. News, 1886.
4. Bontecou, J. A. M. A. 1890, Vol. 15, p. 455.
5. Wagner, q. by Fitz.
6. Escher, Wiener klin. Woch. 1887, B. 38, S. 607.
7. Senn, Am. J. M. S. 1887.
8. Van Hook, N. Y. Med. Jour. 1891.
9. Osler, Lancet Feb'y 9, 1901; Phil. Med. Jour., Jan. 19, 1901.
10. Briggs, Am. J. M. Sc. 1903, Vol. 125, p. 821.
11. Fitz, Trans. Ass. Am. Phy. 1901.
12. H. Dept., Report of the Health Comm. 1902.
13. Francis, Personal Letter.
14. City Hosp. Alum., Courier of Med., Nov., 1904.
15. Harte & Ashhurst, An. of Surg., Jan., 1904.
16. Holt,, Diseas. of Inf. & Childhood. 1903.
17. Jopson, Arch. of Ped., March, 1904.
18. Elsberg, Med. Rec., July 9, 1904.
19. Finney, Bull. J. H. H., May, 1897.
20. Platt, Lancet, Feb. 25, 1899.
21. Shattuck, W. & Cobb, Boston Med. & Surg. Jour., June 21, 1904.
22. Harte & Ashhurst, Annals of Surg., Jan., 1904.
23. Keen, Courier of Med., Nov., 1904.
24. Mackenzie, Lancet, 1903; Practitioner, Jan., 1904.
25. Nietert, Personal Letter.
26. Dalton, St. Louis Med. Review, Vol. 38, 1898.
27. Maclagan, British Med. Jour., June 15, 1901.
28. Stewart, Annals of Surgery, 1904; Am. J. Med. Sc., May, 1904.
29. Brown, Ibid, 1903, March.
30. Holmes, J. A. M. A., March 14, 1903.
31. Bernays, Private Letter.
32. Monod & Von Verte, Quoted by Shattuck, W. & Cobb.
33. Thayer, Pathology, 1903, 2d Edit.
34. Cushing, Reprint, B. J. H. H., No. 92, Nov., 1898.
35. Allyn, Phil. Med. Jour., Aug. 3, 1901.
36. Barrs & Thompson, Lancet, Jan., 1904, p. 160.
37. Bartlett, Med. Fort., Apr. 11, 1903.
38. Baumgarten, Private Comm.
39. Bennett, Lancet, March 7, 1903.
40. Bernays, Private Letter.
41. Bowley, Lancet, Jan. 16, 1903.
42. Briggs, Am. J. Med. Sc., 1903, Vol. 125.
43. Brown, An. of S., March, 1903.
44. Cutler & Elliott, Med. Rec., Dec. 22, 1900.
45. Cushing, Rep. B. J. H. H., 1898.
46. Davis, Am. Med., Jan. 18, 1902.
47. Dalton, Private Letter.
48. Drury & Taylor, Med. Press, 1904.
49. Elsberg, Med. Rec., July 9, 1904.
50. Finney, Bul. J. H. H., 1897.
51. Hawkins, Lancet, Oct. 14, 1899.
52. Hays, Am. Med., Sept. 6, 1902.
53. Hill, R., Private Letter.
54. Heuston, Brit. Med. Jour., Nov. 16, 1901.
55. Jones, An. of S., Vol. 33, p. 176, 1901.
56. Le Conte, Phil. Med. Jour., Dec. 13, 1902; An. of S., 1904.
57. Mallet & Deansley, Brit. Med. Jour., 1901.
58. McCrea, Am. Med., Sept. 6, 1902; N. Y. Med. Jour., May 4, 1901.
59. Manges, Med. News, June 11, 1904.
60. Miller, Boston M. & S. Jour., May 25, 1899.
61. Munro, Ibid., Feb. 5, 1903.
62. Pentry, Phil. Med. J., Dec. 13, 1902.
63. Ricketts, Reprint. Cin. Lancet-Clinic, Apr. 6, 1895.
64. Reder, Interstate Med. J., Vol. II, No. 11, p. 676.
65. Sayer, Lancet, 1902; quoted by others (?)
66. Saleesby, Phil. Med. Jour., Aug. 5, 1899.
67. Steer, Private conversation.
68. Thornton & Godwin, Lancet, Aug. 17, 1901.
69. Wilson & Ross, Phil. M. Jour., May 2, 1903.
70. Murphy, J. A. M. A., Apr. 11, 1903.

(Concluded in next issue.)

Book Notices.

Psychiatry. By STEWART PATON, M. D., Associate in Psychiatry, Johns Hopkins University, etc. Philadelphia and London. J. B. Lippincott Co. 1905. Cloth. Small 8vo. Pp. 618. $4.

The continuous advances made in the study of so-called mental diseases—notwithstanding the multiplication of technicalities as introduced by different writers—are tending very materially to simplify the subject of psychiatry. The volume before us, intended as a "text-book for students and practitioners," impresses very strongly the value of early recognition of various disorders of mental action, and adapting treatment promptly to suit the condition. The chapters on the symptoms, the treatment and the general causes of mental alienation are specially valuable in this connection. All of the usual forms of insanity are well described; and copious illustrations of handwriting, of pathological sections, etc., very materially assist the reader. Every doctor's library should have some authorities on psychiatry, and there is none of text-book size that is more nearly up-to-date, more clear in description, or more helpful in the proper application of the subject than this book.

The Eye, Mind, Energy and Matter. By CHALMERS PRENTICE, M. D., Chicago, Ill. Published by author. 1905. Cloth. 12mo. Pp. 131. Price, $1.50 net.

The announcement states that the first half of this book (which treats of mind, energy, brain strain, open air life, etc.) is written for the general reader; the other part is of a professional nature. Drunkenness is treated of as a nervous disease, and the use of eye glasses is spoken of "the latest discovery of its cure." Such a sweeping statement should not go out without noting that it is true only in some cases. An analysis of the various factors in open air treatment of consumption is given. Relief of eye-strain, energy-strain, or brain-strain he regards as one of the chief factors in the cure of consumption by the open air treatment—another point, we fear, the author carries too far. In short, the author appears to be too ardent an advocate of the use of eye glasses before the patient or party is aware of the need for them —either for close work or far off vision. The book has no index.

Gray's Anatomy.—A new edition of this valuable book is announced by the publishers, Messrs. Lea Brothers & Co., as being about ready for issue this summer. It is edited by Dr. J. Chalmers Da Costa, of Philadelphia, together with a special corps of assistants, who have been laboring diligently for the past two years. Several important changes have been made in the revision. Old nomenclature is used, with new names given in brackets following the old terms; the sections on embryology and histology have been distributed throughout the new edition as references bearing directly on the part under consideration. More than 400 new and elaborate engravings in black and colors have been added.

Editorial.

Yellow Fever in New Orleans

And certain other neighboring localities has gradually, day by day, grown worse, until at this writing the record for the twenty-four hours ending 6 P. M., August 9th, as issued by the health authorities for the city of New Orleans shows: new cases, 12; total cases to date, 628; deaths during day, 3; total deaths to date, 115; new sub-foci, 15; total foci, 91.

With the appearance of yellow fever in that city, there was naturally some uneasiness among the population, but with assurances that the manner in which the disease conveyed was understood by the medical profession, as was also the matter of ridding a section of this formerly much dreaded plague public confidence was held in abeyance. The health authorities in New Orleans have had much to contend with—especially so with an undesirable Italian element about the French markets—in carrying out measures to limit the spread of yellow fever, measures which proved effectual during the latter portion of the American army rule in Cuba. For this reason, the disease has not been

checked as was expected that it would be, with the result that with the gradual increase in the number of cases a state of affairs bordering on a panic, if not real panic, exists in many sections of Louisiana, Mississippi and adjoining States. Old-time shotgun quarantine is maintained at numerous places, freight and passenger traffic are interferred with—even so distant and large a city from the infected centre as Shreveport being without other than telegraphic communication. While there is no reason so far for any doubt by the health authorities as to the truth of the mosquito theory, the general public of the surrounding country, without thought of the many obstacles to be surmounted in controlling the disease—with each new case drifts slowly away from any such theory as the transmission of yellow fever from patient to patient by the bite of an infected mosquito. Such lack of belief by the public means lack of support and assistance, as well as negligence of the proper methods of prevention of and consequently to the early eradication of this plague. Town councils, legislatures, and other governing bodies are slow to appropriate the necessary moneys of their treasuries to Health Boards or for any other purpose so long as there is room for skepticism in their own or their constituents' minds as to the benefits to be derived. The profession has, with few exceptions, accepted the mosquito theory as to the mode of transmission, though there are undoubtedly large numbers of doctors who have felt and still feel that although the mosquito may be the chief conveyor of yellow fever in most epidemics still it is drawing the lines too closely to say that this is the only intermediary. The theory is comparatively new, but with the most convincing proofs that it is founded on fact as established by the Yellow Fever Commission, of which the late Major Walter Reed, of Virginia, Surgeon U. S. Army, was chairman, we are not willing to do otherwise than accept the findings of this Commission, which was appointed by the Surgeon-General of the Army from among men in the service who were deemed especially fitted for the special work before them, and who freed Havana, where the disease had always been considered endemic to such an extent that according to the reports of Dr. Gorgas, of the U. S. Army, not a case has occurred there since September 28, 1901. From all the information at hand, it looks as if the New Orleans health officers have been hampered by insufficient means for the territory embraced to manage the situation—not because of improper measures. When we study the spread of this fever, no other theory seems to explain the cause of so many cases as does the mosquito. Nothing in the present epidemic has gone to show that anything but incompleteness in known methods of prevention has allowed it to progress thus far. The mosquito theory—with its special variety of mosquito, the *stegomyia fasciata*—can explain, so far as we have reason to believe, each case that has occurred, and it will explain things about the disease that were taught long years before it was positively looked upon as such a dangerous little culprit. It might explain how it was that yellow fever came to be regarded by the best authorities as noncontagious; why it was confined within certain territorial limits; why, as was taught by Flint, persons going from a district where it prevails into a district where it does not exist, and becoming attacked in the latter, do not communicate the disease; why complete seclusion has proved ineffectual to prevent the disease; why it prevails only in the summer season; and why—besides numerous other apparently predisposing causes—persons more are frequently infected at night? Sanitary measures in general were always strictly enforced whenever yellow fever was within range, but special efforts to eliminate the mosquito, to destroy his breeding place, and to prevent his bite, were not thought of. Prophylaxis now-a-days means an active campaign against the mosquito and the annhilation of his breeding places, as pools, or gutters containing water, etc. All cases of yellow fever are to be protected by netting, so that mosquitoes cannot bite these cases and carry the infection to the uninfected, while it probably goes without the saying that the uninefcted individual would further protect himself from mosquito bites—be they infected or not—by a similar means at night. The seaport towns all along the gulf and the Atlantic seaboard are on the alert for stray cases, but we are hopeful that from now on the situation will steadily improve, and that the worst is over.

As we go to press it is announced that the United States Public Health and Marine Hospital Service, with its great facilities and practically unlimited resources for handling the situation, is to assume entire charge of the yellow fever area, and we presage for it the success

that crowned the efforts of the Medical Department of the Army in Cuba.

Bacteriologist for City of Richmond.

We note with pleasure that an ordinance to establish the office of City Bacteriologist has been introduced into the City Council of Richmond by Dr. Ennion G. Williams, who is the only representative of the profession in either branch of the city's legislative body. The chief duties of such an officer will be to aid the regular practitioners in making a correct diagnosis of cases suspected of having tuberculosis, diphtheria, and typhoid fever. He will examine sputum for tuberculosis, blood for typhoid fever by means of the Widal reaction, and cultures from the throat for diphtheria. As the prompt diagnosis of these three diseases aids very materially in preventing their spread to others, the examinations will be made free and the reports sent to the attending physician.

The benefit to be derived from this office is not only for the individual patient, but more especially for the public generally. It will undoubtedly be the means of saving many lives and much sickness, and should have the heartiest co-operation of the profession.

It is strange that a city of the size and importance of Richmond should not long ago have had this office, which has been established in nearly every city of importance in the Union. The city of Norfolk, Va., which is to be congratulated upon its active, progressive and efficient health department, has had such an officer for several years.

St. Luke's Hospital,

The private sanatorium of Dr. Stuart McGuire, of this city, although built hardly more than five years ago by his eminent father, the late Dr. Hunter McGuire, is now being enlarged by the addition of a new story. For the last twelve months, owing to lack of space, Dr. McGuire has frequently had to put some of his patients at hotels or other institutions, and to obviate further annoyances of this sort the changes at present under way are intended to increase the capacity from forty-two to seventy-five patients. Private baths are to be put in some of the rooms, a house system of telephones is to be inaugurated, and everything, in fact, that experience has suggested, will be done to make St. Luke's one of the most thoroughly equipped hospitals in the country. It will be reopened, as is announced in the advertisement, early this fall.

The Hygeia Hospital,

The private sanatorium of Dr. J. Allison Hodges, of this city, owing to the increasing demands of the patients, is being enlarged for the second time in two years. This hospital is designed especially for the care and treatment of medical cases alone, and has met with marked success.

The present enlargement will consist of a three-story addition, with fourteen additional sleeping rooms. The bath department will also be remodelled and enlarged.

The hospital will be closed during the month of August, but will be ready for the reception of patients on September 1st.

The Medical Department

Of the United States Navy has detached Surgeon W. C. Braisted from special duty in connection with the Russo-Japanese War, and ordered him to report to that Department in Washington.

The Medical Department of the United States Army has ordered Surgeon Wm. C. Borden to proceed to Boston and Albany, via Philadelphia, on business pertaining to the construction of newer hospitals.

Obituary Record.

Dr. P. Edward Anderson,

Of Rodophil, Va., died July 24th, aged 67 years, in Richmond, where, owing to ill health, he had resided during the past few months for the purpose of treatment. Dr. Anderson graduated at the Jefferson Medical College in 1859. During the first years of the Civil War he served as a trooper in the Third Virginia Cavalry, though later he was given duty in the Medical Department. He practiced medicine the greater portion of his life in Amelia county, where he was highly esteemed. He joined the Medical Society of Virginia at its last session. Three daughters, one of whom is married, survive him.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 10.
Whole No. 226.

RICHMOND, VA., AUGUST 25, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

Concerning Some of the Newer Non-Surgical Forms of Treatment of Abdominal Conditions of the Female Pelvic Organs.*

By KATE C. MEAD, M D., Middletown, Conn.

Much may be done in the way of preventing abnormal conditions of the female pelvic organs by attending to the school hygiene of growing girls. It has been said that this is an age of pie, pickles, "fudges," and chafing-dish indigestibles. It is also an age of insufficient winter clothing, of high-heeled shoes, of abdominal constrictors named "straight front corsets," and, unfortunately, of night long dancing parties. This combination results promptly in intestinal fermentation, and constipation, followed by visceroptosis of some or all the abdominal and pelvic organs and by diminished vitality and neurasthenia.[1] President Stanley Hall says:

"Specialists are beginning to realize that they must broaden their views from the pathology of a woman's organs, till lately so often doomed if once she consulted them, to the entire problem of regimen, and know at least as much about woman as about her organs."[2]

"It cannot be doubted that the annual increase in strength of girls from fourteen to nineteen is exceedingly small, and out of all proportion to that of boys of the same age. I have no doubt that the average woman from nineteen to twenty-one years of age has much less strength in proportion to her weight than the average girl of twelve to fourteen."[3] Few women of twenty-one years of age, outside of professedly athletic college women, can play a good game of tennis, row, or walk ten miles. They have increased in height, breadth and weight without muscular increase.

Some accidental trifle calls upon a woman for a little more than her ordinary work, and she pays for it by a congestion of some organ of the body, or a sprain of some ligament or tendon. Time spent in muscular training is not lost time. Flabby muscles are anemic, and this anemia implies congestion of the viscera. The idle muscle contains not more than one-fourth or one-sixth as much blood as the active muscle. Wherever there is a congested area there is a good culture-field or bacteria, and if the pelvic organs are engorged with blood they may be infected by the colon bacilli from an over-distended bowel, or made the seat of any other auto-intoxication. The pain or discomfort of uterine disorders produces mental weariness, which easily becomes neurasthenia, with its long chain of sequelæ.

The routine of housework, and the slow or jerky movements connected with the care of children are not enough to keep a woman's muscles in tone. She needs active out-of-door exercises of a pleasurable sort to keep the proper amount of blood in her muscles and to keep debris from clogging her brain.

McCallum says that over 90 per cent. of cases of neurasthenia in the female depend upon visceroptosis, owing to badly fitting and heavy garments, imperfect use of the lower thorax, presence of fat, and want of tone in the abdominal muscles. Prolapsus of the uterus may be only one feature of a possibly general visceroptosis, causing all kinds of pain and discomfort. Many non-medicinal means are necessary to cure visceroptosis: abdominal supporters, massage, gymnastics, cold baths, sleep in correct positions, increase of tone in the rectal muscles, etc.[4]

Operations are spectacular, and often necessary, but early and judicious gynecological treatment by other means will often prevent an operation.

Air and water, light and heat, motion and electricity, are six powerful restorative agents which are practically within reach of all. By motion alone the osteopaths promise many cures and obtain no little fame; but it may be questioned whether it is altogether to the credit of the medical profession to ignore the study of

* Read before the 113th annual meeting of the Connecticut Medical Society, at Hartford, May 24-25, 1905.

Swedish movement and massage, which is much more scientific than osteopathy, and gives better results.

Unfortunately, we have few institutes which make use of all these six agents developed to their greatest therapeutic value. In Rome there is one such institute, which I had the pleasure of seeing last spring, called "The General Institute of Physical Therapeutics." In its first year there were treated ninety-six cases of diseases of the female pelvic organs, of which sixty-one were cured or much improved. The treatment consisted chiefly in massage, electricity, and baths, given several times a week for six to eight weeks; and the proportion of cures would have been larger had some of these chronic invalids not become discouraged in the early part of the treatment by an inevitable recrudescence of the disease.

For chronic inflammatory conditions, such as metritis, endometritis, peri- and para-metritic exudates, oophoritis, etc., a "water cure" is often very beneficial:[5] draughts, for example, of sodium chloride and sodium sulphate waters. These purgative waters cause a lowering of the hypostatic pressure in the abdominal blood vessels, overcome the hyperemia of the uterus and its adnexa, and so stimulate the absorption of exudates. (Cohen.) Such natural waters as Rose or Crab Orchard and Saratoga Springs are of benefit in some cases, or in debilitated patients the milder waters, such as Vichy or the Waukesha Spring water of Wisconsin.

A "drinking cure" may be combined with a "bathing cure," such as the mud or peat baths, hot brine baths, iodine brine baths, or the Fango baths lately introduced into New York from Italy.

The iron-peat baths are especially valuable for absorbing exudates, on account of their powerful cutaneous irritation. This is due to the mechanical friction and weight of the mud, and to the greater degree of heat which can in this way be borne by the patient. Contra-indications for this kind of bath are organic disease of the heart, arterio-sclerosis, or pulmonary tuberculosis.

Hot sea-baths and the iron-peat baths of Marienbad, etc., are of value in relieving the secondary manifestations of myomata of the uterus and of incipient ovarian tuomrs. Local carbonic gas-douches are useful in treating amenorrhea and dysmenorrhea.

Fango,[6] a kind of volcanic mud found in Italy, makes a good hot bath for treating pelvic and uterine inflammation. It acts like a gigantic poultice, withdrawing blood from congested areas to the surface of the body, and stimulating removal of inflammatory products, especially in recent cases. The mud is applied hot, about 112° F., and the patient remains in the "pack" for twenty to forty minutes and then goes into a water-bath to be rubbed. Fifteen to twenty-one treatments are said to be required for individual cases. There is now a Fango Institute in New York city.

The pain of sub-acute para- or peri-metritis is quickly relieved by dry hot air over the abdomen. Any apparatus which will generate a heat of 300°, or more, may be used; or an apparatus consisting of four electric light bulbs under an arched abdominal covering. If chloride of calcium is placed inside this cover to absorb some of the perspiration, a much greater degree of heat may be borne. The effect of this dry heat, or light and heat together, if used for thirty minutes once or twice a day, is very good in hastening resolution, or in softening tissues before making a vaginal incision through which to evacuate pus from an infected Fallopian tube.

Take a case of sub-acute gonorrheal parametritis, which Schauta calls "Cementitis," owing to the firmness of its exudate, treat it for a week with hot air and hot vaginal douches, then replace the uterus gradually by Brandt's massage method, and the patient's symptoms should be entirely relieved, although the gonorrhea may not be cured.

Moist heat to the abdomen is often comforting to the patient, and readily applied. Pads of wadding, which may be soaked in any hot solution and covered with oiled silk, are most suitable for this treatment. This combination can be bought at the drug stores under the name of "emolasm," and it is fully as efficient as antiphlogistin, and cleaner than this much advertised paste.

At Schauta's clinic, in Vienna, I found Schauta and his assistant very conservative as to operations. Uterine massage and local applications of absorbents or antiseptics are given a thorough trial or consideration before resorting to surgery. For obvious reasons tumors, cysts and cancers must be removed, and by the vaginal route if possible; curettage is done for retained placentæ; abscesses are evacuated and drained, and in many cases retroverted uteri are suspended or fixed to the wall of the abdomen or anterior wall of the vagina. But for a

case of hemorrhage from a simple endometritis, for example, instead of immediate curettage, they give rectal enemata of ergotin with glycerine—viz: Ergotin 10.00 grammes, Glycerine 20.00 grammes, Aq. Dest. 70.00 grammes, Ac. Salicyl .20 (as preservative). This preparation is to be used by rectal catheter, 50 grammes at a time, once or more a day for a week if needed before resorting to the curette.

Stypticin or styptol, three to six grains in twenty-four hours, or fl. ext. hydrastis can. 75 gtt. per diem, are administered by mouth in some cases, and the case carefully watched.

Given a case of endometritis or of chronic metritis in a multipara (and few multiparæ have not a chronic metritis), where there is a steady ache in the sacrum as a subjective symptom, and an enlarged retroposed uterus, with hard, open cervix and no history of unusual bleeding or fever, it is found beneficial to give these rectal enemata of glycerine-ergotin solution and vaginal tampons of ichtholdine or other solutions of ichthyol and iodine, and to scarify the cervix as often as is necessary to deplete it freely.

If an acute para- or peri-metritis can be seen sufficiently early, the inflammation may be aborted by the use of a Leiter coil of ice water to the abdomen. This is often useful during the puerperium, and at the same time cold wet gauze may be kept in the vagina, constantly renewed.

Chronic salpingitis, with retroversion of the uterus, is amenable to treatmeit by Brandt massage. This treatment can be used so long as it causes no pain; from eight to sixteen treatments may be needed to cure an ordinary chronic salpingitis plus exudates connected with a retroverted uterus. The technique of the Brandt massage[7] cannot be taught by books. It is demonstrated in some of the larger medical clinics abroad and has many adherents in this country. It consists of a form of spiral strokings on the body of the uterus, pressure against the adhesions to cause absorption of exudates, external massage of the fundus uteri through the abdominal wall, backward stroking on the cervix after the fundus has been placed well forward, and finally sacral percussion or vibration to cause contraction of the blood vessels in the pelvis. The internal massage is given by two fingers in the vagina.

After the treatment by Brandt's massage, the patient is given passive exercise with "knee-resisting" movements, to increase the tone of the muscles in the pelvic floor and the levator ani. Following all this the patient must rest for half an hour in the abdominal decubitus.

Vibratory massage on the sacrum and over the ovaries is of great value in lessening neuralgic pains and aches in the pelvis. This treatment may be given in several ways; either by expensive vibratory machines run by a city motor or steam, or by small hand machines run by a few battery cells. This form of treatment gives very appreciable results in office practice.

Vibratory massage stimulates the nerves by causing them to vibrate more or less forcibly. With light vibration the blood supply of a part is increased. With deep vibration and pressure a painful neuralgia may be stopped. The vibration stimulates secretion and excretion; it softens and relieves muscular spasm and congestion, empties lymphatics, and lessens venous stasis. Used between the spinal vertebræ it controls the spinal nerve centers and does more good than any form of electricity or rest cure.[9] (Schauffler.)

Massage by machinery is sometimes more beneficial than by hand. Dr. Zander's mechanico-therapeutic appliances can be used for all parts of the body with a precision not possible to a human being. At the Zander Institutes procidentia, prolapsus uteri, hemorrhoids and constipation are treated very successfully. This treatment should be combined with home exercises, such as walking around a room on "all fours," derivative leg exercises, knee-chest position frequently, and other good postures, in order that the patient may do much to hasten her own recovery.

The stretching of old adhesions may be aided by the use of a colpeurynter bag filled with mercury. This treatment should be given every day, for half an hour at a time. The patient lies with hips elevated, the physician places the colpeurynter empty into the vagina, and fills it with about 1 k. g. of mercury which is to exert the pressure on the exudate behind the uterus. In due time the mercury is siphoned off, the bag removed and a douche given, followed by a Brandt treatment. After this the patient should rest for one hour, preferably in a sun bath.

Uncomplicated retrodeviations of the uterus may be treated by tampons and pessaries in order to prevent the replaced uterus from sliding back into its former bad position. The Hodge pessary, for example, shortens the sacro-uterine ligaments, making tension in the posterior for-

nix, and may be used during the intervals between the Braidt massage treatments.

The Schatz pessary is of great value in supporting a prolapsed uterus with rectocele and cystocele, where operation is inadvisable. It is the only pessary which is not forced out of the loose vagina when the bowels move, and it can be depended upon to remain in place when every other pessary fails. The Schatz pessary is saucer-shaped and perforated and is easily removed by the patient for cleansing, and as easily replaced.

For the more complicated cases of uterine displacements operations must be employed. Hayd[9] advises the Alexander method; Schauta, vaginal fixation; others, abdominal or peritoneal suspension. For cases where there is a hernia the "Alexander-Adams" operation is a good one. But however much the round ligaments may be shortened, they are not strong enough to support a heavy uterus plus the superimposed weight of torpid bowels and full bladder; and it seems useless to subject women to this operation.

If women walked "on all fours," the round ligament would be quite equal to the work of holding the uterus in anteversion. In the erect position, if the great broad ligament and the sacro-iliac ligaments are contracted by injury, or held as in a vice by a mass of exudate and adhesions, they thus become the evil forces which perpetuate retrodeviations of the uterus or ovaries.

Any malposition of the uterus interferes with its circulation, and arrests involution after labor, or causes an hypertrophy or chronic congestion. Chronic inflammations follow with severe hemorrhages, or profuse leucorrhea, and the patient seeks the gynecologist and begins treatment. Perhaps the first thing to be done in this case is to use heat in various ways to lessen the congestion, then to replace the uterus in a correct position, and then to apply caustics or electricity to the endometrium.

Electricity is often of great value in controlling uterine hemorrhage due to fibroids. Barton Cooke Hirst[11] uses the positive pole with constant current in the uterus, of a strength of 50 m. a. Witte[12] uses a Faradic current for arresting the hemorrhage of uterine myomata, one pole in the uterus and one on the abdomen, for twenty minutes each day. W. H. White,[13] of Boston, has reported a case of chronic metritis and of ovaritis cured by high-frequency currents. For this case he used at first a copper-tipped intra-uterine positive pole, and a larger electrode on the abdomen with the continuous current of 35 volts and 25 to 30 m. a. This was given five or six times, for five minutes each time, but was only fairly satisfactory in controlling the pain and hemorrhage. He then began with the high-frequency current, using a special vaginal vacuum tube, and a flat disk tube over the ovarian region, running the current for five to eight minutes, twice a week. The patient received thirteen treatments in all, and her flowing and pain stopped completely.

Furthermore, electricity in the form of the continuous current is said to be of more value in dissipating inflammatory exudates than any other treatment. Cleaves[13] suggests that the electrode contacts must be carefully adjusted so as to operate upon or within the mass, and the cicatricial bands softened by massage or by the alternating current.

It was once claimed that uterine fibroids could be shrunken by galvanism. That this was too optimistic time has shown, but the patient's symptoms were ameliorated and her general health improved so that a subsequent operation was perhaps more successful.

It should not be overlooked in this connection that uterine tumors as well as ovarian, although starting apparently as benign growths, often become malignant later. Barton-Cooke Hirst's figures are significant. Out of one hundred and eighty-nine fibroid tumors operated on he found eight per cent. complicated. Three were sarcomatous, five cystic, four necrotic, two myomatous, one calcareous; and in fifty per cent. of all the cases there was disease of the ovaries as well as of the uterus.

Finsen rays and X-rays have undoubted value in the treatment of hypertrophied uteri as well as of cancers. Tousey[10] says: "I cannot too strongly recommend the adoption of this treatment at any stage before the recurrent cancer has too far sapped the patient's vitality." He uses the rays through the uncovered abdominal wall, and through a Nott's speculum in the vagina, each treatment lasting four to ten minutes.

Lomer,[14] in an article on the curability of cancer, reminds his readers of the readiness with which cancer cells are influenced by hemorrhages, burns, fevers, erysipelas, etc., and suggests the more frequent use of the actual cautery or electric snare.

Of not less importance than the treatment of

malignant diseases of the uterus and its adnexa, is the question as to the treatment of lacerations of the cervix. Do these lacerations lead to cancer if left unrepaired, and if repaired when should the operation be done? Most obstetricians repair a perineum immediately after delivery, but as to the cervix there is a difference of opinion. Baldy[16] protests against immediate operation on the cervix, and does not believe that lacerations ever lead to cancer. He agrees with Emmet that erosions must be healed, but they both believe that the symptoms are local and not reflex.

Dr. Robert L. Dickenson[17] has drawn attention to the alterations produced by granulation and contraction in unsutured lacerations of the cervix uteri, and to the scarred, swollen, everted and cystic lips which give uncertain indications for accurate restoration to a normal condition. He advocates mending the severe cervical and perineal tears within the first week after confinement, say from the third to the tenth day, or as soon as the swelling has disappeared sufficiently to allow accurate adjustment of the parts. His practice is to suture cervical injuries at the close of labor only when they seem to be the cause of post-partum hemorrhage.

Schauta treats erosions of the cervix with applications of sticks silver nitrate, once in four days. The cervix is then enveloped in cotton on which is a powder consisting of equal parts of dermatol and tannin. And, if there is any unusual tenderness of the uterus or adnexa, he packs into the vagina, ichthyol and glycerine.

For intra-uterine treatment, in cases of fungus endometritis, the following solutions are used in Schauta's clinic: formalin, 25 to 50 per cent., once in five or six days; chloride of zinc, 50 per cent. every ten days; tr. iodine every second day; silver nitrate, 10 to 20 per cent. every third or fourth day. These applications should not be made before swabbing the vagina and cervix with an alkaline solution. The chloride of zinc preparation causes so much pain that it should not be used except as a last resort. In all cases these cauterizations should be followed by a tampon of dermatol and tannin, and the patient kept in bed for some hours.

A valuable agent for the relief of the pain in salpingitis and all acute inflammations in the pelvis is a tampon soaked in a 10 per cent. solution of chloral hydrate in glycerine, to which may be added one-half of one per cent. of cocaine.

Many of these cases of inflammatory conditions of the pelvic organs in women are due to infection during the puerperium, from auto-intoxication, or from carelessness in observing the rules of antisepsis. And many are due to gonorrheal infection. The latter disease spreads from the vagina to the cervix and lymphatics, causing a cellulitis or para-metritis and later involves the tubes. This gonorrheal infection must be energetically treated, although it is perhaps never cured.

For a recent gonorrhea Cotton[15] suggests that the vagina should be irrigated with a solution of potassium permanganate, 1-6000, followed by a five per cent. protargol application twice a day for three days, then once a day for ten days. After this period the patient should use at home vaginal suppositories containing ichthyol as well as antiseptic douches. Pond's medicated wool tampons are of service where the patient cannot be treated as frequently by the physician as is necessary; but protargol solutions or some of the salts of silver should be continued by the physician at intervals for many months.

The nonsurgical treatment of some of the abnormal conditions in the female pelvis demands most careful diagnosis. Critical differentiation must be made between para- and peri-metritis, chronic salpingitis and pus tubes, tubular pregnancy and tumors, ovarian cysts and multiple fibroids of the uterus, fungous endometritis and cancerous growth, simple erosions of the cervix and epithelioma, etc. The use of the microscope is a sine qua non to determine the histology and bacteriology of a puzzling case. Often it is necessary to examine scrapings, make a blood count, and stain a muco-purulent discharge before one is sure of the diagnosns and ready to begin any treatment whether surgical or non-surgical.

REFERENCES.

1. J. H. Kellogg, Archives of Phys. Therapy, Feb., 1905.
2. Stanley Hall, Johns Hopkins Bul., April, 1905.
3. Carolyn Ladd, Proceedings Alum. Ass'n, W. M. C. of Pa., 1890.
4. H. A. McCallum, Brit. Med. Jour., Feb., 1905.
5. Cohen, System of Phys. Ther., Vol. IX.
6. Fango Treatment, N. Y. Med. Journ., March, 1905.
7. Kate C. Mead, Journ. of Obstet., 1890-1896.
8. Schauffler, Journ. of Med. Soc. of New Jersey, Jan., 1905
9. Hayd, International Journ. of Surgery, March, 1905.
10. Tousey, N. Y. Med. Journ. and Phila. Med. Journ., March, 1905.
11. Barton Cooke Hirst, N. Y. Med. Journ. and Phila. Med. Journ., March, 1905.

12. E. Witte, Deutsch Medicinische Wochenschrift, Nov., 1904.
13. Margaret Cleaves, Med. News, April, 1905.
14. R. Lomer, Zeitschrift fur Geburtshilfe, und Gynaekologie, Bd. 50, B. 2.
15. F. J. Cotton, Boston Med. and Surg. Journ., Feb., 1905.
16. Baldy, Am. Med., July, 1904.
17. Robert L. Dickenson, N. Y., Med Journ., and Phila. Med. Journ., March, 1904.
18. Walter H. White, Archives of Phys. Therapy, Feb., 1905.

PUERPERAL SEPTICEMIA.*

By CURTIS A. BURWELL, M. D., Salem, Va.

No subject in the whole domain of obstetrics is entitled to greater consideration than that of puerperal septicemia. Since the time of the very early medical writers up to the days of antisepsis this one trouble caused the death of more child-bearing women than all other diseases peculiar to their sex combined. Since the days of antisepsis and asepsis in obstetrics, the mortality from septicemia has been greatly reduced.

We are reminded of the possibility of guarding our patients against a pest that not long ago was thought to be due to a deterioration of the atmosphere, or even to a direct retribution of irate deity; and we are turned in the right direction for finding therapeutical relief for evils already existing. We stand also on pure scientific grounds, since all modern research proves that in the mildest and in the severest cases the morbid element is the same—namely, the presence of the different species of staphylococcus pyogeneus and the streptococcus pyogeneus. Some of the most noted bacteriologists have arrived at the conclusion that the streptococococci found in puerperal infection are identical with those found in infected wounds.

First of all, we must distinguish between mere local affections and a general infection reaching the whole system. The former are, of course, much less dangerous than the latter. Next, we must separate the putrid from the genuine septic infection, both of which may be local or general. General putrid infection is called *sapremia*, and general septic infection is called *septicemia*.

"Although the infection generally remains limited to the endometrium, in not a few cases it may progress beyond it, giving rise to a metritis, lymphangitis or phlebitis, as the case may be. This extension usually occurs through the lymphatics, and in such cases areas of inflammation can be traced along their course extending to the peritoneal surface of the uterus. At other times, espccially when the infection has been limited to the placental site, the thrombi may be invaded by the micro-organisms, and there results a phlebitis which may rapidly extend beyond it and give rise to the various thrombotic forms of puerperal infection."

There is no doubt that puerperal septicemia is encountered more frequently among primiparæ than among multiparæ, although no satisfactory explanation can be given for the fact. It was recognized by most of the early writers on medicine, and by them was attributed to prolonged and difficult labor.

Endometritis arising during the puerperal state is usually the result of a piece of membrane or placenta remaining in the uterus and and becoming attacked by micro-organisms. Decomposition followed by inflammation of the endometrium results, and this virulence of the infecting bacterium determines the severity of the lesion.

In putrid endometritis a retained portion of the decidua, afterbirth, or blood clots has undergone putrefactive changes and the uterus is filled with pulpy, reddish brown fœtid mass. The removal of this mass by curetting reveals a sharp line of demarkation between it and the healthy myometrium.

Septic endometritis, on the other hand, is caused, as a rule, by streptococcus infection, and the endometrium is usually covered by a dry, dirty, yellow membrane with areas of necrosis.

I do not believe that pelvic cellulitis as a primary condition occurs, except by infection introduced by way of a wound through the peritoneum, tears in the vagina or cervix, which take place during child birth, or by extension of pus from the upper to the lower retroperitoneal space.

The uterus is frequently boggy, œdematous and friable throughout, or else the inner layers of the muscle may alone be involved, with sloughing off of masses of tissue.

The symptoms of the various forms of puerperal infection depend upon the virulence, the nature of the tissues attacked, and the resistance of the organism to absorption of septic products. The most common type is a simple sapræmia

*Read before the Southwest Virginia Medical Society, n session at Pulaski, Va., July 4 and 5, 1905.

from the absorption of the toxines produced by the putrefaction of shreds of decidua, blood clots, etc. Upon the second or third day after labor the temperature rises and the lochia may have a foul odor; the appetite is impaired, and there may be slight nausea and chilly sensations. The pulse is usually a little faster than normal. In these cases early recognition will confine the operative treatment to the vagina and uterus, and simply necessitate thorough cleansing of both cavities and the establishment of drainage with sterile gauze. All symptoms will usually disappear thirty-six hours after operation.

The distinction between septic and non-septic forms becomes particularly important when we come to discuss the matter of treatment; for therapeutic measures applied to one class of cases will cause death, while in another, the same proceedings are accepted as proper.

A glance at the current medical literature will show the almost hopeless confusion which exists in the professional mind regarding the nature of puerperal septicemia. Reports are daily made of cases, evidently not septic, which have been subjected to some much lauded method of treatemnt. As the microscopical findings will alone determine the exact nature of a given case, it becomes highly important to adopt fixed rules governing even the collection of the lochia. I again emphasize the fact that it is of the greatest importance that we determine what cases of puerperal fever are septic and what are not; otherwise rational treatment is impossible.

The treatment of puerperal infection has for its aim (1) the removal of the source of infection; (2) the neutralization of the effects of the septic germs or of their toxines; (3) the support of the patient's vitality. Considerable difference of opinion exists as to the manner in which these aims may be best accomplished. Some authors advise, when the vagina is affected, that it be thoroughly washed with 50 per cent. peroxide of hydrogen solution, and then packed with gauze soaked in a solution of formalin, minims xxx; glycerine, ounces iv; and sterile water, one pint. After twelve hours the gauze should be withdrawn, the parts again washed with peroxide, and fresh gauze inserted. This treatment is repeated until the parts are in a healthy condition. The uterine cavity should be explored with a finger, and if no abnormal masses are attached to its walls, any debris present should be simply washed out with normal salt solution. If the walls are rough, or if secundines are adherent, the finger or placental forceps should be employed, followed by saline irrigation.

Many authors strongly advise the introduction into the uterus of gauze soaked in the formalin-glycerine preparation. In cases in which the organisms have not passed beyond the uterus it is rarely necessary to use more than one or two applications of the gauze. When there is evidence of general systemic invasion or of pelvic infection external to the uterus—i. e., parametritis, salpingitis, etc.—it is useless to continue the intrauterine applications.

Too many condemn the practice of swabbing out the uterus with corrosive sublimate, carbolic acid and the like.

J. Whitridge Williams advises the following plan: Abrasions or lacerations of the vaginal walls or vulva should be occasionally brushed with pure carbolic acid or with tincture of iodine and the parts kept clean. If the repaired perineum breaks down and suppurates, the stiches should be removed to allow of free drainage. Finger curetting and saline douches, if necessary; bichloride of mercury or carbolic acid douches should not be employed. "If bacteriological examination shows the presence of streptococci, all local treatment should at once be omitted. In dealing with putrid endometritis, and the symptoms do not yield to the first saline injection, additional ones may be given. When the infection has extended beyond the uterus local treatment should not be persisted in, as it will do more harm than good."

The practice of introducing suppositories of iodoform into the uterus in practically all cases of rise of temperature during the first days of puerperium is very common. As a rule, each suppository contains from 15 to 30 grains of the drug combined with starch, cocoa butter, or with starch, glycerine, and gum acacia. But one suppository is used in twenty-four hours, and it is held in place by a light tamponing of iodoform or plain gauze. If a septic condition of the uterus has already been developed, very much larger amounts of iodoform, even 100 or more grains, may be used without danger of poisoning the patient.

Frequent and copious infusions of normal salt solution are of inestimable benefit. Ergot is always indicated, and usually strychnine and quinine. The fluid extract of ergot should be given in ten minim doses, and strychnine nitrate, one-sixtieth of a grain, every three hours from the beginning of an attack, and later,

quinine sulphate, two or three grains, three times daily. When the patient's temperature declines, brandy or whiskey should be given liberally. Some authors advise large doses of whiskey during the entire course of the disease. Body temperature should be controlled by cold water sponging, ice compresses, or an ice water coil, and never by the administration of drugs.

The patient's diet should be nourishing in the highest degree, but of such nature that the tax put upon the digestive system is reduced to a minimum. During the heat of the fever food should be given at frequent intervals. Peptonized milk, white of eggs, calf's foot jelly, meat extracts, gruel and the like, are valuable under the circumstances.

On the same principle that the blood corpuscles are favorably influenced by the absorption of iodine from the uterus and pelvis, it would seem an assimilable form of this drug given by the mouth would yield distinctly satisfactory results.

The surgical means of combatting the disease have already been discussed in the leading medical journals. The necessity of evacuating pus collections wherever they may occur need not more than be referred to.

In this superficial review of puerperal infection, covering a period of more than 2,300 years, one cannot be but impressed by at least two facts which stand prominently forward from the great mass of dogmatism presented. The first of these to excite wonder is that a theory, the fruit, as far as is known, of one man's deductions, should have been accepted as a natural law almost without reservation for nearly twenty centuries: that, during all this time, a symptom of pathological condition should never have been recognized as such, but should have been considered as the etological entity.

Hippocrates stood for all that was great in medicine. In such reverence were his teachings held that no practitioner of the healing art possessed the temerity to contradict in toto the soundness of his reasoning. It is a strongly developed characteristic of mankind to blindly follow a leader or a strongly intrenched idea.

And so it was with those who followed in the footsteps of the "Father of Midwifery"; but it is to be remembered that, during many hundreds of the years intervening between his time and the seventeenth century, the practice of medicine and surgery was in ill repute—charlatans and mountebanks of all kinds trading almost universally for their own gain on the credulity of rich and poor alike. Only at intervals did a disciple arise who shed lustre upon the art, a disciple whose ability singled him out above all others of his time, whose fame has come down to us, rich with the flavor of things accomplished.

The second fact which holds attention is the great reluctance with which physicians accept the doctrines of contagion. A somewhat analogous condition of the present time, perhaps, is the refusal of some to acknowledge the merits of diphtheria antitoxine, in spite of the preponderance of evidence in its favor. And today—progressed as we have, well over the threshold of the twentieth century—in spite of our knowledge of the cause of puerperal infection; in spite of accepted principles of asepsis and antisepsis; in spite of everything, although epidemics of the disease are a thing of the past, the mortality is still far higher than what it ought to be. With reason may it be asked, why? and with reason may the answer be, because of ignorant midwives, first, and second, because of disregard by the general practitioner of the rules of surgical cleanliness.

In closing, I cannot do better than quote from a paper written by Dr. Oliver Wendell Holmes, in 1843. Dr. Holmes says: "I have no wish to express any harsh feelings with regard to the painful subject that has come before us. If there are any so far excited by the story of these dreadful events, that they ask for some word of indignant remonstrance to show that science does not turn the hearts of its followers into ice or stone, let me remind them that such words have been uttered by those who speak with authority I cannot claim. It is as a lesson rather than as a reproach that I call upon the memory of these irreparable errors and wrongs. No heart can tell the heart-breaking calamity they have caused; they have closed the eyes just opened upon a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, or bequeathed it with less cruelty to the death of its dying parent. There is no tone deep enough of regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born infant upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden or stretches her aching limbs. The very outcast of the streets has pity upon her sister in degra-

dation when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim of mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly."

SURGERY OF TYPHOID PERFORATION.

By EDMUND A. BABLER, M. D., St. Louis, Mo.

(Continued from last issue.)

A characteristic case of typhoid perforation may be succinctly depicted as follows: The patient, usually a young adult male, is in the end of the second or the beginning of the third week of typhoid; the attack has been moderately or quite severe; delirium and vomiting have been absent; patient takes liquid nourishment every three hours; orange juice or egg-albumen *ad libitum;* sponge baths reduce the temperature one or two degrees and are well borne; morning temperature 101°, pulse 98; evening temperature 104°, pulse 110 to 120; bowels are moved every third day with small, non-forcible enema of soapsuds; patient in fairly good condition; abdomen not much distended; patient is somewhat restless but sleeps quite well; in fact, we consider him to be doing fairly well or satisfactorily. During the night while sleeping he is suddenly awakened with a severe, stabbing-like paroxysmal pain in the right lower quadrant of abdomen; the pain may cause him to scream out and toss about; he complains of feeling cold; temperature may show a sudden drop to normal or even subnormal; extremities are cold and covered with a clammy sweat; pulse shows diminished volume and increased rate (140 to 160); patient's expression is distinctly changed, being now anxious and distressed, or it may be pinched and the lips blue; it is evident that something wrong has happened. Gradually the hot applications and words of assurance have somewhat soothed the patient; the pulse continues high and the temperature may now register 100 to 101; abdomen shows increased distention; the axillary line of dullness shows diminution; the pain continues severe and cramp-like; some tenderness and rigidity in right lower quadrant of abdomen; rectal examination shows rectum practically empty; no blood or impacted feces; bedside notes show that patient urinated freely two hours previous to onset of symptoms and that flatus was also noted; the temperature now registers 104°, pulse 160, vomiting slight; patient's expression still continues to be very anxious and distressed; respiratory organs apparently in good condition; no pain or tenderness in the right hypochondrium; tenderness seems especially prominent in the region of the outer border of the right rectus, midway between umbilicus and pubes; gradually the symptoms of the resulting peritonitis develop; vomiting becomes persistent; the abdomen very tender; right rectus rigid; patient protects abdomen as much as possible; patient continues to complain of the pain but as the disease progresses the senses may become obtunded and collapse and death follow in due time.

I cannot too strongly impress the fact that every typhoid patient demands the closest and best care and attention. Any sudden change must be investigated immediately, and the possibility of perforation must be ever remembered. The pain may be referred to the bladder, rectum, umbilicus, or groin—make it a rule to examine the patient when pain, especially if cramp-like, stabbing and paroxysmal is complained of. Above all do not administer morphine or apply hot stupes and let the matter pass until peritonitis manifests itself. *Morphine cannot be too strongly condemned in typhoid fever. Seek the cause of the sudden changed condition of the patient.* If the shock has been due to intestinal hemorrhage there will be evidences of same within an hour or so. Bear in mind that the sudden drop, or sudden rise, in the temperature may not have been noted; the drop may have lasted but a little while and have been followed by a rise. In some cases a severe chill will precede or follow perforation.

DIFFERENTIAL DIAGNOSIS.

It may be impossible to differentiate perforation from *appendicitis.* In the latter, however, the pain is seldom so severe; the temperature shows no sudden, severe change; pulse is not so rapid; the expression is not so strikingly changed; and there is usually a history of previous attacks. In any case, operation is indicated.

In *intestinal hemorrhage* the pain is not so severe and, in fact, is seldom present; there is no muscular rigidity, and blood will be passed by the rectum in the course of an hour or two; a small rectal enema may detect its presence sooner. Dr. Cushing believes that in some cases intestinal hemorrhage may be amenable to surgical interference.

In *perforation of the gall-bladder* the pain and other symptoms are more localized in the right hypochondrium. Jaundice may be present and the temperature does not show such a sudden change, while the shock is less severe and the pulse less rapid.

Dr. Ross[71] has reported a case of *intussusception* occurring in typhoid fever. The differential diagnosis should not be difficult.

In *intestinal obstruction* the bowels are constipated; not even flatus has passed; temperature shows no sudden severe change and the pulse is likewise less rapid; distended intestinal coils may be noted: vomiting may be a prominent symptom. In Dr. Cushing's patient it was noticed that the irrigating fluid which preceded the administration of the nutrient enema, was returned unchanged, while previous to the time of collapse it was returned with a fecal color.

In *iliac thrombo-phlebitis* pain and sensitiveness in the groin and along the femoral vein for some distance are noted. In some cases, it is impossible to differentiate *mesenteric thrombosis*, but in either instance surgery offers practically the only hope. Drs. Jackson, and others[72], have carefully and thoroughly studied the subject of mesenteric embolism, and their valuable memoir is worthy of the most careful study and consideration.

PROGNOSIS.

In every case of perforation the prognosis is very grave. Not more than 5 per cent. of the non-operated cases recover. When the perforation occurs in some quiet nook of the abdomen and very little bowel contents have escaped, and a tag of omentum seals the parts, the prognosis is more favorable than in those cases where the perforation occurs in some freely moving portion of the bowel. That a *few* cases of perforation recover without operation no one can question. In Dr. Holmes' patient the perforation was followed by abscess formation. Dr. Osler contends that early diagnosis and early operation should save from 30 to 40 per cent. of the cases. In the twelve cases at the Johns Hopkins Hospital the mortality was 59 per cent. There seems to be some relation between the time of perforation, the site of perforation, the patient's condition, and the prognosis. Very recently Drs. Harte and Ashhurst stated that the prognosis was most favorable in girls between 10 and 15 years of age, in which perforation occurred during the first week of the disease, when the constitution was still strong, or in convalescence when the frame was re-established, and where the operation has been performed within three hours after the symptoms of perforation; and where neither fecal extravasation had occurred nor adhesions were present. It is certain that an early diagnosis, and prompt, competent surgical intervention are of prime importance if ideal results are to be obtained.

TREATMENT.

There is but one, and that is surgical. The prophetic words of Professor Wilson, *"The courage to operate will come of the knowledge that the only alternative is the patient's death,"* have at last come to be appreciated. Operation should be performed just as soon as the diagnosis has been made. Dr. Carson[73] has recently stated that operation should not be performed if extreme shock be present. It is possible that extreme shock will seldom be seen early after perforation. In only one of Mange's fifteen cases was collapse present. If shock be a prominent feature, I would advise atropine sulphate in place of the usual administration of strychnine. It is also important to remember that the patient should be moved about and palpated as little as possible. In some instances operation will be flatly refused. During a recent conversation with Dr. Steer, the latter said: "Just state in your paper that St. Louis is the worst place on earth to secure either an early operation or a post-mortem." Many of us can concur with Dr. Steer. When operation has been agreed to, the question of anesthesia becomes an important factor.

ANESTHETIC.

Dr. Cushing has strongly advocated local anesthesia for these cases. Drs. Shattuck, Warren and Cobb have very carefully investigated the subject and concluded that operation under cocaine anesthesia is not advisable in cases of mild typhoid where general condition of mind and body is fairly good, because rationally the shock to the mental and physical organism from an abdominal operation, with all its attendant

manipulations, to a conscious patient must be greater than the judicious use of ether. In moribund or stupid cases it may be of advantage. It must be admitted that experience with local anesthesia may be an important factor.

Very recently my attention has been called to ether administered by the drop-method and in the many cases in which I have employed it, the results have been perfectly satisfactory. To me it seems the ideal method of producing anesthesia and especially so, in these cases of typhoid perforation where struggling and straining are to be avoided, and where a heart depressant is to be obviated. By placing a few layers of plain gauze over a common chloroform mask, and administering ether by the drop-method you have the ideal results; and the danger reduced to a minimum. I cannot too strongly urge its adoption.

PREPARATION OF PATIENT.

In preparing the patient for operation he must be handled as little as possible, and with extreme care and tenderness. *The abdomen should not be scrubbed with force,* since the pain thus induced causes a contraction of the abdominal muscles and an outpouring of bowel content. The same applies to cases of gunshot or stab wounds of the abdomen.

Dr. Harrington[74] has very recently called attention to a solution prepared by himself, which is now being extensively employed. It is prepared as follows:

Common alcohol (94%).....c. c. 640.
Hydrochloric acid .....c. c. 60.
Bichloride of mercury.....c. c. .8
Aquæ destillata .....c. c. 300.

By simply and carefully washing the abdomen with warm soapsuds, then with turpentine followed by Harrington's solution, I believe, that the results will be far superior to the more common methods. Even in shaving the abdomen pressure must be made very carefully. It may be found valuable to place a roll of plain gauze, wrung out of Harrington's solution, on the abdomen for a few minutes, then, just before making the incision, wash off the abdomen with warm sterile water. To me, the technique of preparing the abdomen is very important.

OPERATION.

The operation should be performed as early and as quickly as is consistent with good surgery. *Care and thoroughness are superior to hasty, half-done work.* Have everything in readiness before making the incision. Each assistant must thoroughly understand what is expected of him. Operate systematically.

Incision.—The right lateral incision will be usually found the most serviceable since it fully exposes the cecum and lower ileum. In one of Dr. Brown's cases the incision was made on the left side because dullness, pain and extreme tenderness were found at that point. Make the incision free, and through the outer portion of the rectus. First of all seek and find the cecum since it is a most valuable landmark. Then examine the appendix; if localized peritonitis be found, wall off the remaining parts with large pads of gauze; begin at the cecum and carefully examine the ileum from below upward; have two assistants watch with you for perforations; remember that the perforation may be covered with particles of lymph; it may appear as a black spot through which gas is escaping; carefully replace the examined bowel as you progress; if any portion of the bowel be left outside the abdomen it should be covered with pads wrung out of warm saline solution; don't have the patient surrounded by cold wet clothes; if feces have escaped into the peritoneal cavity the perforation will be medium-sized or quite large; if only a slight amount of feculent material be present or if it be only lymph, it is very probable that there is a pin-point or pin-head size perforation; wherever lymph clings to the bowel it should be carefully wiped away; adhesions are to be carefully handled; they are not very favorable since it indicates plastic peritonitis and the presence of virulent streptococci.

When the perforation has been found, its treatment depends upon (1) its size, (2) the presence and character of escaped bowel content; (3) the condition of the surrounding tissues; (4) the condition of the patient. If the perforation be minute and there has been no escape of feculent material into the peritoneal cavity, and if the remaining patches look favorable, I would advise the closure of the perforation with a double row of Lembert silk sutures, and cigarette drains after having carefully wiped the parts with pads wrung out of warm saline solution; and just about the perforation I would wipe the parts with a pad wrung out of peroxid of hydrogen, and then with the saline solution. If, however, there has been any escape of feculent material, and if the perforation be of medium size, and there are other suspicious points near the perforation, I would bring the loop up into the wound and surround

the impending perforation areas with strips of gauze; a few sutures will hold the bowel in contact with the site of incision and permit of free drainage; an artificial channel has thus been formed and by carefully flushing the area the best results are obtained, as pointed out by Escher[75], who reported four cases so treated with a recovery of three. In those cases where feculent material has escaped into the free peritoneal cavity, the thorough flushing with normal saline solution will be found of great value. Escher's method is far superior to bowel resection; it saves time, affords free drainage, produces little or no shock, and there is far less danger of subsequent paralysis of the bowel, and peritonitis. In the literature will be found cases in which resection was performed simply because Escher's method was unknown. Dr. Kyle and others have employed the method brought forward by Escher with better results than have been otherwise obtained in these severe cases. In a recent communication to me Dr. Nietert says, "The next case I get, if I find contents of bowel in peritoneal cavity, and the patient in bad condition I will make an artificial anus, drain the pelvis and employ the Fowler's posture. The artificial anus will give perfect drainage to the part of bowel most affected, and therefore keep the ulcers clean and give them an opportunity to heal." Personally, *I believe that free drainage should be employed in every case of bowel perforation.* As before stated, it depends upon the several factors whether an artificial anus be made or not. If the case be seen early and operation be performed while the peritonitis is strictly localized, and no feculent material has escaped, closure of the perforation and free drainage seems the ideal treatment; free drainage is of the greatest importance. Cases have been reported in which suspicious areas perforated subsequently and the gauze drains prevented any serious consequence. In flushing the abdominal cavity always flush the pelvis first and thoroughly.

In closing I wish to emphasize the following points:

1. Careful and complete bedside notes should be kept in *every* typhoid case.

2. Any sudden change in the patient's condition should be *immediately and thoroughly* investigated.

3. Sudden severe abdominal pain *demands* consideration.

4. *Morphine should never be given a typhoid patient.*

5. Early diagnosis and early operation are *prime requisites* for the obtaining of ideal surgery.

6. Drainage should be employed in *every* case of typhoid perforation.

BIBLIOGRAPHY.

71. Ross, Annals of S. Abst., Vol. 39, p. 604, 1904.
72. Jackson, J. A. M. A., Vol. 43, 1904.
73. Carson, Courier of Medicine, Nov., 1904.
74. Harrington, Annals of Surgery, Nov., 1904.
75. Escher, Mitterlung aus den Grenzgebieten, B. 11, No. 1, 1903.

617 *North Euclid Avenue.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE VIII.

Repair of Blood Vessels—Formation of Thrombus and Final Healing by Production of New Tissue—Repair of Nerves—Vegetative Capacity of Central and Peripheral System—Nerve Suturing—Repair of Bone—Callus and its Formation—Treatment of Fractures.

REPAIR OF BLOOD VESSELS.

Arteries and veins are formed of three coats, the internal, or tunica intima, composed of endothelial cells, the middle, or tunica media, composed of elastic and muscular tissue, and the external, or tunica adventitia, composed of fibrous tissue. The two inner coats are firmly united to each other, but are very easily separted from the external coat. If a ligature be tied tightly around a blood vessel the external coat will not be divided, but the two inner coats will be cut circularly in the line of the ligature, and will retract from the external coat. It is essential for the safety of the patient that repair after injury to blood vessels be rapid and complete, and fortunately nature has endowed these structures with high vegetative capacity. Healing occurs here, as elsewhere, by the proliferation

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

of the formative cells and the production of new tissue, which undergoing vascularization and cicatrization results in the permanent repair of the injury. When a vessel is divided the tunica intima and tunica media separate from the tunica adventitia and retract. Their edges curl inward, fibrin is deposited upon them, and a thrombus is formed, which arrests bleeding. The action of this plug of coagulated blood is temporary, however, and the formation of a permanent cicatrix must follow, else the patient will be in danger of a recurrence of hemorrhage. The old authors thought that the final healing of a blood vessel was due to what they termed "the organization of the thrombus," but this theory has been proved to be incorrect. The formation of a thrombus is merely a provision of nature to secure temporary hemostasis, and the final or permanent repair of the injury is accomplished by the proliferation of the formative cells of the tunica intima and tunica media. As soon as the circulation is arrested by the formation of the thrombus, the formative cells of the vessel wall begin to divide and form new cells, which infiltrate the blood clot and cause its gradual absorption. The mass of granulation tissue thus produced undergoes vascularization from the vaso-vasorum, and finally through the process of cicatrization is converted into mature cells. As long as a vessel is merely occluded by a thrombus there is danger of secondary hemorrhage, and it is not until a permanent repair of the defect is accomplished through the agency of the formative cells that the patient is safe. The reason secondary hemorrhage was so frequent in the pre-antiseptic era was because inflammation was usually present in the wound and the thrombi disintegrated by septic process before regeneration was complete. The reason secondary hemorrhage is now rare is because inflammation is rarely present in a wound and the aseptic thrombi remain in the ends of divided vessels until definitive healing takes place. In the old days thrombosis was much more extensive than at present. In fact, after division of a vessel the blood usually coagulated back to the nearest collateral branch. Surgeons of that generation were afraid to ligate a vessel unless they had a space of at least an inch to contain the thrombus. In modern aseptic surgery, extensive thrombosis is not seen, and the operator is able to ligate a vessel close to a collateral branch or near its bifurcation with little or no risk of secondary bleeding. The treatment of injuries to blood vessels will be considered fully when we come to the subject of hemorrhage. Here all that can be said is that if the vessel is a large one and the injury only partially divides it, there is the possibility of closing the opening by sutures or a lateral ligature without completely obstructing its lumen. If the vessel is entirely divided, its two ends should be ligated with fine aseptic silk or catgut.

REPAIR OF NERVES.

The nervous system consists of a central portion, or brain and spinal cord, and a peripheral portion, or number of nerve trunks. The central portion is composed of neuroglia and ganglionic cells. It is a structure of high development, hence has a very low vegetative capacity. For a long time it was believed that repair after injury to the brain and spinal cord never took place in the true sense but that defects due to injury were restored by the substitution of connective tissue. It is now known that neuroglia is occasionally reproduced, and in still rarer instances new ganglionic cells are formed by the division of pre-existing cells. The peripheral nervous system is composed of nerve trunks. They are formed of nerve fibres, which consist essentially of an axis cylinder, the white matter of Schwann, and the neurilemma or primitive sheath. Lying in the white matter of Schwann and attached to the inner surface of the neurilemma are found large oval nuclei, which are the formative cells of the part, and are termed neuroblasts. They proliferate normally to restore physiological waste, and after injury to repair damage inflicted by traumatism. When Cruikshank first suggested that function could be restored to a divided nerve by suturing the ends together he was laughed at, but it is now known that nerve trunks have high vegetative capacity. It has been proved that not only will the two ends of the same nerve unite, but that the ends of different nerves will unite with the re-establishment of function, provided the nerves are both motor or both sensory. As yet there is no data to show that the union of the end of a sensory nerve to the end of a motor nerve will be followed by any physiological result. When a nerve is cut there is degeneration of the fibres of the peripheral end throughout its entire length, and also degeneration of the terminal fibres of the central end to a limited extent. If the nerve trunk is sutured, however, degeneration is accompanied by regeneration. In the union of a divided nerve there is first physical union by granulation tissue, the result

of the proliferation of fibroblasts located in adjacent connective tissue, and then physiological union from proliferation of the neuroblasts found in the nerve fibres themselves. The fibroblasts in the endoneurium and perineurium proliferate and form granulations that bridge the gaps between the separated ends, the neuroblasts in the central end of the nerve then proliferate and form new nerve fibres, which penetrate the granulations and reach the proximal end of the nerve, thus re-establishing the broken circuit between its origin and distribution. Experiments prove that in favorable cases it takes about three weeks after a nerve is sutured for any evidence of restoration of function to be noted. It is usually eleven or twelve weeks before restoration of function is complete. There is no such thing as the immediate union of a nerve, and the cases reported where there was rapid return of function after the division of a nerve are due to the anastamosis of the peripheral branches of the cut nerve with the branches of another nerve that was not cut. When a nerve endowed with an important function is divided it should be sutured. If the operation is done immediately after the injury it is called "primary nerve suture." If it is done some weeks or months afterwards it is called "secondary nerve suture." If the sutures are passed through the end of the nerve it is spoken of as the "direct method." If the sutures are passed only through the fibrous sheath it is spoken of as the "indirect method." The results of nerve suture as far as the restoration of physiological function is concerned depend upon the amount of seperation that exists between the divided ends, the nearness of the injury to the terminal distribution of the nerve, the promptness with which sutures are applied, and the existence or absence of septic complications during the healing of the wound. The operation of primary nerve-suture is easy, and the results very satisfactory. The ends of the divided nerve are readily found, do not require to be freshened, and can often be approximated without tension. Direct sutures of fine silk or catgut are inserted with a round cambric needle, and their ends tied and cut short. The wound is closed and the part immobilized. If successful there is evidence of beginning of return of function in about three weeks, and there is restoration of normal condition in about three months. In the division of a mixed nerve, it will be noted that sensation returns sooner than motion. The operation of secondary nerve suture is more difficult and uncertain, nevertheless it frequently yields most satisfactory and brilliant results. The part should be rendered bloodless by means of an elastic bandage, the nerve trunks found and their ends dissected out of the cicatricial mass in which they are embedded. The ends of the nerve should then be freshened, brought into as close apposition as possible, and sutured. The failure of secondary nerve suture is usually due to the difficulty in getting the ends together, owing to either loss of tissue at the time of injury or subsequent retraction and contraction of the cord. This should be overcome in one of the several ways:

1. *By Stretching.*—The two ends of the nerve may be grasped by the fingers or by padded forceps and forcibly pulled upon, and in this way lengthened sufficiently to secure approximation.

2. *Suture a Distance.*—When, despite stretching, the ends cannot be brought together, union can often be secured by passing catgut sutures between the divided and separated ends and tying them. This fixes the ends of the nerve as near together as it is possible to get them, and the bundle of strands of catgut is a bond between them, which is utilized as a scaffolding on which the new cells are deposited.

3. *Suture Tubulaire.*—Sometimes a decalcified bone tube is taken and the ends of the divided nerve are introduced and fastened into it. By this means relative approximation is effected and all the cells proliferated by the revivified ends of the nerve are caught and carried in the direction desired.

4. *Nerve Grafting.*—Efforts have been made to restore the continuity of a nerve by grafting a section of another nerve between its two ends. Also to restore the function of a nerve by grafting the end of the proximal portion to an adjacent nerve, but none of these expedients have yielded satisfactory results.

5. *Flap Operations.*—Numerous flap operations have been tried on the lower animals, but while they all restore the mechanical continuity of the nerve, none of them are able to restore its physiological function, as they fail to unite an unbroken nerve filament.

6. *Shortening of Bone.*—In some cases where the restoration of nerve influence is of paramount importance, as in an extremity, and the divided ends of the nerve cannot be brought together by less radical methods, a portion of the shaft of the bones are resected and easy and accurate apposition thus secured.

REGENERATION OF BONE.

Bone is one of the hardest structures in the body. It is composed of both organic and inorganic material. It occurs in two forms, the compact and the cancellated, but while they differ macroscopically they are found to be the same microscopically. Bone is covered externally by a vascular fibrous membrane called the periosteum, and, if it contains a medullary cavity, it is lined internally by a somewhat similar membrane, called the endosteum. The histological structure of bone and the existence of Haversian canals, lacunæ and canaliculi need not be discussed. The formative cells of bone are found in the periosteum, the endosteum and the lacunæ, and are called osteoblasts. When bone is injured, they proliferate, giving the tissues a high vegetative capacity. If a fracture of a long bone occurs, there is invariably laceration of adjacent soft structures attended by bleeding and the accumulation of coagulated blood between the ends of the fragments. Within a few hours the osteoblasts begin to proliferate and form granulation tissue to effect repair. This granulation tissue is called callus. At first it is soft and forms an indefinite swelling about the seat of injury. Later the mass becomes smaller, firmer and has a well defined outline, finally it becomes ossified and converted into bone by the deposition of lime salts. The callus developed after the fracture of a long bone may be divided into three varieties: First, the *external or splint callus*, or that formed on the outside of the bone by the osteoblasts of the periosteum; second, the *internal or pin callus*, or that formed in the medullary cavity of bone by the osteoblasts of the endosteum; and third, the *intermediate or definitive callus*, or that formed between the broken surface of bone by the osteoblasts of the lacunæ. The external and internal callus serve to temporarily fix and immobilize the fragments. They are not permanent and do not undergo ossification, but are removed after they have fulfilled their mission, the absorption being accomplished in some undetermined way by cells called osteoclasts. The intermediate callus, or that thrown out between the broken surfaces of bone, however, is permanent, undergoing ossification and firmly uniting the fragments one to the other.

A broken bone, properly set and splinted, will usually heal. Sometimes callus formation is deficient or excessive and ossification does not follow. When this occurs, the condition is spoken of as either delayed union or non-union. Delayed union is where reparative action is present, but owing to lack of nutritive vigor callus is either tardy in development or imperfect in its transformation. Non-union is where reparative action is absent, and the result is either a ligamentous union or the formation of a false joint. The division of ununited fractures into delayed union or non-union is based on the fact that cases in the first class can be cured without an operation by making more active the reparative forces already in existence, while cases in the second class cannot be cured except by an operation which freshens the rounded ends of the bones, opens up their medullary cavities and changes the existing passivity to the activity of a recent fracture.

The causes of delayed union or non-union of a fracture are usually classified under the heads of general and local. Under the first, authorities give a long list of constitutional conditions, such as age, pregnancy, lactation, acute infectious diseases, starvation, loss of blood, rickets, marasmus, and syphilis. All except the last are of doubtful influence, for it is a strange but authenticated fact that failure of a fracture to undergo proper ossification is more apt to be observed in a vigorous adult than in the debilitated, the marasmic or the aged. While it is true that syphilis and fractures are both so common that they often co-exist without detrimental influence one on the other still patients with delayed union so often respond to antisyphilitic treatment that it is now the usual practice to prescribe iodide of potash as the first effort to secure union, and this whether any history of specific infection can be obtained or not. If it does no good it does no harm, and as we all know syphilis, like accidents, is likely to occur in the best regulated families, and patients suffering with the disease are sometimes ignorant or untrustworthy in their statements.

Under the local causes of delayed union or non-union may be mentioned marked displacement or wide separation of the fragments; interposition of muscle, fascia or foreign bodies between the fragments; defective nutrition through faulty innervation or deficient blood supply; infection and suppuration, destroying or preventing the formation of callus; and finally, defective immobilization or premature passive motion. In fact, delayed union may be due to any defect in the primary treatment of a fracture, such as failure to effect accurate reduction and to secure proper immobilization, too tight bandaging, undue pres-

sure of splints, frequent removal of the dressings, for the purpose of inspection, or allowing the patient to use the limb too soon on account of the unfounded fear that prolonged fixation endangers the function of the adjacent joint. The local treatment of delayed union or non-union should be based largely on the result of an X-ray examination. In some cases it will appear probable that the patient can be cured without subjecting him to an operation; in other cases it will at once be obvious that nothing short of bloody surgery will prove effective. The following is a brief summary of local methods that have been advised: First, light elastic constriction above and below the fracture, producing more or less hyperemia; second, active use of the limb encased in an immobilizing dressing of plaster of Paris; third, percussion of the limb by the surgeon with a rubber mallet, or by instructing the patient to strike his heel on the floor if the fracture be in the lower extremity, or pound the hand or elbow on a table if it be in the upper; fourth, injection of from three to ten drops of 10 per cent. solution of chloride of zinc between the ends of the fragments by means of a hypodermic syringe; fifth, administration of an anesthetic and forcibly tearing loose fibrous adhesions, affecting accurate apposition and treating as a recent fracture; sixth, subcutaneous drilling of the ends of the fragments, the perforations opening up medullary space and the small particles of bone detached acting as a stimulus to repair; seventh, resection of the ends of the bone by an operation, the accurate adjustment of their freshened surfaces, and the maintenance of the fragments in correct position by means of sutures, nails, medullary splints or bone ferrules—all reinforced, of course, by a rigid external dressing, which should also immobilize the two adjacent joints.

Proceedings of Societies, Etc.

Medical Examining Board of Virginia, June, 1905.

The Medical Examining Board of Virginia met at Murphy's Hotel, Richmond, Va., 9 A. M., June 21, 1905. Dr. R. W. Martin, President, presiding; Dr. R. S. Martin, Secretary-Treasurer, recorded.

On roll-call the following other members were present: Drs. J. E. Warriner, Brook Hill; M. R. Allen, Norfolk; E. C. Williams, Hot Springs; C. W. Rodgers, Staunton; A. S. Priddy, Bristol; O. C. Wright, Jarratts; E. T. Brady, Abingdon; W. B. Robinson, Tappahannock; Robert Randolph, Boyce. Dr. R. M. Slaughter, Theological Seminary, came in the afternoon of the first day of the examination.

Minutes of the last meeting were read and adopted. The resolution introduced by Dr. Lile, which reads as follows:

"*Resolved,* That in future any applicant under the reciprocity clause asking recognition must show certificate of boni fide residence as practitioner in State from which certificate is granted, for at least two years after date of certificate," was, after full discussion, defeated.

The resolution offered by Dr. Priddy at the June meeting, 1904, was next taken up, and after considerable discussion, Dr. Brady, seconded by Dr. Priddy, offered the following substitute, which was accepted by Dr. Priddy: "*Resolved,* That no examiner can change a grade once reported, but if there is dissatisfaction, the papers shall be forwarded to the Executive Committee, who shall decide as to the correctness of such grades."

The Secretary read a letter from the Attorney-General in regard to fees to be charged applicants claiming reciprocity, and the Board decided, under his instruction, to charge $10.00, same charged all other applicants.

Dr. Williams, seconded by Dr. Priddy, offered the following resolution: "*Resolved,* That a committee of three be appointed, of which the Secretary shall be one, to arrange the questions to conform to the requirements of the American Confederation of Reciprocating Examining and Licensing Medical Boards." Adopted, and the President appointed Drs. C. W. Rodgers, Robt. Randolph, and R. S. Martin, committee.

Dr. Brady, seconded by Dr. Williams, "*Resolved,* That the Secretary prepare blank form to be used for applicants claiming reciprocity."

Dr. Priddy, seconded by Dr. Brady: "*Resolved,* That the Virginia State Board of Medical Examiners, do endorse the object and principles of the Council on Medical Education of A. M. A." Adopted.

Dr. Brady moved that, on account of Missouri being required to license non-graduates, and which is contrary to our law, that we do not reciprocate with same. Adopted.

The Secretary was instructed by the Board to inform Dr. Hunter, of the Tennessee Board,

that under the instruction of the Attorney-General, the Medical Examining Board of Virginia cannot legally hold any examinations by a special committee, but all applicants must be examined by the Board in session.

The order of examinations was arranged as follows:

Wednesday—Physiology, Chemistry, Obstetrics, and Gynecology.

Thursday—Surgery, Histology, Pathology, and Bacteriology, Practice.

Friday—Materia Medica and Therapeutics, Anatomy, Hygiene and Medical Jurisprudence.

Questions on Physiology, Chemistry, Practice, Materia Medica and Therapeutics, Anatomy, Hygiene and Medical Jurisprudence were read and adopted.

President appointed auditing committee: Drs. Warriner, W. B. Robinson, and Wright.

Oral Committee—Drs. Wright W. B. Robinson, and Rodgers.

On motion, Dr. Priddy, selected Richmond, Va., as the place, and December 12, 13, 14, 15, 1905, as the time for the next meeting of the Board. Board adjourned.

Medical Examining Board of Virginia met in the University College of Medicine 12 M., June 21st, Dr. R. W. Martin, President, presiding, Dr. R. S. Martin, Secretary-Treasurer, recorded. Present: Drs. Allen, Williams, Warriner, Wright, Brady, and Nash. Minutes of last night's meeting read and adopted. Questions on Obstetrics and Gynecology and Surgery were read and adopted.

Auditing committee reported as follows: "We, the Auditing Committee, appointed by the President, have examined the books of the Secretary-Treasurer, and find them correct.

O. C. Wright,
C. W. Rodgers,
Robert Randolph,

The Secretary, on request for an opinion as to when reciprocity should begin with different State Boards, the President ruled, which was concurred in by the members of the Board present, that, reciprocity begin with the different State Boards from time of entering into the agreement.

Dr. R. S. Martin seconded by Dr. Brady, introduced the following resolution, having heard with deep regret o the illness o our colleague, Dr. S. Lile ;be it therefore "*Resolved*, That we, the members of the Medical Examining Board in session, do extend to him our most cordial sympathy and trust he may soon be restored to health and vigor."

"*Resolved*, That the Medical Examining Board o Virginia returns thanks to the Faculty of the University College o Medicine for the use of their college, and other courtesies extended during the spring examination, June 20-23, 1905.

There being no further business the Board adjourned.

R. W. Martin, M. D., *President*.
Dr. R. S. Martin, *Secretary-Treasurer*.

Alphabetically Arranged List of Applicants for License to Practice Medicine, Surgery, etc., Who Passed Satisfactory Examinations Before the Medical Examining Board of Virginia During Its Session June 20-24, 1905, Held at Richmond, Va.

Ashby, Julian W., Richmond, Va., Univ. of Md., 1905.
Ashton, F. L., Hooes, Va., Univ. Col. of Med., 1905.
Bloss, J. R., Huntington, W. Va., Univ. of Va., 1905.
Burger, F. W., Shawsville, Va., Univ. of Va., 1905.
Brown, S. E., Norfolk, Va., Univ. of Va., 1905.
Boland, Micajah, Lawyers, Va., Univ. of Va., 1905.
Brown, Walter, Richmond, Va., Leonard Med. Col., 1905.
Bishop, J. G., Stuart, Va., Baltimore Med. Col., 1905.
Broadford, Kennth, University Station, Univ. of Va., 1905.
Bennett, R. A., Jr., Leesville, Va., Univ. Col. of Med., 1905.
Bland, J. M., Shacklefords, Va., Med. Col. of Va., 1905.
Bennett, C. D., Galveston, Va., Univ. Col. of Med., 1905.
Broaddus, J. G., Bowling Green, Va., Univ. Col. of Med., 1905.
Boyd, John O., Winchester, Va., Univ. Col. of Med., 1905.
Cochrane, John I., East Dorset, Va., Univ. of Va., 1897.
Crowe, Harry M., Richmond, Va., Univ. Col. of Med., 1905.
Conrad, Chas. E., Harrisonburg, Va., Univ. of Va., 1905.
Cassell, W. H., Wytheville, Va., Med. Col. of Va., 1905.
Chiles, J. H., Richmond, Va., Univ. Col. of Med., 1905.
Connelly, E. Hale, Richmond, Univ. Col. of Med., 1905.
Collins, J. D., Portsmouth, Va., Univ. Col. of Med., 1905.
Cassiday, F. T., Richmond, Va., Med. Col. of Va., 1905.
Chewning, W. C., Merry Point, Va., Univ. of Md., 1904.
Dudley, M. L., Glade Hill, Va., Phys. and Surg., Baltimore, 1905.
Davis, L. M., Salem, Va., Ky. School of Med., 1904.
Daugherty, J. W., Jr., Richmond, Va., Univ. Col. of Med., 1905.
Dumas, M. O., Washington, D. C., Howard Univ., 1895.
Dodd, W. T., Red Oak, Va., Univ. of South, 1904.
Epperson, E. E., Abingdon, Va., Univ. Col. of Med., 1905.
Eastham, Granville, Mitchells, Va., Memphis Hospital Med. Col., Nashville, 1904.
Freeman, Allen W., Richmond, Va., Johns Hopkins Univ., 1905.
Foreman, W. T., Hampton, Va., Leonard Med. Col., 1904.
Ferguson, W. S., Lynchburg, Va., Univ. of Va., 1905.
Fuller, R. H., Clover, Va., Univ. Col. of Med., 1905.
French, M. S., Emporia, Va., Jefferson Med. Col., 1876.
Gibson, A. P., Ore Knob, Ky., Ky. Univ., 1905.
Grubbs, E. L., Riverton, Va., Univ. Col. of Med., 1904.

Gorsline, I. T., Warm Springs, Va., Med. Col. of Va., 1905.
Hooker, G. W., Elamsville, Va., Univ of South, 1904.
Hull, G. F., Hightown, Va., Univ. of Va., 1905.
Harloe, W. W., Winchester, Va., Univ. of Va., 1905.
Harris, Percy, Richmond, Va., Med. Col. of Va., 1904.
Hogan, C. H., Charlottesville, Va., Univ. of Va., 1905.
Hammer, A. Ludwell, Petersburg, Va., Univ. Col. of Med., 1905.
Hyde, Wm. F., Brownsburg, Va., Univ. of South, 1904.
Hunter, Montgomery, Washington, D. C., Columbian Univ., 1896.
Johnson, W. H., Toano, Va., Med. Col. of Va., 1905.
Kendig, E. L., Richmond, Va., Med. Col. of Va., 1905.
Kendig, Walter D., Richmond, Va., Med. Col. of Va., 1905.
Knepp, J. W., Roanoke, Va., Univ. Col. of Med., 1905.
Kaufman, J. B., Portsmouth, Va., Univ. of Pa., 1903.
Koontz, W. W., Broadway, Va., Univ. Col. of Med., 1905.
Lacy, J. B., Richmond, Va., Med. Col. of Va., 1905.
Lewis, J. M., Manassas, Va., Univ. of Va., 1905.
Martin, Moir S., Norfolk, Va., Univ. Col. of Med., 1905
Manson, R. H., Warfield, Va., Univ. Col. of Med., 1905.
McCoy, U. S., Petersburg, Va., Howard Univ., 1904.
Mason, J. L., Lahore, Va., Univ. of Va., 1905.
McIntosh, D. M., Portsmouth, Va., Med. Col. of Va., 1904.
Miller, J. W., Simmonsville, Va., Univ. Col. of Med., 1902.
Montgomery, B. J., La Crosse, Va., Univ. Col. of Med., 1905.
Montgomery, C. V., La Crosse, Va., Univ. Col. of Med., 1905.
Moon, S. B., Richmond, Va., Univ. Col. of Med., 1905.
Moore, E. A., Berryville, Va., Univ. Col. of Med., 1905.
Mease, M. E., Sandy Level, Va., Med. Col. of Va., 1905.
Nottingham, J. M., La Crosse, Va., Med. Col. of Va., 1905.
Nelson, Nathan W., Richmond, Va., Phys. and Surg., N. Y., 1903.
Payne, R. L., Jr., Norfolk, Univ. of Pa., 1905.
Powell, L. O., Dare, Va., Md. Med. Col., 1903.
Phipps, G. Z., Mouth of Wilson, Va., Tenn. Med. Col., 1901.
Perkins, E. W., Lina, Va., Univ. of Va., 1903.
Pitt, C. S., Richmond, Va., Univ. Col. of Med., 1905.
Pack, H. B., Blacksburg, Va., Phys. and Surg., Baltimore, 1905.
Rucker, M. P., Bedford City, Va., Md. Med. Col., 1904.
Rogers, W. E., Washington, D. C., Georgetown Univ., 1904.
Rosario, Ruggieri, Norfolk, Va., Univ. of Napoli, Italy, 1899.
Rawls, Julian L., Carrsville, Va., Med. Col. of Va., 1904.
Robertson, W. S., Richmond, Va., Univ. Col. of Med., 1905.
Ross, Chas. F., Morgantown, W. Va., Med. Col. of Va., 1905.
Rudasill, D. J., Newport News, Va., Med. Col. of Va., 1905.
Ramsey, O. L., Sandy Level, Va., Univ. Col. of Med., 1905.
Ross, Clyde Fenton, West Point, Va., Univ. Col. of Med., 1905.
Rice, Samuel D., Richmond, Va., Med. Col. of Va., 1905.
Strother, W. A., Charlottesville, Va., Univ. of Va., 1905.
Smith, Leon W., Raleigh, N. C., Leonard Med. Col., 1902.
Smart, I. Gibbon, Bedford City, Va., Phys. and Surg., Baltimore, 1885.
Schoenbaum, Max, Vontay, Va., Med. Col. of Va., 1904.
Sycle, M. C., Richmond, Va., Univ. Col. of Med., 1903.
Smith, F. L., Richmond, Va., Univ. Col. of Med., 1905.
Smith, J. H., Richmond, Va., Univ. Col. of Med., 1904.
Sloan, Julian W., Chester, S. C., Med. Col. of Va., 1904.
Trigg, F. R., Princess Anne, Md., Boston Univ., 1904.
Turman, G. F., Richmond, Va., Univ. Col. of Med., 1905.
Tucker, R. B., Norfolk, Va., Med. Col. of Va., 1905.
Twyman, D. N., Charlottesville, Va., Med. Col. of Va., 1905.
Tucker, A. W., Norfolk, Va., Univ. of Va., 1905.
Terry, J. D., Rice Depot, Va., Med. Col. of Va., 1905.
Whitehead, R. C., Lynchburg, Va., Univ. Col. of Med., 1905.
Whitaker, R. L., Hampton, Va., Leonard Med. Col., 1904.
Walters, J. W., Madison Mills, Va., Med. Col. of Va., 1905.
Willis, A. M., Rapidan, Va., Med. Col. of Va., 1904.
Witten, J. W., Richmond, Va., Med. Col. of Va., 1905.
Watts, W. L., Monitor, Va., Univ. Col. of Med., 1905.
Williams, R. F., Sowers, Va., Univ. Col. of Med., 1905.
Williamson, W. F., Alexandria, Va., Univ. Col. of Med., 1905.
Whited, E. P., Grundy, Va., Med. Col. of Va., 1903.
Wood, Geo. W., Washington, D. C., Georgetown Univ., 1894.
Van Duersen, H. J., Mineral, Va., National Med. Univ., Chicago, 1904.

Questions for Examinations.

SECTION ON OBSTETRICS AND GYNECOLOGY.

QUESTIONS IN OBSTETRICS.

Dr. H. M. Nash, Norfolk, Va., Chairman.

1. Name the most important abnormalities of the female pelvis.
2. Give the approximate diameters of the living female pelvis, and also of the average diameters of the fœtal head at term.
3. What are the relative pelvic floor lacerations, as to frequency, in first and subsequent labors: about what per cent. is inevitable, and what methods may be taken to prevent such laceration during labor?
4. What abnormalities may favor the production of face presentations, and what circumstances, in such cases, improve the prognosis?

QUESTIONS IN GYNECOLOGY.

Dr. Wm. L. Robinson, Danville, Va., Examiner.

1. Describe the cystoscope and its use in female bladder cases.
2. Name the different displacements of the uterus. Give causes of dysmenorrhea and the treatment of endometritis.
3. Give diagnostic symptoms and appearances of rectocele and cystocele, and describe operation for the latter.
4. Give symptoms, causes, diagnosis and briefly the treatment of pelvic peritonitis.

SECTION ON PRACTICE OF MEDICINE.

Dr. E. T. Brady, Abingdon, Va., Chairman and Regular, Dr. E. C. Williams, Hot Springs, Va., Homeopath.

(Answer all quesctions. Sign by number only. Please write the branch, and your number on outside of your paper after folding.)

1. Give definition, causes, symptoms, and treatment of (a) active, and (b) passive, congestion of liver.
2. What is measles? Describe the eruptive stage, give diagnosis, complications and sequelæ, and state your management of a case.

3. Define neuritis, giving its causes and symptoms.
4. Give origin, course, duration, and termination of tuberculous peritonitis. Give diagnostic differences from cirrhosis, and other forms of general peritonitis.
5. Differentiate, clinically, renal, hepatic and flatulent colic, each from the other, and all from appendicitis.
6. What diseases are most common to (a) the summer season, and (b) the winter season? Why?

SECTION ON PHYSIOLOGY.

Dr. Robert Randolph, Boyce, Va., Examiner.

1. (a) What are the vital or physiological characteristics of protoplasm? Name four. (b) Name the four elementary tissues. (c) What are the three (3) great primary divisions of organic substances forming the chief part of the solid and fluid tissues of the body?
2. (a) Give physical properties and histological characteristics of the blood. (b) Give process of coagulation or clotting of the blood. (c) What physical factors are necessary to the maintenance of arterial blood pressure?
3. (a) Describe mouth digestion. (b) What is the action of gastric juice on food? (c) What is the succus-entericus and what are its functions?
4. (a) Describe the pancreatic juice, naming its ferments and describing the part each plays in digestion. (b) Describe the mechanism of normal intestinal movements. (c) Describe vomiting and its mechanism.
5. (a) Give number of spinal nerves and the function of anterior and posterior roots. (b) Locate the visual centre. (c) Locate the respiratory centre.
6. (a) What is the function of the third cranial nerve? (b) What is the function of the fourth cranial nerve? (c) What nerve supplies the posterior one-third of the tongue with taste and sensation?

SECTION ON HYGIENE AND MEDICAL JURISPRUDENCE.

Dr. A. S. Priddy, Bristol, Va., Examiner.

QUESTIONS IN HYGIENE.

1. Define drainage and sewerage. Explain what is meant by ground air and ground water, and how they may become factors in causing disease. Name the two diseases most commonly associated with soil pollution.
2. What are some of the physiological effects of exercise, and what are some of the pathological results of over-exertion?
3. Give some of the common modes of conveying the infection of typhoid fever. What preventive measures should be adopted against transmitting the infection in handling a case?
4. State the physiological effects of alcohol on the brain, circulation, secretions, temperature and metabolism. What organs are most commonly affected by its prolonged or excessive use, and the most common pathological condition found in them?
5. State the most approved hygienic methods of dealing with tuberculosis from both a remedial and prophylactic point of view.

QUESTIONS IN MEDICAL JURISPRUDENCE.

1. Define medical jurisprudence.
2. What is a wound? How are wounds classified? What are the characteristics of each class? What are the distinguishing differences between ante- and post-mortem wounds?
3. What might lead to the detection of a case of feigned epilepsy?
4. What extremes in time of access on part of the husband are usually allowed by common law in determining the question of the legitimacy of birth?
5. On what occasions may pregnancy become the question of medico-legal inquiry? How are the signs of pregnancy classified? What do you understand by super-fœtation?

N. B.—Select and answer any four in each branch. Erase those not answered and pin this printed list of questions to answers turned in. Should it be necessary to write Examiner on any matter concerning examination enclose stamp for reply.

SECTION ON ANATOMY.

Dr. C. W. Rodgers, Staunton, Va., Examiner.

1. Describe the radio-carpal articulation.
2. Describe the pericardium.
3. (a) Give a short description of the lymph vascular system, including its arrangement and characteristics. (b) Describe a lymph gland, and state in what regions of the body they are chiefly located.
4. Give the origin and insertion of the following muscles: Triceps, pronator radii teres, tibialis anticus, gastrocnemius.
5. (a) Give the origin and termination of the following arteries: Brachial, left sub-clavian, thoracic aorta, posterior tibial. (b) Name the branches of the axillary artery. (c) Describe the internal mammary artery.
6. (a) Describe the spheno-palatin (Meckel's) ganglion. (b) Give the origin, course, and distribution, of the great sciatic nerve.

SECTION ON MATERIA MEDICA AND THERAPEUTICS.

QUESTIONS ON MATERIA MEDICA.

Dr. W. B. Robinson, Tappahannock, Va., Examiner.

1. (a) Internally administered, state the action of small and large doses of ipecac. (b) What symptoms are produced by poisonous doses of tartar emetic? Give antidote. (c) Give the principal alkaloid of cinchona, its dose and incompatibles.
2. (a) What are the physiological effects of aloes? (b) How does the action of codeine differ from that of morphine? Give dose of each. (c) Give the principal alkaloid of belladonna, its dose, and state how eliminated.
3. (a) Give the physiological action of ergot of rye. (b) How does santonin affect vision? How is it eliminated, and what is the dose? (c) Mention the objection to the use of most of the salts of iron, and state which preparation is especially credited with diuretic properties.
4. (a) Give the physiological action of antipyrin. (b) What is the action of salol, and what conditions contraindicate its use? (c) What symptoms are produced by the prolonged use of bromides?

QUESTIONS IN THERAPEUTICS.

Dr. J. E. Warinner, R. F. D. No. 7, Richmond, Va., Examiner.

1. (a) Define diuretics. (b) In what four ways do diuretics act? (c) Name and doses of four most efficient diuretics. (d) State three perverted conditions requiring diuretics, not naming special diseases.
2. (a) Compare the therapeutic action of digitalis and strychnine on the heart. (b) What drug has a similar action to digitalis, and give three reasons for its being preferred? (c) Give chemical and physiological antidotes for strychnine. (d) Which preparation of digitalis is preferred in heart lesions, and which in kidney lesions, and why?
3. (a) Give name and strength used of two best mydriatics. (b) Give name and strength used of two best myotics. (c) Which of the above classes

of drugs are indicated in glaucoma and why? (d) Write a prescription for conjunctivitis, containing three useful drugs.

4. (a) Give strength, methods of using, and conditions requiring, normal saline solution. (b) Give directions for rectal alimentation, naming foods used, amount, preparation for, and interval. (c) Name three remedies classed as anti-malarial. (d) Give a good rule for computation of doses for children, and state what classes of drugs are exceptions to the rule.

(Sign pledge and number only.)

SECTION ON HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Dr. R. M. Slaughter, Theological Seminary, Va., Examiner.

Answer six blocks.

1. (a) Name the varieties of cartilage. (b) Give the structure of the peritoneum. (c) Give the structure of a renal tubule.
2. Describe, give morphology, biology, and pathogenesis of) the (a) bacillus diphtheriæ, and (b) the bacillus influenzæ.
3. (a) Explain the difference between so-called interstitial and parenchymatous inflammations. (b) Define productive metastatic and suppurative inflammation.
4. (a) Define the terms pathogenic and pyogenic. (b) Explain the difference between the bacillus coli communis and the ameba coli. (c) Name and locate the three varieties of muscle fibre.
5. (a) Name the epithelial tumors, stating which are malignant and which benign. (b) Define the term malignancy as applied to tumors. (c) What are endotheliomata?
6. Explain the process termed infarction.
7. One of three immediate results follow perforation of the appendix: Describe these, and give the cause of death in fatal cases of appendicitis.

SECTION ON SURGERY.

Dr. S. Lile, Regular, Lynchburg, Va., Dr. M. R. Allen, Homeopath, Norfolk, Va., Examiners.

1. (a) Give causes, symptoms and signs of inflammation, with its modes of termination. (b) Describe the different forms of erysipelas.
2. (a) Define and give symptoms of gangrene, with its general surgical treatment. (b) Differentiate furuncle and carbuncle, fissure and fistula.
3. (a) Define and give the symptoms of shock. (b) Give the differential diagnosis of chancre and chancroid, and give the treatment of syphilis in detail.
4. (a) How would you treat a Potts' fracture—giving mode of reduction and after treatment? (b) Give symptoms and signs of dislocation.
5. Differentiate between concussion and compression, and give treatment of each condition.
6. Give the diagnosis of hydrocele and inguinal hernia.
7. Diagnose appendicitis and describe in detail the steps necessary for an appendectomy.

Short, concise answers to each question are desired.

SECTION ON CHEMISTRY.

Dr. O. C. Wright, Jarratts, Va., Examiner.

1. (a) Define chemical affinity, molecular weight and atomic weight. (b) Why is hydrogen the unit of comparison of elements? (c) What is the difference between a mixture and a chemical compound?
2. (a) Explain what is meant by monads, diads, triads, etc. (b) If given the specific heat of an element, how would you determine its atomic weight? (c) Why are chemical means not always sufficient to determine atomic weight of elements?
3. (a) Why is free oxygen and free nitrogen found in atmospheric air? (b) Tell how carbon is found in nature, give allotropic forms and its physical and chemical properties.
4. (a) How many and what series of compounds does iron form? (b) Give formula for each. (c) Does exposure to air effect either series? If so, how?
5. (a) What is the action of heat on organic substances? (b) What three factors are necessary to cause putrefaction and fermentation? (c) What is the most favorable temperature for putrefaction?
6. (a) Explain what is meant by proteids. (b) What effect does nitric acid have on proteids? (c) Define glucosides.
7. (a) Differentiate pus and mucus in urine. (b) What is the origin of pus found in acid urine? (c) Mention several conditions in which the urine is of a high specific gravity.
8. (a) If given specific gravity of urine, how would you determine its total solids? (b) Describe the diazo-reaction. (c) Give reaction of normal urine and tell what chemical constituent produces this reaction.

(Answer any six and only six of the above blocks.)

HOMEOPATHIC QUESTIONS ON THERAPEUTICS.

Dr. E. C. Williams, Hot Springs, Va., Examiner.

(Answer four blocks of questions.)

1. (a) Give indications for the use of hellebore in hydrocephalus. (b) What are the principal clinical uses of phytolacca, and of platinum? (c) Give the indications for the use of eupatorium perfoliatum in intermittent fever. (d) Differentiate aconite from bryonia in acute bronchitis.
2. (a) Differentiate arsenicum from natrum muriaticum in intermittent fever. (b) Give the indications for the use of nux vomica in dysmenorrhea. (c) Give the principal clinical uses of (1) sanguinaria, and (2) rheum. (d) Give the diet and general mode of life for a lithæmic patient.
3. (a) Give the indications for the use of antimonium tartaricum in bronchitis. (b) Differentiate between aloes and sulphur in a case of diarrhea. (c) Give the indications for the use of belladonna in dysmenorrhea. (d) State the principal clinical uses of thuja and terenbinthina.
4. (a) Give indications for the use of veratrum album in cholera. (b) Differentiate aconite from spongia in croup. (c) Mention the remedies of especial use after an excess of mercury. (d) Give the general treatment of a case of scarlet fever.
5. (a) Differentiate bryonia from rhus in typhoid fever. (b) Give the symptoms for the use of (1) graphites, and (2) sulphur in eczema. (c) What are the principal clinical uses of croton tigliun and of camphor. (d) Mention two remedies of use in acute cystitis, and give three indications of each.

QUESTIONS ON MATERIA MEDICA—HOMEOPATHIC.

Dr. E. C. Williams, Hot Springs, Va., Examiner.

(Answer four blocks of questions.)

1. (a) Give the physiological action and two characteristic symptoms of nux vomica. (b) Describe the stools characteristic of (1) bryonia, (2) calcarea carbonica, and (3) podophyllum.
2. (a) What is mercurius corrosivus, and upon what tissues or organs does it especially act? Men-

tion three of its characteristics. (b) Describe the characteristic type of patient for (1) pulsatilla, (2) calcarea carbonica, and (3) ignatia.

3. (a) Give the physiological action and two characteristic symptoms of ferrum. (b) Mention the tissues or organs especially affected by (1) caulophyllum, (2) hamamelis, and (3) hydrastis.

4. (a) What is sepia? Give four characteristic symptoms. (b) Give the heart symptoms of (1) aconite, (2) cactus, and (3) spigelia.

5. (a) Give the mental symptoms of (1) belladonna, (2) hyoscyanus, and (3) stramonium. (b) Give three characteristic symptoms of (1) antimonium crudum, and (2) antimonium tartaricum.

INSTITUTIONS REPRESENTED BY THE APPLICANTS BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, FROM THE ORGANIZATION OF THE BOARD, JANUARY 1, 1885, TO JUNE 20-24, 1905.

	Total Number from each Institution.	Total Number Licensed First Examination.	Total Number Rejected First Examination.	Licensed on Second Examination.	Rejected Second Examination.	Licensed Third Examination.	Rejected Third Examination.	Licensed Fourth Examination.	Rejected Fourth Examination.	Licensed Fifth Examination.	Rejected Fifth Examination.	Incomplete or Withdrew.	Partial examination.
Total number before Board from organization to June 20-24, 1905	2670	1552	551	180	91	31	31	2	23	1	..	39	399
University College of Medicine, Richmond, Va	38	32	3	..	..	3							
University of the South	4	..	..	2	1	1							
University of Virginia	19	16	3										
Maryland Medical College	4	..	1	..	1	1	..	1					
Johns Hopkins University	1	1											
University of Pennsylvania	2	2											
Boston University	1	..	..	1									
Medical College of Virginia	33	23	6	1	..	1	..	..	..	..	..	2	
College of Physicians and Surgeons, Baltimore	3	3											
Leonard Medical College	12	1	2	2	2	..	4	1					
University of Maryland	4	2	2										
Kentucky University	1	1											
Kentucky School of Medicine	1	..	..	1									
Georgetown University	2	2											
Columbian University	1	1											
Jefferson Medical College	1	1											
Howard University	3	1	..	1	1								
Hospital College of Medicine, Kentucky	1	..	1										
Meharry College, Nashville	2	..	2										
Med. and Chir. College of Christ Institution, Baltimore, Md	1	..	1										
National Medical University, Chicago	1	1											
Baltimore Medical College	3	1	1	..	..	..	..	..	..	..	..	1	
University of Napoli, Italy	1	1											
Pulte Medical College, Hom	1	..	1										
Physicians and Surgeons, New York	1	1											
Baltimore University	1	..	..	..	..	..	..	..	..	..	..	1	
Tennessee Medical College	2	1	..	..	1								
Memphis Hospital Medical College, Tenn	1	1											
Non-Graduates taking partial examination	62	..	..	..	..	..	..	..	..	..	..	..	62
Totals	2877	1644	574	188	97	37	35	4	23	1	..	43	461

INSTITUTIONS REPRESENTED BY APPLICANTS WHO CAME BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, SUMMER SESSION, AT RICHMOND, VA., June 20-24, 1905.

	Total Number of Applicants from each College.	Total Number of Applicants Licensed from each College.	Total Number of Applicants Rejected from each College.	Partial Examination.	Incomplete.
University College of Medicine, Richmond, Va.	38	35	3		
University of the South	4	3	1		
University of Virginia	19	16	3		
Maryland Medical College	4	2	2		
Johns Hopkins University	1	1	0		
University of Pennsylvania	2	2	0		
Boston University	1	1	0		
Medical College of Virginia	33	25	6	..	2
College of Physicians and Surgeons, Baltimore	3	3	0		
Leonard Medical College	12	4	8		
University of Maryland	4	2	2		
Kentucky University	1	1	0		
Kentucky School of Medicine	1	1	0		
Georgetown University	2	2	0		
Columbian University	1	1	0		
Jefferson Medical College	1	1	0		
Howard University	3	2	1		
Hospital College of Medicine, Kentucky	1	0	1		
Meharry College, Nashville, Tenn	2	0	2		
Med. and Chir. College of Christ Institution, Maryland	1	0	1		
National Medical University, Chicago	1	1	0		
Baltimore Medical College	3	1	1	..	1
University of Napoli, Italy	1	1	0		
Pulte Medical College, Hom	1	0	1		
Physicians and Surgeons, New York	1	1	0		
Baltimore University	1	0	0	..	1—Sick
Tennessee Medical College	2	1	1		
Memphis Hospital Medical College, Tenn	1	1	0		
Non-graduates taking partial examination	62	..	..	62	
Total	207	108	33	62	4

Nos. of examination papers.	INSTITUTIONS Whose Graduates were Rejected by the Medical Examining Board of Va., at Regular Spring Meeting, June 20-24, 1905 With Percentage Marks of each. COLLEGE OF GRADUATION.	Hygiene and Med. Jurisprudence.	Chemistry.	Anatomy.	Physiology.	Histology, Pathology, Bacteriology.	Obstetrics and Gynecology.	Materia Medica and Therapeutics.	Practice.	Surgery.	Total.	Average.
11	University of Virginia	80	66	74	21	70	82	66	65	78	602	66+
19	Medical College of Virginia	85	80	61	81.5	75	82.5	75	75	35	650	72 "
23	Maryland Medical College	84	67	72	49	65	65	58.5	66	76	602.5	66 "
30	Leonard Medical College	88	76	76	86	65	52.5	69	72	70	664.5	73 "
33	University of Virginia	83	77	80	60	70	76	65.5	76	76	663.5	73 "
35	University of Maryland	90	80	62	48	65	83.5	78.5	76	70	653	72 "
40	Leonard Medical College	82	72	78	82	65	64	75	70	70	658	73 "
43	Leonard Medical College	73	70	74	58	68	78	66	75	76	638	70 "
49	Leonard Medical College	75	81	65	88	68	60.5	76	75	60	648.5	71 "
50	Howard University	88	75	64	73	65	77	73	75	76	666	74
51	Leonard Medical College	92	76	75	85	65	55.5	63.5	75	60	647	71+
52	Meharry College, Nashville	65	62	69	22	65	36	50.5	70	72	511.5	56 "
53	Med. and Chir. College, Maryland	55	60	68	22	65	76.5	70	71	30	517.5	57 "
54	Leonard Medical College	76	91	68	65	70	68	77.5	73	75	663.5	73 "
58	Maryland Medical College	75	62	36	39	50	58	67.5	70	50	507.5	56 "
59	Leonard Medical College	90	66	81	86	65	55 5	60	77	59	639.5	71 "
63	Meharry College, Nashville	72	68	22	34	65	55	62	52	40	470	52 "
67	Medical College of Virginia	73	75	67	20	65	72	72	72	70	586	65 "
68	Leonard Medical College	80	72	55	73	68	61	63.5	75	65	612.5	69 "
84	Tennessee Medical College	74	53	58	49	55	68	75	75	70	577	64 "
95	University College of Medicine	90	75	75	50.5	65	86	79.5	78	60	659	73 "
108	Medical College of Virginia	84	78	78	75	71	78	72	69	30	635	70 "
118	University College of Medicine	88	76	73	42	70	81.5	77.5	78	76	662	73 "
123	Baltimore Medical College	75	66	73	50	65	78	75	72	50	604	67 "
142	Medical College of Virginia	84	71	89	49	68	78	66.5	77	76	658.5	73 "
146	University College of Medicine	78	76	72	67	65	79	76	76	50	639	71
159	Medical College of Virginia	82	73	74	45	70	75.5	75	77	84	655.5	72+
162	Pulte Medical College	85	71	51	74	72	75	84	72	60	634	70 "
167	University of the South	60	60	60	60	60	60	60	60	60	540	60
175	University of Maryland	80	71	74	45	70	76	73 5	75	75	639.5	71+
186	Hospital College of Medicine, Kentucky	70	60	30	53	68	63.5	62	50	62	518.5	57 "
192	Medical College of Virginia	78	70	51	70	50	76	72.5	70	78	614.5	68 "
201	University of Virginia	78	60	65	81	70	87	62.5	70	80	653 5	72 "

Book Notice.

Text-Book of Physiology, Normal and Pathological. By WINFIELD S. HALL, Ph. D., M. D., Professor of Physiology, Northwestern University Medical School, Chicago, etc. *Second Edition, Revised and Enlarged. Illustrated with 340 Engravings and 3 Colored Plates.* Lea Brothers & Co., Philadelphia and New York. 1905. Cloth. 8vo. Pp. 800.

While marked on the title page "for students and practitioners of medicine," we wish to emphasize that this book is much more than an ordinary class-room book for students. It is a work of greatest interest to practitioners as well. The sections on *Pathological Physiology* make it so. The sub-chapters on this subject occur especially at the end of chapters on Circulation and Blood, Digestion, Metabolism and Excretion, while the pathological physiology of the special senses and of the central nervous system are discussed within the bodies of these chapters. These several sub-chapters, etc., while by no means covering the entire field of diseases, afford valuable information to the reader of standard works on Practice, etc., in explaining the relation of cause and effect of many of the phenomena of diseases. As a standard *physiological* text-book for students during their college courses, the descriptions and discussions are all in the plainest language adapted to teaching. It is a book that if more generally carefully examined by professors of physiology would unquestionably become adopted by them for their students. The usual tedium of dry details common in so many other text-books is removed in great part in this book by illustrations or examples of the practical need of the information imparted.

Editorial.

Norfolk Session of Medical Society of Virginia.

The thirty-sixth annual session, to be held at Norfolk, October 24-27, 1905, promises in every good way to be a breaker of all records. The 1904 President of the Norfolk Medical Society, Dr. R. L. Payne, appointed the following as chairmen of the several important committees, who are doing their duties admirably well:

Ways and Means—Dr. Herbert M. Nash.

Transportation—Dr. E. T. Field.
Halls—Dr. O. C. A. Bindewald.
Exhibits—Dr. Levi Old.
Entertainments—Dr. Jett McCormick.

It is just two months in advance of the session, and the preliminary announcement postal is being issued asking for titles of papers, etc. With reference to the high grade of papers and profitable discussions that may be expected it is sufficient to mention that thus early—before response comes in from the postals now being sent to all members—beside the address of the President, Dr. Wm. S. Christian, of Urbanna, Va.,—the names of doctors who have promised papers, participation in discussions, etc.:

Drs. P. B. Barringer, University of Virginia.
E. T. Brady, Abingdon, Va.
J. E. Cannaday, Paint Creek, W. Va.
Edward P. Davis, Philadelphia, Pa.
L. S. Foster, Williamsburg, Va.
Julius Friedenwald, Baltimore, Md.
W. L. Harris, Norfolk, Va.
James S. Irvin, Danville, Va.
James Wilson Hunter, Norfolk, Va.
George Ben. Johnston, Richmond, Va.
Clarence Porter Jones, Newport News, Va.
B. C. Keister, Roanoke, Va.
Stuart McGuire, Richmond, Va.
M. Monroe Moran, Pinners, Va.
J. H. Musser, Philadelphia, Pa.
W. A. Plecker, Hampton, Va.
Joseph Price, Philadelphia, Pa.
Julian M. Robinson, Danville, Va.
Wm. L. Robinson, Danville, Va.
A. R. Shands, Washington, D. C.
I. S. Stone, Washington, D. C.
Geo. Knowles Swinburne, New York, N.Y.
Hugh M. Taylor, Richmond, Va.
Hugh H. Trout, Baltimore, Md.
George Tully Vaughan, Washington, D. C.
Oscar Wilkinson, Baltimore, Md.
Ennion G. Williams, Richmond, Va.

In the entire history of the Society, we have never known so many applications for Fellowship to be in hand so far in advance of a session. When quacks, charlatans, negroes, homeopaths, eclectics, and all other sorts of irregular doctors are excluded from the count, there are not materially over 1,800 worthy regular practitioners in Virginia. On adjournment of the 1904 session of the Medical Society of Virginia there were 1,290 *active* members of the Society—beside 45 honorary Fellows, most of whom are practitioners in Virginia. This gives a percentage of membership of over 71, as compared with the total worthy regular medical population of the State. No other State Society in the Union had a percentage of over 65 on adjournment of its 1904 session.

Every one of the one hundred counties of Virginia is represented in the membership of the Society. Very, *very* few other State Societies, with all the machinery of the so-called reorganization features, can present such a record.

Why should a worthy regular doctor be a member of his State Society? There are many reasons:

1. "In union there is strength." Such a proposition being axiomatic needs no argument.

2. To array the regular profession against quackery, charlatanry, and all sorts of irregular and ignoble practices.

3. Self-improvement. There are many who do not realize how little they know until they "rub up" against other doctors at Society meetings from whom they gather oftentimes treasures of information, which they can carry back to their homes with profit to themselves and benefits for their patients.

4. Self-interest. The time has arrived when the general public looks with suspicion as to the merits of a doctor who is not in affiliation with his representative Medical Society. In the selection of medical examiners for life insurance and other such purposes, corporations wish their doctors to be in full recognition by their State Medical Societies. Many such illustrations of self-interest might be named if space permitted.

5. Public interests. Circumstances are constantly occurring which call upon the profession of a community or State to give advice and counsel for the common good. Representative organizations of doctors are those upon whom such duties usually fall. And it should never be forgotten that occasions may arise when it is a part of the duty of the doctor to *give* such advice for public interests as the occasion may demand.

6. Scientific benefits. At State Society sessions the best products of the year's experience and observation are given in the form of papers, discussions, etc. Those truly interested in the cause of medicine, wherever it is possible for them to do so, willingly give their time and necessary expenses to attend Society sessions in order that they may impart and receive further information on subjects of interest. Such is the disposition of all true scientific students, as distinguishing them from quacks, etc.

7. Social features. Membership and attendance on sessions of one's State Medical Society enables the party to make many desirable acquaintances and friendships in the profession which no other opportunity affords. In addition, the social entertainments so generally provided by the local profession at the place at which the State Society meets affords opportunities for enjoyments, for recreation, for renewing old friendships, etc., which could not otherwise be offered.

8. Legislative influences. Doctors wield very strong political influences. Legislators are aware of this. So that when the regular profession becomes fixed in its ideas as to what is best for doctors and the public good, and acts in concert, it is scarcely probable that legislators will treat the earnest appeals of the profession with indifference.

Many other reasons suggest themselves why the worthy regular doctors of every State should thoroughly organize themselves into State Medical Societies. Such State Societies become the courts of appeal for local societies, or for the individual doctor when they or he have grievances to present, or methods to urge. It is through the State Medical Society that the worthy doctors of every community can best make their influences felt.

The American Medical Association.

The session at Portland, Ore., was attended by about 1,500 doctors—about 165 being members of the House of Delegates. Reports indicate that it was a very excellent session—Dr. John H. Musser, Philadelphia, President. Each of the sections was well occupied with papers and discussions. Boston was selected as the place of meeing in 1906. Dr. Wm. J. Mayo, of Rochester, Minn., is President-elect. Dr. Simmons, of course, was re-elected Secretary and Editor Journal American Medical Association. The total membership of the Association, June 1, 1905, was 19,285. Virginia and Maine are named as the only two States that have not adopted the plan of reorganization proposed by the American Medical Association. Dr. J. N. McCormack, of Kentucky, was re-elected to continue the work of reorganization. In this connection, Dr. Wm. E. Anderson, Farmville, Va.—an appointed *alternate* for one of the elected delegates for Virginia, who was unable to attend—undertook to explain why that State has not adopted the plan, and stated that if Dr. McCormack will assist, "I am certain Virginia will soon line up."

Fees for Life Insurance Examinations.

Special attention of our readers is directed to the communication in this issue by Dr. D. S. Ellis, of Ashland, Va., who very justly feels himself aggrieved. His remarks, in connection with those of Dr. J. R. Gildersleeve, of Tazewell, Va., ex-President of the Medical Society of Virginia, and other able papers scattered through the journals, have emphasized the point. The whole business of life insurance is dependent on the examining doctors. The ordinary office practice of the doctor calls for a fee of not less than $5 from a patient asking only for diagnosis. The charge for an ordinary urinalysis is $5 alone. So that the fee of $5 for ordinary examinations of applicants for life insurance is already "dirt cheap." The insurance companies are money making corporations, and their immense reserves, investments of surpluses, their exorbitant salaries for officials, etc., make it a shame that they should undertake to grind out of the examining doctor a farthing of curtailment of just fees. Not one of these companies insures a party without the expectancy of making money out of him. The rates of insurance are built up on this calculation. The time has come when the profession, in self-protection, should stand shoulder to shoulder on the subject matter of this letter from Dr. Ellis, and we congratulate the Ashland doctors that they will hereafter act as a unit in the matter.

Quarantining Against Yellow Fever.

The Atlantic Coast Quarantine against yellow fever as now prevailing in Louisiana seems satisfactory. To make more secure the cities, etc., of possible yellow fever zone, most of the Southern States have established a system of inspection of railroad trains entering their States from the infected belt. The Virginia State Board of Health, so as to add to the sense of security of its seaports, has appointed medical inspectors of trains entering the State, who will have full powers of quarantine officers.

Dr. J. M. Burke,

Of Petersburg, Va., was recently appointed Chief Surgeon of the Seaboard Air Line Railway.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 11.
Whole No. 227.

RICHMOND, VA., SEPTEMBER 8, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

QUININE IN THE TREATMENT OF LOBAR PNEUMONIA.*

By EDWIN T. RAMSEY, M. D., Clark, S. Dak ,
First Vice-President South Dakota State Medical Association, etc.

During the past few years, various plans of treatment, such as the use of creosote, guaiacol, digitalis, sodium salicylate and numerous other drugs combined with various external applications, have been advanced as being specifics, or nearly so, for the cure of this formidable disease. It is not my intention, however, to discuss these various drugs, from some of which many of you have, no doubt, obtained good results. But what I want to bring to your attention is a line of treatment which I have used for two or three years, and the results from which will compare favorably with those from any other treatment I have seen advocated—namely, the use of quinine and iron in lobar pneumonia.

During the past year two or three articles have appeared in the *Journal of the American Medical Association,* written by Dr. W. J. Galbraith, of Sonora, Mexico, in which he advocates the use of large doses of quinine in the treatment of this condition, and from which he has obtained most excellent results. This method of treatment is not new, by any means, although it has not been used very extensively in this country, but practically the same treatment has been advocated and used by some of the leading German authorities for the past ten or twelve years, von Jurgensen of Tubingen, Aufrecht of Madgeburg, and Niemeyer. Dr. Galbraith's method differs somewhat from the German, in that he gives larger doses of the quinine and begins it earlier in the disease, but he has, if anything, obtained better results, although his experience with it has not been so extensive. Aufrecht, in the fifteen years previous to the commencement of the use of quinine, reported 1,441 cases of pneumonia, 249, or 17.28 per cent. of which terminated fatally; but since using this treatment his mortality rate has dropped to about 5 per cent. Galbraith, in the *Journal of the American Medical Association* of January 28, 1905, reported a series of fifty cases without a death. Of course, this number of cases is small, and not sufficient to draw any positive conclusions, but it certainly demands attention and further investigation. Since following this plan of treatment, I have had no reason to regret my departure from the expectant plan as advised and used by the majority of the physicians in this country, and I have used practically the same treatment as recommended by Dr. Galbraith with equally good results, although I have never given as large doses of the quinine as he has. In that time, in 36 cases I have treated by this method, I have had two deaths. One of the cases that terminated fatally was in a patient who was suffering rom tuberculosis of the lungs at the time he developed the pneumonia, and the other was an alcoholic patient who developed a double pneumonia, and whose condition was hopeless when I first saw him on the third day of the disease.

The expectant plan of treatment of so formidable a disease as pneumonia has always appeared to me as irrational. All authorities agree that pneumonia is an acute infection, and in the majority of those cases that terminate fatally, death is caused by toxemia producing a failure of the right heart; but still they give us no advice as to how to counteract that toxemia and prevent that failure of the right heart. One author says: "All cases of pneumonia do not need active treatment. What is necessary is to combat fever if it becomes excessive, to support the heart if it becomes feeble or congested," etc. It is true that some cases of pneumonia will get well without the use of any drugs, but we have all seen cases of this disease which were apparently very mild sud-

*Reod before South Dakota Medical Association, July, 1905.

denly change and become critical. The excessive fever, the enfeebled heart, and the general depression are sure signs that the infection has progressed and become firmly seated, and it does not seem reasonable or rational that we should do practically nothing but watch and wait until such a time as the development of the above symptoms shows us the true condition of our patient. Dr. Jacobi has said: "The time to treat heart failure is before it happens"; and as our cases of pneumonia die from heart failure due to toxemia, the time to treat them is at the beginning of the disease, when the patient's condition is such as to enable him to rally to treatment, and not wait until his heart begins to fail and his condition is bad.

Dr. H. A. Hare, in his *Practice of Medicine,* published this year, in his article on the treatment of pneumonia, says: "Large doses of quinine which produce cinchonism or irritation of the stomach, are valueless and may do harm by irritating the stomach, producing cerebral congestion or meningeal irritation, or by irritating the kidneys." He also says in his text-book on *Therapeutics:* "It decreases pulse force, pulse rate and arterial pressure." These depressing effects which Dr. Hare describes, have never been noticed by those who have used this method of treatment; on the contrary, it produces an increased arterial pressure and increased pulse force. Personally, I have never observed the slightest evidence of cinchonism in any of my cases during the active stage of this disease, and I have never hesitated to give at least 30 grains of quinine, and repeat it again in one hour, even in those cases where there was every evidence of cardiac weakness.

Another important feature of this treatment is the lack of evidence of a so-called crisis. When first called to a case of pneumonia, I order a warm bath, give a mild cathartic, and if the pain is at all distressing, I give a hypodermic of morphine, which I have seldom found necessary to repeat. If the pain returns, it can usually be controlled by applying the ice bag. I have discontinued the use of all external applications, as I have not found them satisfactory. I then order the administration of 30 grains of quinine, repeated in one hour, and again, in some cases, in two hours, depending on the amount of fever and condition of the patient. With the third dose, I give some form of iron. I have been in the habit of using reduced iron in doses of from 3 to 5 grains, repeated every three or four hours. In order to better describe this method of treatment, I will give the history of one case in which the constitutional depression was extreme.

W. J., age 29; single; farmer. Was taken with a chill and characteristic symptoms of pneumonia November 13, 1903.

November 14th, 9 A. M.—Patient complained of severe pain in lower part of right chest, extending to back, severe cough, profuse rusty expectoration, and, at times, considerable bright red blood; delirious. Temperature 105.4°. Respiration, 44.

Treatment.—Patient was given morp. sulph. gr. one-fourth for the pain and ℥ss of magnesia sulph., and a warm bath was ordered. At 10 A. M., 30 grains of quinine were given and repeated at 11 A. M., and followed by 15 grains at 12 M., with 3 grains reduced iron. I ordered the iron given every three hours. 8 P. M., temperature 104°. Pulse, 110. Respiration, 38.

November 15th, 9 A. M.—Temperature 103°. Pulse, 100. Respiration, 32. Pain was moderate, and easily controlled by the ice bag. Sputum still rusty, but no blood.

November 16th. 9 A. M.—Temperature 104°. Pulse 100. Respiration 36. Gave 30 grains of quinine, and followed by 15 grains in one hour. Iron continued. 8 P. M.—Temperature 102.4°. Pulse 98. Respiration 30. Patient's cough is less, pain practically gone, sputum only slightly rusty, slightly delirious.

November 17th, 9 A. M.—Temperature 104.6°. Pulse 116. Respiration 38. On examination, I found an extension to the upper part of the lung, increased rusty sputum and pain severe in upper part of chest Gave a hypodermic of morphine, grain one-fourth. Also gave 30 grains of quinine, and repeated it in one hour.

November 18th, 9 A. M.—Temperature 102°. Pulse 100. Respiration 30. Pain easier and sputum a little clearer. Sitll delirious. Gave 30 grains of quinine and 15 grains an hour later. Iron continued every three hours.

November 19th, 9 A. M.—Tempearture 101°. Pulse 96. Respiration 28. Gave 30 grains of quinine, and ordered 10 grains of quinine and 5 grains of reduced iron alternated every four hours.

November 20th, 9 A. M.—Temperature 101°. Pulse 94. Respiration 26. Ordered

the quinine reduced to 5 grains every four hours, and continued the iron. Pain was gone and sputum almost clear. Patient was very nervous; so ordered 20 grains of sodium bromide, to be repeated if necessary.

November 22d, 9 A. M.—Temperature 99°. Pulse 84. Respiration 20. Sputum clear, and patient was feeling fine and wanting something to eat.

November 24th, 9 A. M.—Temperature, pulse and respiration normal. Patient was complaining of ringing in the ears; hence discontinued the quinine, and ordered a bitter tonic and plenty of good, wholesome food.

The treatment as followed in this case has practically been used in every case treated by this method. In those cases where nervousness has been more marked, the bromides have been given more often, and I have frequently combined chloral in 10 grain doses with it. Where the rusty sputum is profuse, I give capsules containing one grain of acetate of lead three or four times a day, for two or three days, and while administering the lead, I discontinue the iron. It seems to liquefy the sputum and cause the blood to disappear.

The conclusions I have reached since using this treatment are: That instead of depressing the heart and decreasing arterial pressure, quinine is the most reliable stimulant we have in this disease. It reduces the frequency of the heart, and, at the same time, increases the peripheral circulation. I believe the value of the quinine is due to some specific action it has on the causes of the disease or their products, and, in that way, retards the pneumonic condition and exerts a great influence in lessening those so-called crises symptoms.

REMOVAL OF A GRAIN OF CORN FROM THE RIGHT BRONCHUS.

By JOHN DUNN, M. A., M. D., Richmond, Va.,

Professor of Diseases of Ear, Throat and Nose, and Associate Professor Diseases of the Eye in University College of Medicine.

On August 6th Mary H., aged 8, while playing put several grains of Indian corn in her mouth. Something occurred which surprised her, and caused her to catch her breath. As she did so she inhaled one of the grains of corn. A terrible struggle for breath ensued, during which it was thought the little one would suffocate. Suddenly her breath seemed mysteriously to return. Its return was followed by coughing spells so severe as to cause the child to vomit several times. After some hours these coughing spells grew less in intensity, and finally ceased, leaving the patient, however, weak, conscious of rattling in the her chest, and suffering from a sense of oppression. The following afternoon I had an opportunity to examine the child.

Dr. Peter Winston, of Farmville, Va., who brought the patient to Richmond, thought the breathing sounds of the left lung had been much interferred with the night before. When I first examined the patient I could find no difference in the amount of air passing into the lungs of either side, over both of which the respiratory sounds had a peculiar, rough whirring quality.

On Tuesday morning the *right* lung was perfectly free, while into the *left* no air passed. On Tuesday afternoon the *left* lung was free, while into the *right* no air passed.

On Wednesday over both lungs could be heard numerous rough rales; later in the day the right lung gave no respiratory sounds, and the coughing spells, from which the patient had been free since Monday, were becoming more and more frequent.

On Thursday morning Jackson's bronchoscope, which had been telegraphed for on Monday, arrived. Under partial chloroform anesthesia a low tracheotomy was done, after which, while the edges of the split trachea were held apart, the patient was held up, head downward, and a probe passed to the bifurcation of the trachea. A violent coughing spell followed. The grain of corn, however, was not expelled. The second sized bronchoscopic tube was now inserted into the trachea. At first the blood and mucus prevented any view of the trachea from being obtained. With a little patience and the use of cotton on the carrier the blood was removed, when the grain of corn could be clearly seen occluding the right bronchus. The lamp was now removed, and turning the far end of the bronchoscope tube slightly to the right the forceps were inserted and the grain of corn seized at the first attempt. Being too large to be got through the tube, the latter was withdrawn with the forceps containing the corn. The patient reacted well. Drainage gauze was

inserted for two days into the lower part of the neck wound.

Upon its removal the wound promptly closed. By the fourth day the lungs had cleared and the patient was allowed to sit up.

The bronchoscope used was designed by Dr. Chevalier Jackson, of Pittsburg, Pa., and made by Feick Bros., of that city. Dr. Jackson and his instrument makers deserve high praise for the perfection to which their bronchoscopes and œsophagoscopes have been brought. Dr. Jackson, in the *Laryngoscope* for April, 1905, reports several interesting cases in which these instruments were successfully used.

In the case above reported, the advantage of the bronchoscope is at a glance seen. The grain of corn, which was a very large one, was drawn into the larynx, where it was caught in the glottis, bringing on the first attack of suffocation, which reached such a stage that finally the vocal cords became paralyzed, allowing the corn to slip through into the trachea, where it provoked the severe coughing spells which followed. That it could never have been coughed up again can be readily understood. It must have passed downwards through the glottis with its long axis vertical, it being too large to pass any other way. Once below the cords it could never have been forced again to the glottis with its long axis exactly vertical; and even if it had the cords would never have been found widely enough separated to admit of its passage between them. Possibly had a low tracheotomy been done immediately after the inhalation of the grain of corn and the child inverted, the corn might have been coughed up (or down) to the tracheal wound and removed.

Those who have made such attempts have found this method so uncertain in its results that patients with a foreign body in the bronchus are not the most acceptable, and many surgeons have preferred to leave the foreign body to the efforts of the lungs and nature, rather than attempt its removal.

The history of the attempts to remove a foreign body from the bronchus by the older methods is full of failures. These attempts have, of course, sometimes succeeded, as in the case reported by Dr. Lyle, of Lynchburg (*Va. Medical Semi-Monthly,* February 8, 1901). Dr. Jackson's bronchoscope, however, allows in most cases so clear a view of the region of the bifurcation of the trachea that we need no longer grope in the dark for the foreign body. It removes that helpless feeling which every surgeon has felt before this instrument was at his command. That in this case the grain of corn did not get fixed until Wednesday is shown by the patency of first one bronchus and then the other.

The history of this case seems to show that as soon as a foreign body is known to be fixed in a bronchus, its removal should at once be attempted.

THE MENOPAUSE.

By W. LOWNDES PEPLE, M. E., Richmond, Va..
Professor of Histology, University College of Medicine.

The term menopause simply means the cessation of the menstrual function. It is neither a broad nor a comprehensive term, for it takes no account of the function of ovulation. It is far less misleading, however, than such synonyms as climacteric, critical time, change of life or climacteric disease, which would lead one to believe that, if not a period of actual pathological changes, it is at least a time strewn with difficulties and beset with hidden dangers.

The ancients gave scarcely more space to this interesting subject than the modern text-books on gynecology. "The humoral pathologists believed that the humors or juices of the body arose like gases, and that they often settled on the brain and produced great disorders, which required abstraction from the head, arm, foot or other part." Hippocrates observed that "Cessation of the menses gave rise to excoriations, violent and often scirrhous tumors of the uterus."

The French have probably given more study to the subject than the writers of any other nation. Tilt was the first to give a complete and comprehensive work on the subject to the English-speaking people. His book, entitled the Change of Life, the third edition of which appeared in 1871, while false in many of its premises and illogical in many of its deductions, is a very treasure trove of statistics written with all the charm of a novel. When we compare its grace of style, bearing in every line the imprint of the author's personality, with the cold, latter day presentation of facts, it makes us regret the passing of the old order to give place to the new.

* Read before the Richmond Academy of Medicine and Surgery, June 11, 1905.

The artificial menopause was not described at length by these older writer, for, fortunately ovariotomy was not so common then as now. "The Menopause," by Currier, of New York, published in 1897, is one of the best, and is the most recent book that I have seen upon the subject.

The menopause is a period of one to four years, occurring in the fifth decade of a woman's life, during which time menstruation becomes irregular, wanes and ceases, while the power of ovulation fails. It is physiological in its nature and not pathological. In it are set up the last few milestones of the child-bearing life. These should be passed by a normal, healthy woman as easily and as painlessly as those nearer the beginning or end of the journey. It is the autumn of life when the harvesting is done and the grain is being garnered, and not the blustering equinox with its sudden, desolating storms.

The structural changes that take place in the generative organs are atrophic in nature. The ovary contracts, the blood supply is diminished, the Graafian follicles disappear, and the organ becomes small and cirrhotic. The uterus shrinks with the increase of connective over the muscular tissue, and there is a consequent diminution of the blood supply. The vagina and vulva suffer atrophy and relaxation. The breasts also, to some extent, share in these changes, the connective tissue preponderating over the glandular, making them less rotund and more pendant.

The signs of the menopause, under normal conditions in a healthy woman, consist, first, in irregularity of her periods, the so-called dodging or skipping time. She misses a month; again, she misses two or three or the monthly character is lost, and the flow comes on at utterly unaccountable times. The amount of blood lost is very variable, being scant at times, and at others very profuse. Thus she goes on, the periods getting further and further apart until they cease altogether. There are instances in which the flow is regular until it stops at a period to appear no more, but these are rare.

With exception of flushes of heat, a little nervous irritability, or the customray inconveniences of menstruation, she has experienced nothing unusual. Indeed, the primitive types, such as our Indians, are not aware that anything out of the ordinary is taking place. Such, then, are the accompaniments of the menopause in the normal woman.

But all women are not normal, else there were books both of poetry and prose; and so it is the purpose of this paper to recount some of the more pronounced departures from the normal. So many and so varied are these that it is a difficult task, in so short a space, to grasp and group them; for after all, a book upon the subject is but a report of cases.

Before going into the symptoms of the menopause, let us remember that millions of women are always passing through this so-called change of life, and that the number of these who are sufficiently troubled to apply to us for relief is extremely small indeed. We must also remember that forty-five is the high point of our life curve, and that after it, the jagged line shows a slow but steady decline. It is the age of arterial degeneration. It is also the age of cancer. Thus we see that many ills which are attributed entirely to the menopause might easily affect men of the same age.

There are many conditions which have an important bearing on menstruation, and hence act as modifying factors upon the menopause. Though forty-five is the average age at which it is completed, instances are on record in which menstruation has ended as early as seventeen, and persisted as late as one hundred and four.

Climate influences it materially, for the women of Southern countries mature, bear children and decay far earlier than those of colder regions.

Obesity seems to bring an early menopause, probably from defective circulation. Fat women show this tendency in the amenorrhea, which is so common to them.

Wasting diseases, such as tuberculosis, diabetes, long continued suppuration and profound anæmia, all tend to bring the function to an early close.

Rapid child bearing in a young woman has the same effect by seemingly exhausting the reproductive function.

Heredity plays an important part in giving an early or late menopause, for in many families we see the women of several generations presenting the same peculiarities. Tuberculosis and tumors or cysts of the ovaries, may stop the menstrual flow, though we are, at times, startled at the presence of little mangled remnants, to see it proceeding regularly and naturally.

Temperament is also an important factor in its bearing upon the menopause, for the high strung neurotic woman who has suffered with her menses is far more liable to have a stormy meno-

pause than one of plethoric temperament, who has little difficulty with her periods. Indeed, I have seen but one negro with a morbid menopause, and she was for years maid to a lady who knew much of such matters.

Neoplasms of the uterus, by increasing its vascularity and by mechanically preventing normal contraction of body or cervix, not only aggravate the normal flow, but inaugurate bleeding at irregular times. Thus, by stimulating the "skipping time," they lead to a false sense of security and to irremediable delay.

The symptoms of the morbid menopause may, for convenience, be grouped under three general divisions: The local, the vasomotor and the nervous. To these, might be added the gastro-intestinal symptoms, which are probably, after all, reflex in nature.

The local symptoms.—There is nothing characteristic about the menstrual pain during the menopause. The same pains in the back and loins, the sense of bearing down and dragging at the hips, are all duly recounted. Vaginal atrophy and relaxation, in the presence of a vaginal tear, often cause or aggravate a prolapse of the uterus, with accompanying sagging of the rectum and bladder.

Hemorrhage is by far the most important symptom of the menopause, for early recognition of its cause often means the life of the patient. Women at forty-five bleed irregularly. Women at forty-five often bleed copiously. Women at forty-five often bleed when menstruation has seemingly ceased. I have named the cardinal symptoms of cancer.

That copious bleeding in the absence of discernable lesion may occur at this time must be denied. The fact that physicians know it to be rare does not alter one whit the deep-rooted belief in the lay mind that it is not only frequent, but perfectly natural. I recently saw a woman about this age with a polypus the size of the thumb dangling from the inner os, and propping the cervical canal wide open. The bleeding was profuse and well-nigh constant, and yet she was in no way alarmed, but was waiting as patiently as she might for the time of her deliverance.

We might multiply cases indefinitely of fibroids, ulcerated tears, endometritis, polypi and cancer, in which the patient is slowly but surely bleeding to death in complete, if not blissful, ignorance, believing a local disease to be but the passing of an unwilling function. If copious bleeding calls for an examination at thirty-five, then hemorrhage at forty-five fairly pleads for it in the name of pity.

Vasomotor symptoms are, of course, referable to the nervous system through the sympathetic, but so pronounced and so frequent are they, that separate consideration is given to them.

Of all the accompaniments of the menopause, the hot flush is the most constant. It consists of a sudden flush of heat, which covers the face and neck like a blush, or even pervades the entire body. It quickly passes, and is usually followed by sweating. They have received many names, as "hot flashes," "hot steams," etc., and in the artificial menopause they are seldom absent. They may persist for a year or more after menstruation has stopped. Palpitation of the heart and the feeling of fullness in the head are also attributed to disturbances of the sympathetic system.

The nervous symptoms.—Paralyses and degenerations were, at one time, commonly thought to be directly traceable to the menopause, and abundant statistics were collected to substantiate this belief. We attribute them now to degeenration of blood vessels, fibroid invasion of nervous tissue, or degeneration of nervous tissue from some constitutional disease or taint. Our heading is, therefore, restricted to the psychic or functional disturbances of the nervous system which, unquestionably, do occur at times as a consequence of the menopause. These symptoms are as varied in character as in degree, embracing all the concomitants of suppressed menstruation, and ringing all the changes from mild hysteria to mania.

For that bewildered half dream, well known to the bilious (a state of altered relations with one's surroundings, as though seeing hazily through a veil of smoke, hearing but dully or watching one's self from afar go drowsily through accustomed duties), Tilt long ago coined the ingenous word, "pseudo-narcotism." Among the few cases I have seen, it has been a prominent symptom; nor do I think I have confused it with gastro-intestinal autointoxication, which gives the same train of symptoms.

In one case, the most annoying symptom complained of, in addition to pseudo-narcotism, was a feeling as though the sinews of the neck were being drawn as a child contracts the claws of a hawk's foot by pulling on the tendons. In the past year, I have seen two cases, both predisposed, in which marked disturbance of the men-

tal faculties followed hysterectomy. Though many forms of insanity are encountered during the menopause, melancholia is the one oftenest met with, and happily, the prognosis is far better when this is the cause, than under most other circumstances.

In passing, it might be well to mention the gastro-intestinal disorders that are frequently associated with menopause. They consist of fermentative dyspepsia, and are accompanied, at times, by uric acid explosions, with decided rheumatic or gouty symptoms.

As to the care of patients undergoing a morbid menopause, few general rules can be laid down, for the treatment must, of necessity, be more or less symptomatic. Every means should be used to bring the system to par, and there to maintain it. This can be done by the use of nourishing food, fresh air, tonics, and reconstructives.

Tears of the cervix should be repaired to lessen local irritation and the possibility of reflex trouble, and also to guard against malignant invasion of the cicatrix. Tears of the perineum should receive attention, for with vaginal atrophy, prolapse is apt to supervene. In short, every possible source of local irritation should receive intelligent attention.

Hemorrhage is a troublesome and at times an alarming symptom to deal with, for, as stated, it may not be dependent upon a recognizable local cause, nor will ordinary methods check it. Absolute rest in bed, with hips elevated, hot antiseptic douches and nerve sedatives should be tried, and in one accustomed to these floodings, the period should be anticipated. When a fibroid is causing bleeding at this age, we should not be too precipitate in advising hysterectomy, for many of these cases, if patiently and judiciously handled until the menopause is passed, will not only bleed no more, but the tumor will undergo shrinkage with the uterus so that the patient is in far greater comfort than for years.

The vasomotor disturbances do not offer a field for brilliant results; but by the use of hot douches, hip and foot baths, when these symptoms are especially annoying at an overdue period, considerable relief may be experienced.

Treatment of the nervous symptoms includes all that has been suggested to put the patient in as good physical condition as possible. For the hysterical cases, with their manifold aches, pains and morbid sensations, general massage may be used with usually good results. Static electricity has proven in my hands a most useful agent in these cases. Whether its unquestionably good results are due to any intrinsic merit it may possess or to the profound moral impression produced by so much revolving glass with the prickling of blue sparks, I could never determine. But that it does give them remarkable relief I know.

Though we are, of course, adverse to giving sedatives to these chronic cases, there will be times when we cannot do without them. The old mixture of the bromides of soda and ammonia with aromatic ammonia and camphor will here be found valuable.

Some of these poor patients, in their vacillating depression, live on the borderland of insanity; and the support of a strong personality, the trust and confidence gained, is of more value than all the therapeutic agents under the sun. It is here that the physician is in highest sphere.

When the mind is overthrown, these cases must be treated according to the type of insanity they assume. But it is seldom, if ever, advisable to treat these cases at home, or in familiar surroundings. In the hands of strangers, under a new environment, their recovery is at times remarkable in its rapidity and completeness.

1000 *West Grace Street.*

THE AMBULANT TREATMENT OF INTERNAL HEMORRHOIDS.*

By COLLIER F. MARTIN, M. D., Philadelphia,
Instructor in Diseases of the Rectum, Philadelphia Polyclini Hospital and College for Graduates in Medicine.

An unfavorable impression regarding the injection method of treating hemorrhoids has been created in the profession by its use by quacks and charlatans, by the investigations published by Andrews in 1876, largely copied in later text-books, and by Kelsey's admission of some unsatisfactory results. All other operative procedures in the same class have dangers and complications, which are set down, not to the method, but to accident, the disobedience of patients, or unskillful surgery.

The dangers and complications of the injec-

*Read before the American Proctologic Society, Pitfsburgh, Pa., May 5, 1905.

tion method can be eliminated by a thorough understanding of their cause. The method is a legitimate surgical procedure producing brilliant results if used properly, and capable of doing much harm in the hands of one unskilled in its application. It calls for the most careful technique and a rigid observance of asepsis, and should not be intrusted to the general practitioner until he has mastered the anatomy of the rectum and its pathological conditions. Its success depends essentially upon a careful attention to details.

Patients suffering from rectal diseases, as a class, are not the best subjects for anesthesia. Complications such as pain, hemorrhage and strangulation can easily be avoided by a free divulsion of the sphincter muscles under nitrous oxide anesthesia. It is quick, safe, and non-irritant, and the patient need not be confined to his bed.

About four days after divulsion, when the primary soreness has subsided, the injection treatment may be commenced with a 50 per cent. solution of phenol Bobœuf, injecting from 7 to 10 minims directly into the centre of the pile. The injection is made through a conical speculum, which is then withdrawn, allowing the rectal walls to collapse, after which the hypodermic may be removed. A suppository containing 3 min. of ichthyol is then introduced, and afterwards used twice daily, once after stool and once at bedtime. From three to twelve injections, made at intervals of from two to seven days, will usually result in a permanent and radical cure. Should a slough occur, it will heal kindly in a short time. There is usually no marked pain.

The recurrences may be estimated at about 15 per cent., occurring after an interval of from three to five years, as shown by a series of about 4,000 cases treated by my father, Dr. Robert W. Martin. My own series of 520 cases, treated in five years, show that only 11 have had a return of their trouble. Only seven cases had an appreciable amount of pain. The pain and hemorrhage stopped within a few hours after divulsion, and hemorrhoids, which were eroded and congested, appeared to have a healthy mucosa within a few days.

The freedom from accidents and complications may be traced largely to the routine practice of primary divulsion. Cases in which the primary condition is one of fibroid hemorrhoids, little suited for treatment by absorption, are usually treated by ligature, employing local anesthesia. The only objection that can be made to the injection treatment is that in a few cases the treatment may extend over a considerable period of time. When the patient comes from a distance, I usually employ either the clamp and cautery or the ligature. When general anesthesia is used, I prefer the clamp and cautery, reserving the ligature for those cases where it is imperative that local anesthesia be employed.

My reasons for preferring the injection treatment lies in the fact that the patient is perfectly comfortable, is able to attend to his business without interruption, and is not required to undergo a prolonged anesthesia. In my hands and in the practice of my father, it has been perfectly safe and eminently satisfactory.

Professional Building, Room 601.

TYPHOID FEVER LIMITED.*

By ALEXANDER G. BROWN, Jr., M. D., Richmond, Va.,
Lecturer on Practice of Medicine, University College of Medicine

To clearly understand the problem of the limitation of typhoid fever, a review of the following questions should be undertaken: First, by what route do typhoid bacilli leave the body? second, by what means do typhoid bacilli gain access to the body?

In considering the means of egress from the patient, the typhoid bacilli are known to be most frequently found in the fecal discharge and urine. The sweat, expired air and expectoration, accredited by some isolated observers with their presence, can hardly be given much importance as bacilli carrying media from a typhoid patient. In the fecal discharges is found the micro-organism with the greatest constancy, and in the largest numbers, and the "stool" is the most fertile source of infection in typhoid fever.

Typhoid germ is found in the feces almost constantly from the beginning of the third week and even later. The urine also plays a role deserving of consideration as a medium for transporting the bacilli from typhoid patients, as has been clearly demonstrated by Newman and others.

*Read before the Richmond Academy of Medicine and Surgery, July 25, 1905.

Having briefly outlined the means of egress from an infected body, let us consider some of the conditions that the Eberth organism will endure out of the body before losing all vitality and becoming inert. "This bacillus is short, thick, actively motile, with rounded ends and flagella (Hare) growing readily in ordinary media." Its resisting powers are great. Its vitality is remarkable. High temperature (140°F.) is required to kill it; but it withstands freezing temperature for a long time. Sunlight kills it. For months and years it may lie dormant in dust, clothing and soil. In water, milk and food the bacillus will survive days and months. Many experiments to prove the vitality of the typhoid bacillus have been carried out, and the proof has been adduced showing that under the most adverse circumstances vitality will be maintained, and that under renewed conditions of favorable media, the bacillus will be revived and will disseminate the disease.

Let us recall now the avenues and means by which the typhoid bacilli gain admittance to the body for infection. At once it is acceded that the digestive tract is the channel of entrance in a vast majority of cases of infection. It is believed to-day that typhoid fever is transmitted and transplanted by "contact method" from some medium infected with bacilli and implanted by a direct or indirect agent somewhere in the digestive tract. By some means the bacilli are brought to the digestive tract, either by hands, food or water, and are carried from the mouth into the esophagus, through the stomach, which is no serious bar to its progress, or into the intestines, where it becomes implanted and proliferated in the lymph follicle and mesenteric glands of the intestines.

It has been told that the bacilli may be in some instances inspired in the air, and, lodging in the nose and throat, subsequently may be carried to the intestines.

Of the carriers of the virus or germs, water is pre-eminent in importance. Drinking water, whether it receives the germ directly from the patient, from privy, wells or cess pool, or by the indirect source of the soil infection, has been through long years of observation accorded the distinction of being the most prolific source of typhoid propagation. Many instances of medical literature may be cited to prove that epidemic after epidemic has been due to the infected drinking water. Milk is also another mode of infection, and this infection may be by "dilution with infected water, preservation and transportation in vessels washed in such water, or direct infection through hands of milkers, dealers, servants and other persons who come into contact with typhoid patients and their dejecta."

Among other sources of infection may be mentioned articles of food, such as butter, tea and coffee, ordinary white and red table wine, vegetables, oysters and clams. Also it has been shown that flies, after coming in contact with typhoid infected feces, may carry the germs and infect food not previously infected. (Fischer.)

But in the greatest epidemics of history *drinking water* has been the acknowledged source of infection. The pollution of the drinking water supply by one typhoid case, may be the cause of an epidemic among a large number using that water.

Among the first (now a classical one) epidemics, indisputably attributable to infection of drinking water, was that at Lausen, Switzerland, where typhoid had not been seen for sixty years. A farmer living about one and a half miles from Lausen, who, after returning from a visit to some point, was stricken with typhoid fever. (June 10th). Before the end of the next month, three other cases developed in the same house. Into a nearby branch, the discharges from these patients were thrown. Now, this stream was dammed up periodically to serve the family as a washing place. This water, obstructed and polluted, passed through the underground water vein to a large spring, which supplied the village with water, and in the early part of August more than one-sixth of the population was seized with typhoid fever.

This is mentioned to illustrate a class of epidemics, and to show that the water supply is the chief source of epidemics. The Plymouth, Pa., epidemic, in which 1,000 to 1,500 in a population of 8,000 were infected, is traceable to drinking water supply. The epidemic at Ashland, Wis. (1893-'94), illustrates the same point.

Within my own experience, a house epidemic occurred in which eleven cases of typhoid fever resulted from one case that had come in from a visit. The dejecta was carelessly thrown in the yard some 40 to 50 feet from the well; the drinking water was promptly infected and eleven cases of typhoid developed in the household.

The epidemics at Cornell, Pittsburg and

Philadelphia, the horrible epidemics which swept through the American army during the Spanish-American war, when by bullets our forces lost only 268 lives, while by the typhoid bacillus 3,862 lives were sacrificed and a great host of stricken soldiers who passed through untold agonies but recovered, all have been attributable in one way or another to pollution of the drinking water.

The Remedy.—It is an established fact that typhoid fever is a national calamity, costing our country thousands of lives yearly, untold train of evil results upon many who survive the disease, involving the expenditure of millions of dollars and incurring agonizing hours of suffering—yet it is a disease proven to be limitable and manageable.

To my mind there is one great reason why heretofore no systematic national effort has been made to eradicate it. Public sentiment, the menace of typhoid fever to public welfare, has not been crystallized.

The medical profession has known for years the nature and the limitation of the disease. The profession has discussed it ad libitum in professional societies, has talked and taught its patients, and has endeavored to reach the ear of the public to enlighten it about the disease. But all this effort has proven futile in a great measure, for to-day in many parts of the country the disease is shamefully present, testifying to the indifference of the public to its own welfare and safety.

The medical profession has been seriously and openly arraigned, by lay writers, for this unwarranted state of affairs. It has been charged that there is professional "lawlessness," that cases of disease are not reported to the health authorities, and that professional men show carelessness in such matters. I am not here to discuss this arraignment—in part there may be some truth in the statement, but I am constrained to affirm that the medical profession has done all that public sentiment would fortify and support.

The *remedy* for this lies in the education of the public as to the nature and processes and dangers of the disease. The rigid application of strict laws in all cases of typhoid fever: Our laws should require the reporting of all cases of typhoid by the physician in attendance: the strict and close scrutiny of all cases of typhoid fever by the city, county or State Board of Health. These officers of the public health should be supported by a strong, vigorous public sentiment, which would demand a faithful discharge of the duties of the officer.

Laws may be enacted which would have for their purpose a more accurate and scientific report of these cases to boards of health. But if public sentiment, which is always necessary for the enforcement of statutory requirements is wanting, carelessness and neglect will soon be displayed and the laws will become inactive and useless, and many cases will be unreported. With an accurate, prompt and honest report of each typhoid case to an active, fearless and intelligent city, county or State health official, much will be done to control the progress of typhoid fever. The exercise of rigid, vigorous and scientific measures for typhoid limitation will ensure the public against the horrors of epidemics.

The public sentiment, of which I speak, is necessary for adequate and proper conduct of the duties of an office of general health officer; authority sufficient for its usefulness should be vested on the office; appropriations from the public funds should be adequate to meet all demands, and the man should be fearless, honest, scientific and endowed with common sense.

In the department, general measures for the appropriate regulation of sewage conditions for biologic and chemic examinations of the water supply, for rigid supervision of the water sheds which furnish the supply of water, for geenral, hygienic and sanitary supervision of the residence and premises of citizens of the city, and a close scrutiny of milk and food supply of the city should be strictly carried out. In county and rural districts, physicians should be required to report every case of typhoid. The health officer of State or county should at once take active measures to inaugurate a scientific inquiry as to the source of infection, and should be empowered to institute such measures as would prevent the spread of the disease from such cases.

The same regulations in the city boards of health should be followed. The appreciation of a thorough, scientific fight against each case as it arises, a search for the facts as to the probable origin of each case, and the strict application of restriction and rules would forestall infection of the other members of the same household, and also a "house or block epidemic" should be regularly carried out by the said board.

The water supply, whether it be in the rural section or city, should be unpolluted. The filtration of city water has proven beyond doubt that that method has done much to lower the typhoid death rate in foreign cities—in Munich and Hamburg the rate being 3 to 100,000, whereas before filtration was instituted, the rate of death from typhoid was great.

The prophylaxis of the individual is of utmost importance. The physician in charge of a patient has this grave responsibility resting upon him. One of the most vital matters in the treatment of typhoid fever at the home of the patient is to secure the services of nurses and assistants, either trained or well informed about the disease and the modes adopted for the prevention. Such persons as are not necessary for the welfare of the patient should be denied admittance into the sick room; better were it that they leave the house entirely. The nurses must remember the virulence, hardihood and tenacity of the bacillus of Eberth, and accordingly secure themselves against infection as well as against becoming disseminators of the bacilli. The room of the patient should be small, well ventilated, sunny, denuded of all unnecessary articles of adornment and furniture; the floors and windows and furniture should be clear of all coverings, and the bed mattress protected from the virus.

Disinfection of stools should follow immediately upon being voided, and should be handled, subjecting it promptly to some strong germicide, as milk of lime, formalin, bichloride of mercury, chlorinated lime and liquid chlorides. Nor is the sputum to be neglected, for in it may be lurking the bacilli—this should be disinfected also.

Not only is strict surveillance required in the handling and disposition of secretions and excretions, but also the things that come in contact with the patient should be likewise treated. The wash and bathing water and remnants of food, as half-used glass of milk, the bed linen and body linen and any other articles of use in the patient's room should receive the same scrupulous antiseptic treatment. After the termination of the attack, the room, furniture, and bedstead should be washed down with carbolic acid or lysol solution. If iron bed, the use of steam is recommended. The bed clothes are disinfected by steam and all valueless articles should be cremated.

In disposing of the typhoid dead, cleansing of the body with antiseptic solutions, and cleansing and covering the buccal, nasal and anal orifices with absorbent cotton, renders the body innocuous.

The sick room, during an attack, should be kept scrupulously clean, all windows screened to prevent the flies from being means of carrying infection. The skin of the patient should be kept clean, as should the nasal and oral cavities. The instruments, thermometers or catheters, should be disinfected and be exclusively for the patient. The hands of the nurse and physician should be surgically cleansed on entering and retiring from the room.

Preventive inoculation has been lately introduced. Wright, of Netley, has inaugurated a similar method to that of vaccination. Its general use has not been such as to have established for it an indisputable position in professional esteem.

416 *West Grace Street.*

CONSTITUTIONAL TREATMENT OF SYPHILIS.

By M. C. SYCLE, M. D., Richmond, Va.

In advocating intra-muscular injections of salicylate of mercury as a continuous method of treating this disease I have not forgotten the other well known method, such as internal medication, inunctions, and fumigations. But I believe the hypodermic method is the best and most satisactory, and can be used with better results than any other method. It is both better for the physician and patient.

If we use inunctions the patient may stop treatment on account of the filth of this method, and then again by this method all parts of the body should be systematically gone over. The back is one part of the body that should be rubbed, and surely a patient would dislike to ask a friend or some one of the family to do this for him.

In regard to fumigations, these I believe are seldom used except in very severe cases, and are said to be very efficacious.

The most common treatment is the internal medication, and the preparation most commonly used is the protiodide of mercury in pill form. To begin with it is slow in action and

unscientific, and we never know exactly how much of the drug is absorbed, and I believe it tempts the patient to treat himself, thereby placing him out of the reach of his physician. In later years he will discover that the disease still exists. Again, it is impossible for many patients to take doses large enough to control in a complete manner the syphilitic lesions because of the gastro-intestinal disturbances that the medicine produces.

Injections intra-muscular of salicylate of mercury have many advantages over the other methods of treatment. First of all, it will not and does not form an abscess, as would be supposed. They are applicable in all stages of the disease. Secondly, they are quick and sure in action. Thirdly, they are more scientific and accurate, and we know just the amount given. Fourth, the skin and gastro-intestinal tract are relieved of any irritations. Fifth, economy to the patient and ease of administration. Sixth, they enable us to control the patient. Seventh, they only have to be given once a week, due to the insoluble properties and slow absorption of the drug.

In the salicylate of mercury we have a salt almost insoluble in character, and by this plan we could use larger doses than with the soluble salts.

The use of this method is admitted by nearly all physicians to be very good in severe and desperate cases, which do not yield readily to other forms of treatment.

If so used in malignant cases, why should it not be used as a routine form of treatment? I feel justified in saying that the internal administration, inunctions and fumigations of mercury are methods to be held in reserve for patients who cannot and will not be injected.

Salicylate of mercury is a fine, white powder insoluble in water—the dose being, internally, from one-fourth to one-half grain, and as an injection in ordinary cases one grain and a half. In selected cases larger doses may be given. I have seen as much as six grains injected in a patient at the Polyclinic Hospital, New York, without any bad results.

The drug when used should be suspended in a heavy liquid. It is put up in drachm vials, each containing one and three-quarter grains of salicylate of mercury, and about thirty minims of liquid benzoinal or albolene. The amount remaining in the vial after it is poured into the syringe and the small amount which adheres equals about one-fourth grain of mercury; so we really inject one grain and a half.

Technique of Apparatus.—An alcohol lamp, one-sixty minim subcutaneous syringe, a needle of a large calibre, with a sharp point about an inch and a half long, cotton, alcohol, ether and collodoin are necessary.

The site most favorable for injection is the gluteal region, but this may be changed to the calf of the leg, muscles of the back and chest. The part selected for injection is cleansed with a piece of cotton moistened with alcohol, and allow the patient to hold the cotton over the spot until we are ready to inject. The object of this is to keep the clothes away from the spot and acts as a guide to the site of injection.

The needle should be sterilized. We now heat the vial containing the mercury, then shake it, the piston is then withdrawn, and the contents of the vial are emptied into the syringe, the piston is then returned and the air displaced. Then by a straight, quick thrust the needle is buried in the muscular tissue, the contents of the syringe are slowly injected, and the needle is quickly withdrawn. A dry piece of cotton is placed over the injected site, and a slight massage is kept up for a moment, when the puncture is sealed with collodion.

201 *West Grace St.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE IX.

Inflammation — Importance — Difficulty of Study—Nature of Process—Definition—Causes and Pathology of Inflammation.

The subject of inflammation is one of great theoretical and practical importance, as on its proper comprehension depends the student's grasp of pathology and the surgeon's successful treatment of the majority of his patients. Consequently it is especially unfortunate that au-

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

thorities do not agree in their teachings, but differ, first, as to the nature of the process—whether it is conservative or destructive; second, as to the variety of its causes—whether it is due to mechanical and chemical irritants as well as to microbic infection; and third, as to what is included in the term inflammation, and what should be excluded and described under other processes.

There are some who contend that inflammation is a pathological process, destructive in its tendencies and opposed to the natural restoration of tissue from injuries inflicted by accident or disease. There are others who contend that inflammation is a physiological process, conservative in its tendencies, and, in fact, is an effort of nature to defend herself against injurious influences and to repair damages inflicted upon her structures. Again, many practical surgeons claim that all inflammation is bacterial in origin, and that the process never develops except as a result of microbic infection; while others, among them the most famous pathologists, insist that irritants, whatever be their nature, are all sufficient to produce the succession of histological changes that are characteristic of inflammation. Finally, some of the most recent writers earnestly contend that hyperemia is not a part of inflammation, and endeavor to draw a sharp line of differentiation between the two processes. They claim that hyperemia is not a stage of inflammation, as has formerly been regarded, but is essentially the opposite of inflammation, in that the one is a physiological process inaugurated by natural forces and aids the tissue in its effort to effect repair, while the other is distinctly a pathological process, destructive in its tendencies and opposed to the inherent recuperative power of tissue. Such is the contradictory status of the present views of inflammation. There is no possibility of a compromise, and a teacher must endorse one school or the other. Having in justice to the student made the foregoing statement, I will without apology teach that theory which seems to me to be most logical, avoiding the introduction of arguments except where unavoidable. If, out of the maze of conflicting tenets, there can be evolved a clear, practical, working hypothesis, I shall be content to leave the discussion of theoretical problems to others.

DEFINITION OF INFLAMMATION.

Inflammation may be said to embrace the abnormal conditions that are caused by the action of irritants upon the histological elements of the blood and other living tissues. Sanderson defines it as "the succession of changes which occur in a living tissue when it is injured, provided the injury is not of such degree as at once to destroy its structure and vitality." Park states that "Inflammation is an expression of the effort made by a given organism to rid itself of, or to render inert, noxious irritants arising from within or introduced from without." It will be noted that the definitions quoted either express or imply that inflammation is a *"protective"* effort of nature against *"noxious irritants,"* and the nature of the irritant is intentionally left indefinite, because it is believed it is not invariably microbic. As an example of the definitions employed by the opposite school may be cited the one coined by Nancrede, "Inflammation consists in the series of results caused by microbic interference with the normal process of repair in injured living tissue."

CAUSES OF INFLAMMATION.

Inflammation is a reaction against irritation. It is undoubtedly true that bacteria are by far the most frequent irritants, and that a large percentage of the inflammatory processes that surgeons have to deal with arise as a result of microbic infection. But certain mechanical, chemical and thermal irritants, as can be demonstrated in the laboratory, also produce inflammation. Such causes are rarely operative in actual practice, and hence from a surgical standpoint they are of minor importance. Still, the scientist must be exact in his statements, and in his teachings he should not substitute the major part for the whole. After all, bacterial infection can only act by destroying or irritating the cells by the production of toxins. Infection, reduced to its last analysis, represents a chemical injury to tissue, the noxious irritant being the specific poison produced by the infecting organism. It is a fact that inflammation may be caused by the injection of toxins free from the presence of bacteria. Here assuredly, we are dealing with chemical bodies alone. Further evidence of the potency of simple chemical irritants may be cited by referring to the inflammatory reaction produced by the application of croton oil, turpentine and other similar agents. Illustrations of thermal causes are seen in the familiar cases of inflammation following burns and frost bites.

Recognition of these results has led surgeons to discard the use of mercurial solutions in

wounds, once a routine practice, thus acknowledging that inflammation may be produced by chemical irritation alone. So universal has been this practice that antisepsis has given place to asepsis. Often the very author who denies the identity of the reaction following the application of mechanical and chemical irritation with the results following microbic infection will in the next paragraph describe the phenomena of inflammation as observed in the experiment of irritating the delicate mesentery of a frog by handling it or touching it with nitrate of silver!

THE NATURE OF INFLAMMATION.

Inflammation is a reactive process on the part of living tissue due to the presence of some injurious agent, bacterial or otherwise. It is not a disease, but an effort of nature to defend the economy from the vicious effects of an irritant. Usually inflammation is the effort of nature to defend the general system from infection, since usually the irritant is microbic. It makes little difference so far as the truth of this theory is concerned to admit the fact that nature in carrying on her defensive campaign often inflicts damage to herself. The demands of the situation may render harsh measures necessary. Her supply of provisions may be so excessive as to embarrass communication; her soldiers may be so overcrowded as to impede their movements; her leucocytes may be sent to certain battle, her bridges may be burned and her territory sloughed from her, but victor or victim, the process of inflammation is a battle of rebellion.

PATHOLOGY OF INFLAMMATION.

An inflamed part is painful and swollen, red and hot, and its functions are more or less perverted. These symptoms are the result of the pathological changes which have ensued in the area involved. If we paralyze a frog with curare and draw a loop of intestines through an incision made in the abdomen, we obtain a thin, transparent membrane, in which the circulation can be readily studied. If the mesentery be irritated with the point of a silver nitrate pencil and the area placed beneath the microscope, we can watch the changes which occur from the very inauguration of the artificially produced inflammation to its termination in resolution or further destruction. This has been done many times, and all observers agree that the changes which occur and which embrace the phenomena of inflammation may be practically classified, as follows:

A. Certain Changes in the Size of the Blood Vessels and in the Blood Circulation.

1. Ischemia.
2. Hyperemia.
3. Congestion.
4. Stasis.

B. Certain Changes by which the Elements of the Blood which were Intra-Vascular Become Extra-Vascular.

1. Transudation.
2. Exudation.
   (a) Emigration.
   (b) Diapedesis.
3. Rhexis.

C. Certain Changes in the Extra-Vascular Blood Elements and in the Peri-Vascular Tissue.

1. Changes in the tissue cells.
2. Changes in the blood elements.
   (a) Transudate.
   (b) Exudate.

STUDY OF THE NORMAL CIRCULATION.

If we examine the normal circulation as it occurs in the vessels of the transparent mesentery of a frog we can see the arteries with their rapidly pulsating current of blood, and near by a small vein in which the blood flows with a more steady movement. The capillaries are not readily seen until inflammation causes their dilatation, but careful observation will detect channels connecting the arterioles and venules, through which a few blood corpuscles occasionally pass. If the flow of blood through a small vein is watched there is little difficulty in distinguishing two currents, the axial and the peripheral.

The axial or central current [illegible] id and conveys the red blood corpuscles [illegible] t the same specific gravity as t[illegible] a, while the peripheral current [illegible] axial current and the vessel wall[illegible] nsiderably slower, and in this current th[illegible]e blood corpuscles are conveyed, their rotary motion being due to their coming in contact with the vessel wall. This is explained by the physical law owing to which if a fluid containing in suspension solid particles is forced through a capillary tube the heaviest particles are carried along the central current while those specifically lighter seek the peripheral current.

As is well known to the student of physiology, the vascular system is controlled by the vasomotor nerves and the peri-vascular ganglia.

The nerves can be divided into two groups,

all originating from a certain part of the brain, but after traversing the cord a large majority join the sympathetic system by means of the rami-communicantes and constitute the "indirect supply," or vaso constrictors, while a small minority do not join the sympathetic, but leave the cord through the posterior or sensory root and form a part of the spinal nerve, constituting the "direct supply" or vaso-dilators. The perivascular ganglia constitute a peripheral vasomotor mechanism independent of the central, and capable of influencing the calibre of vessels in tissue actually separated from the brain and spinal cord, as in a transplanted flap. The vaso-constrictor nerves and peri-vascular ganglia are in continuous action, and keep the muscular walls of the blood vessels in a state of tonic contraction. The vaso-dilator nerves are not always in action, but are called into play in unusual conditions. Having reviewed the normal circulation and the nervous mechanism by which it is controlled in health we now take up the description of the abnormal changes which are seen in inflammation, discussing them under the headings in the classification already given.

A. Certain Changes in the Size of the Blood Vessels and in the Blood Circulation.

1. *Ischemia.*—The first change which is observed after the artificial production of inflammation is a fleeting contraction of the lumen of the vessels caused by stimulation of the vaso-constrictor nerves, and as a result there is a temporary blanching of the tissues. This is the stage of ischemia.

2. *Hyperemia.*—Following almost immediately upon ischemia there is a wide dilatation of the blood vessels from the action of the peri-vascular ganglia, and this dilatation of the vessels is accompanied by an increased velocity in the flow of blood through them. Dilatation is first noticed in the small arteries, afterwards in the veins and capillaries, and keeps increasing for fifteen minutes to two hours. The blood is brighter and more arterial in color and obviously greatly increased in amount. The blood corpuscles circulate in their respective streams and the condition is one of exalted physiological activity. This is the stage of hyperemia.

3. *Congestion.*—There is next a gradual slowing of the blood current, which is first noticed in the capillaries and soon afterwards in the venules. This is not due to contraction of the vessel walls, but to overcrowding of the venules with blood corpuscles, which mechanically obstruct them. The blood current becomes more sluggish and the column of blood corpuscles broader. Owing to the slowing of the stream the leucocytes in the peripheral current are not forced onward with the same momentum, but are dropped here and there on the vessel walls. Some of them appear to be momentarily attached, when they are again detached by the force of the current and rolled away by another leucocyte. As the process advances it appears as if the viscosity of of the leucocytes was gradually increasing as more and more of them adhere while fewer and fewer are detached. The vessels now look as if the internal surface of their walls was paved with leucocytes and their lumen is much diminished by this mural implantation. It appears as if obstruction would occur every minute, the capillary stream becoming completely arrested for a few seconds, and then the current overcomes the obstruction, and again moves forward in the normal direction. The smallest arteries exert themselves to the utmost to clear the way, and pulsation can be seen where in a normal condition it is absent. The stage of hyperemia has given place to that of congestion.

4. *Stasis.*—The last change observed is the complete arrest of the blood current. The vessels continue widely dilated, but the great accumulation of leucocytes and their adhesion to the interior of the vessel walls causes more and more obstruction, until finally, the space for the axial current becomes too small for the passage of the colored corpuscles, when complete arrest of the circulation takes place. As soon as this occurs the red and white blood cells become mixed and no longer occupy their respective [illegible] in the vessels. Congestion is now said [illegible] terminated in stasis. Such are the [illegible]es which occur in the lumen of the vessels and the variations noted in the blood stream. This is only the preliminary step in the struggle that is to come. Nature is mobilizing her army, so to speak, for her [illegible] struggle against the invader.

B. Certain Changes by which Elements of the Blood which were Intra-Vascular Become Extra-Vascular.

The action of the noxious cause of inflammation shows its most decided effect on the capillary wall, altering the structure so as to increase its permeability and to permit the escape of the contents. A capillary is a minute vessel, or channel, composed of a single layer of endo-

thelial cells, held edge to edge by an amorphous, cement-like substance. When capillaries undergo alteration and are subjected to distention, as in inflammation, the cement substance yields in many places and in consequence minute openings occur called stigmata and stomata. During the observation of inflammation artificially produced in a transparent membrane there will be seen the passage of the vessel-contents through the vessel walls to the peri-vascular tissue. The fluid portion of the blood passes out by the process called transulation; the solid element of the blood by the process called exudation.

1. *Transudation.*—This is the escape of the fluid element of the blood from the vessel. The plasma normally passes in small quantities from the capillariees to convey nutrition to neighboring cells. In inflammation, owing to the existence of stigmata and stomata in the capillary wall it escapes more rapidly and in greater quantities. In fact, it leaks out as water would do from a defective hose.

2. *Exudation.*—This is the escape of the corpuscular elements of the blood from within the vessel to without the vessel. As the white blood cell and the red blood cell adopt different methods of passage through the minute openings the process is complicated.

(a) *Emigration.*—The white blood cell or leucocyte passes through the inflamed capillary wall by what is known as emigration. For this to take place there must be (1) alteration of the capillary wall, or the existence of a minute opening; (2) mural implantation of the leucocyte, or its arrest opposite the opening; (3) permeability of the lumen of the capillary vessel, so that there is some intra-vascular pressure; and (4) ameboid movement of the leucocyte, for the process is not a passive one, but is largely effected by the change in shape of the corpuscle and the almost physical effort it makes to escape. In emigration a white blood cell may be seen to become implanted on the inner surface of the vessel wall, insinuate an arm into a stigma and gradually pass its body through the opening which may be several times smaller than its own diameter. Frequently one leucocyte after another may be seen passing through the same opening.

(b) *Diapedesis.*—The red blood cell, or erythrocyte, passes through the inflamed capillary wall by what is known as diapedesis. As the colored corpuscles possesses parctically no ameboid movement, this process is purely a passive one on their part. They drift inertly in the plasma stream and their passage through stigmata or stomata is owing to their being carried with the current in which they float, or being forced by the *vis-a-tergo* of the heart's action. This is proved by the fact that, despite the larger diameter of the white blood cell compared to the red blood cell, the white blood cell is the first of the two elements to escape, and the red blood cell is only found outside of the blood vessel in the late stage of acute inflammation, a time at which the stigmata and stomata have been much enlarged by the constant passage of the emigrating leucocytes.

3. *Rhexis.*—Occasionally, in addition to the passage of the constituents of the blood through stigmata and stomata of the vessel wall by transudation and exudation there is the escape of blood in its entirety through a large tear or defect in the vessel wall; a hemorrhage, so to speak, and this is termed rhexis.

It is somewhat remarkable that the character of the irritant determines to a certain extent the form of leucocyte most abundant in the exudate. In many of the infections, notably the pyogenic, the polymorpho-nuclear leucocyte is abundant, while in other forms the lymphocyte predominates. What factor or factors determines this consideration we cannot say at the present extent of our knowledge. But given an acute suppurative inflammation we expect the polymorpho-nuclear cell to be abundantly present; and given a chronic, less acute irritant we expect to find the lymphocyte the characteric cell.

C. Certain Changes in the Extra-Vascular Blood Elements and in the Peri-Vascular Tissue.

At this point in the process of inflammation the fibres of the tissues are swollen and the meshes distended with coagulated lymph, and infiltrated with small round sells.

1. *Changes in the Tissue Cells.*—If the inflammation invades fibrous tissue the fibres of the original tissue are swollen, and softer than usual, and here and there terminate abruptly as if broken off. If an organ composed of epithelial cells is the seat of infection the epithelial cells are granular, opaque, and frequently contain fatty granules, a condition spoken of as "cloudy swelling."

2. *Changes in the Blood Element.*

(a) *The Transudate.*—The fluid and coagu-

lated lymph found in inflamed tissues is the blood plasma, or liquor sanguinis, that has escaped from the vessels by the process of transudation. A part undergoes coagulation by virtue of the fibrinogen. The transudate by its escape from the vessels relieves intra-vascular tension, averting the threatened interruption of the circulation and the danger of gangrene from pressure. It also dilutes the irritant present in the tissues, carries with it anti-toxic and anti-bacterial properties, and probably furnishes some nutrition to the cells of the area. The coagulated portion retards the dissemination of bacteria and lessens diffusion of the toxin into remoter tissues.

(b) *The Exudate.*—The exudate is composed of the white blood cells or leucocytes that have escaped from the neighboring vessels by the process of emigration. In addition there are other small round cells found, which, though hardly to be distinguished morphologically from the leucocyte, have a different origin. They are newly formed or embryonal cells, the result of the proliferation of the formative cells of the part. Hence, it will appear that the numerous small round cells found in the inflamed area may come from one of two sources, or from both combined.

The function of the leucocytes is to attack the infecting organism, if it be the cause of the inflammation, or to remove dead tissue if the inflammatory process follows upon non-microbic cause of cell destruction. It is not improbable that the phagocytes, as these fighting leucocytes are termed, in addition to their phagocytic action liberate some antitoxic or anti-bacterial body that further aids in subduing the infection. The embryonal cells have no part in the inflammatory process, strictly speaking, but are thought to be the result of the first effort of nature at repair, an attempt at reconstruction inaugurated before victory has been achieved.

The Motor Apparatus of the Eyes

Is the title of a new book by Dr. George T. Stevens, announced for early publication by the F. A. Davis, Co., Philadelphia, for which it is believed there will be a large demand. The ability of the author and the importance of the subject justify such an expectancy.

Correspondence.

Life Insurance Companies Should Pay Five Dollars for Examinations.*

During the session of Medical Society of Virginia, at Rockbridge Alum Springs, 1896, the following resolution was adopted: "That the members of this Society will not examine an applicant for life insurance for a fee less than $5.00—fraternal and benevolent organizations excepted." It was understood at the time, if not so stated publicly, that this resolution should not be binding on members who were located where there were other physicians who were not members of the Society. And so, it has practically been a dead letter. I think the time has come for the physicians of Virginia to begin to "dare to maintain" their rights, even in the face of such wealthy corporations as the New York Life Insurance Company, and a few others of that class.

I have received notice from several companies recently, stating that hereafter they will pay a fee of three dollars only on small policies, and when they ask if that will be satisfactory, I answer in the negative, and my reason is that it requires as much time and labor and skill to make an examination of a small policy as for a large one, and that it is an injustice to the examiners to cut the fee 40 per cent., if they expect the same careful, conscientious work that they have always required. And the companies who continue to insist on a three-dollar fee ought not and need not expect a five-dollar examination to be made for three dollars; they may expect the best class of examiners in the State to give their influence to the companies who treat them fairly and liberally.

Some things that have recently been aired in the public prints have given us an insight into the workings of some of the large companies, whose "resources" are so abundant that they can pay princely salaries to their officers, and even liberal pensions to families of deceased officials; and still some of them write us doctors that they are obliged to economize by cutting our fees 40 per cent.

Dr. J. R. Gildersleeve, in the President's address at our Lynchburg meeting, in 1901, called

*By an oversight of the printer in "making up" the forms for the second August number, this letter was omitted because of the overcrowded pages, but the editorial reference to it was published in that number, on page 240.

attention to this matter, and read a letter from the medical director of the New York Life Insurance Company, actually dismissing him because he had protested against the three-dollar fee.

Now, I say, the physicians of Virginia have this matter in their own hands. We have practically all of the best men in the profession in the State Society, and it is a duty we owe ourselves to stand together for our rights in this as in other matters. I will state, in this connection, that the doctors of Ashland have entered into an agreement not to examine for any old line company for less than a five-dollar fee, and I am so notifying the companies who have been requiring me to do it for less.

Now, if they choose to import an examiner to do it, let them do so, but let us see that all our influence and patronage are given to the companies who treat us right. I think a word on the business side of our profession occasionally is in season, and hope that this letter will cause others of our brethren to give us their views through your pages. D. S. Ellis, M. D.

Ashland, Va.

Analyses, Selections, Etc.

Diseases of the Lymphatic and Adenoid Structure of the Throat.

Dr. D. D. Willcox, Consulting Oculist and Aurist to the Home for the Sick, Petersburg, Va., read a paper with the above title before the Association of S. A. L. Railway Surgeons, in session at Old Point, Va., July 12th and 13th. He called attention to the importance of these troubles, which were much neglected and overlooked by the general practitioner, and made a plea for more frequent surgical intervention.

He thought there were many proofs that the tonsil is an abnormal growth, and nothing but a diseased lymphatic gland, such as may be found in the region surrounding. The crypts found therein are dilated, diseased, mucous glands belonging to the buccal mucous membrane, and dip down into the tonsilar structure as this gland forces its way up into the space between the pillars of the fauces. Its abnormal presence in children causes disorders of the gastro-intestinal tract with its disastrous effects upon the general health.

The author also referred to the influence of post-nasal adenoids upon the ear, nose, pharynx, and general health, and directed especial attention to the numerous reflex symptoms often resulting from this cause. Surgical intervention in such cases brought about improvement that was truly wonderful.

Formalin in the Treatment of Diseases of the Rectum, Sigmoid and Colon.

In a paper read by John L. Jelks, M. D., of Memphis, Tenn., before the American Protologic Society, at Pittsburg, Pa., on May 5, 1905, the author spoke of the antiseptic properties of formalin, its selective action on certain diseased tissues, its use as a parasiticide and antiferment, and of its application in certain diseased conditions and affections of the rectum, sigmoid and colon. Among these latter was noted perirectal infections, perirectal fistulæ, perianal skin affections, tenia and other parasitic rectal infections.

His experience with this chemical was decidedly favorable in the treatment of one case of gonorrheal proctitis, resulting from the rupture of a gonorrheal prostatic abscess into the rectum.

High colonic flushings, facilitated by the author's tube, with solutions of formalin in autotoxemia incident to fermentative processes and the absorption of toxins, were found very beneficial.

The use of formalin in the treatment of ulcerations in general, and its especial value in the treatment of cases of amebic dysentery, compared as to its relative value with results to that of other treatments.

Certain other remedies and conditions seem to increase the value of formalin as a remedy in the treatment of amebic dysentery, and solutions having an acid reaction, especially boracic acid solution, were apparently of greatest merit.

The Southside Virginia Medical Association

Held its recent quarterly session the first Tuesday in September—the 5th—at Emporia. The secretary is Dr. J. E. White, of Wakefield. We are glad to hear of the usual excellent meeting.

Book Notices.

Color Vision and Color Blindness. By J. ELLIS JENNINGS, M. D., Professor Diseases of the Eye, Medical Department Barnes University, St. Louis, etc. *Second Edition, Thoroughly Revised, with Illustrations.* Philadelphia: F. A. Davis Co. 1905. Cloth. 8vo. Pp. XII-132.

This book, useful to students and specialists in general, is particularly intended as "a practical manual for railroad surgeons" in the examination of the eyes of railroad employees. Beside thorough revision of the edition of 1896, much new matter has been added, including a chapter describing the methods of testing the form and light sense; rules for examining the sight and hearing of railroad employees; descriptions of Williams and Thompson's lanterns, semaphore charts, and Abbey's pellet test for central scotoma, and five new illustrations. While the entire monograph is of great practical interest, the railroad doctor will find specific instructions in Chapters X, XI and XII for the examination of sight and hearing of employees, the Pennsylvania Railroad instructions for examinations of employees as to vision, color blindness and hearing, and the description of Oliver's series of tests for the detection and determination of subnormal color perception, etc. Strange as it may appear, certain classes of the color blind make the best of engravers, etc. Ready reference to a point is aided by a very full index.

Practical Treatise on Fractures and Dislocations. By LEWIS A. STIMSON, B. A., M. D., LL. D., Professor of Surgery in Cornell University Medical College, New York, etc. *Fourth Edition, Revised and Enlarged. With 331 Illustrations and 46 Plates in Monotint.* Lea Brothers & Co., New York and Philadelphia. 1905. Royal 8vo. Pp. 844. Cloth, $5 *net;* leather, $6 *net;* half-morocco, $6.50 *net.*

So established in professional favor has this great work become that the announcement of the issue of this fourth edition would seem sufficient to secure for it a place in every surgical library. Twenty X-ray photographs have been added, and the best means of using the X-ray in diagnosis are well described. New material is also found in the chapter on "Operative Reduction of Old Dislocations," which must prove of great value to practitioners interested in this special line of work. Beside the scattered new material throughout the book, some chapters have been largely rewritten so as to simplify the subjects. The doctor who has no recent volume on fractures and dislocations should not delay in adding this standard, excellent work to his books, for he will have frequent occasion to consult it in the ordinary rounds of professional life. A very full index will aid in prompt reference to a special form of fracture or dislocation.

Medical Examination for Life Insurance, and Its Associated Clinical Methods. By CHARLES LYMAN GREENE, M. D., Professor Theory and Practice of Medicine, University of Minnesota, St. Paul, etc. *Second Edition, Revised and Enlarged, with 99 Illustrations.* Philadelphia: P. Blakiston's Sons & Co. 1905. Cloth. 8vo. Pp. 466. $4 *net.*

This is a book of such vast importance to life insurance companies that they should issue it to their numerous medical examiners, or require them to let it serve as their guide book of instructions as to how to examine applicants for insurance. It is a notorious fact that an applicant justly "turned down" by one examiner is often favorably passed upon by another examiner; and, *vice versa,* parties are sometimes rejected by some examiners on insufficient data which would not be so generally the case if some one standard were accepted. An examination of Dr. Greene's work warrants us in giving it special endorsement for the purposes above referred to. The chapter on "Insurance of Sub-Standard Lives, and Accident Insurance" deserves special mention as of decided interest and practical value. The book is so full of detailed facts and figures that it is hard to select any one or two such pages for special notice. From cover to cover, all is important to the conscientious medical examiner. Ready reference to a matter referred to in the book is aided by an eighteen page double columned index.

Ophthalmic Neuro-Myology. By G. C. SAVAGE, M. D., Professor of Ophthalmology, Medical Department, Vanderbilt University, Nashville, Tenn., etc. 39 *Full page Plates and* 12 *Illustrative Figures.* Published by Author. 1905. Small 8vo. Cloth. Pp. 221.

The preface so well describe this book that we quote it: "There are *eight conjugate brain centers in the cortex,* by means of which the several versions are affected, and one conjugate center by which convergence is caused. These

conjugate centers act alike on orthophoric and heterophoric eyes, and when there is only one eye. Each of these is connected with two muscles, and the work done by the center and its muscles, under the guidance of volition, is normal work. The conjugate centers have no causal relationship with the heterophoric conditions, nor have they any power for correcting them.

"There are twelve basal centers, each connected with only one muscle. If the eyes are emmetropic-orthophoric, these centers are forever at rest; but when there is any form of heterophoria, one or the other of these centers must be ever active, during all working hours. These centers do not cause heterophoria, but they stand ready to correct it. Under the guidance of the fusion faculty, each basal center stands ready to act on its muscle, whenever there is a condition that would cause diplopia. They may be called fusion centers."

The author thinks the above hypothesis accounts for every phenomenon connected with the normal and abnormal actions of the ocular muscles.

Appendicitis and Other Diseases About the Appendix. By BAYARD HOLMES, M. D., B. S., Professor Surgery, University of Illinois, Chicago, etc. New York: D. Appleton & Co. 1904. Large 12mo. Cloth. Pp. 350.

The title page would indicate that this volume is Part I of a series on Surgical Emergencies, and that it treats of the surgery of the abdomen. We have received no other explanation. But as to the merits of the book before us, it is undoubtedly the best monograph on appendicitis, etc., that we have seen. It makes it plain that it is a surgical disease, and that the physician in charge of a case—especially if it is acute, should promptly submit his patient to surgery. Plates I, II and III especially should be made familiar to college students and doctors alike, presenting to the eye at a glance the radiation of signs and symptoms, as to whether they point to diseased appendix or biliary apparatus, or to the kidneys and ureters. To keep these pictures in mind is equal to much reading, for the graphic form of explanation is undoubtedly the easiest to comprehend and to remember. Peritonitis as such is shown to be plainly a terminal condition, and not a disease of primary origin. Such a book as this should be included in the list of reference books for students, and special prominence should be given to the fact of the plain teaching, well founded on accumulated facts.

Handbook of Anatomy. Being a Complete Compend of Anatomy, Including the Anatomy of the Viscera and Numerous Tables, by JAMES K. YOUNG, M. D., Professor of Orthopædic Surgery, Philadelphia Polyclinic, etc. Second Edition, Revised and Enlarged. With 171 engravings, same in colors. Crown Octavo, 404 pagesf, Extra Flexible Cloth, rounded corners. $1.50 *net*. 1905. F. A. Davis Company, Philadelphia.

This *Handbook* contains the essentials of anatomy for student life, and is specially adapted to those colleges that use either Gray's or Morris' voluminous text-book. For the practitioner, that part dealing with the viscera, special senses, vascular and nervous systems and surgical anatomy are particularly useful, as containing the record of the latest authorities on the subjects named. The book is a handy one—not too bulky for the student to carry with him to the dissecting hall or the lecture room, in order that he may specially not the point emphasized by the professor.

Editorial.

Reagitation of Reorganization Plan for Medical Society of Virginia.

In our August 25th number it was noted that Dr. W. E. Anderson, Farmville, Va., an *alternate* delegate from the Medical Society of Virginia to the House of Delegates of the American Medical Association at Portland, undertook to explain why Virginia has not adopted the "reorganization plan," and stated that if Dr. McCormach will assist, "I am certain Virginia will soon line up."

It is unfortunate just now to reagitate the question of reorganization in this State. There is yet enough of "conservatism" in the Virginia Society not to recognize homeopaths, eclectics, negroes, etc., as associates, as is done in some of the State Societies. For the present, at least, the Virginia Society Constitution requires of its members that they shall be white, and worthy *"regular"* doctors.

Why undertake to reagitate the question of reorganization again after the wasting of the

time of the Roanoke session (1903), and much of the time of the Richmond session (1904) from the magnificent scientific programs of those sessions in bitter controversies and failure of success at either session? While every one of the 100 counties of Virginia is represented in the membership of the State Society, there are as yet not over 25 distinctive county medical societies—although doctors in other counties have been time and again urged to organize such societies. In fact, a number of these distinctive county organizations are so only in name. For a few monthly or quarterly meetings they flourish, and then gradually practically die out for want of quorums, etc.

When the idea of increase of membership is advocated as a result of reorganization, let it be kept constantly in mind that the Medical Society of Virginia has the largest membership of regular, worthy white physicians of any State in the Union, in proportion to the worthy regular white profession of Virginia. The American Medical Association, on January 1, 1905, had a total membership of 19,285; the Medical Society of Virginia, on adjournment of its 1904 session last October had a membership of over 1,300—that is, nearly *one-fifteenth* of the entire membership of the A. M. A.; and this, too, without the inclusion in the Virginia Society membership of a single known homeopath, negro, etc., which some of the State Societies admit to membership, and thereby become members of the A. M. A.

As illustrative of the disappointment noted in many States, to secure the additions expected to the membership of the State Societies under the "reorganization plan, the annual report of the secretary, Dr. J. D. Fernandez, at the 1905 session of the Florida Medical Association, may be taken as voicing an expression of regret and disappointment by other State Societies. He reports that "we have not increased in membership to the extent that *we had reason to believe we would.* I have tried *in every way* to promote the work, and to assist the councilors in forming a society in each of their counties." And then he goes on to report that in the eight districts of Florida, there has been a absolute loss of membership during the year in five districts, and a gain in three. *And this under "reorganization plan" of the A. M. A.!* Of the entire forty-five counties in that State, twenty-one are unorganized; whereas the Virginia Society, under its non-trust, democratic organization, has membership in every one of the one hundred counties composing the State. Which plan shows the better results?

What possible good can be secured by undertaking *forcible* reorganization of the Virginia Society? As the Society now is, it has every privilege and right that are accorded the reorganized societies. Each Fellow of the Virginia Society can become a member of the American Medical Association, *if he chooses to do so;* but as the Virginia Society now is, its members *are not forced* to be members of the A. M. A. Any doctor in the country who desires can be a subscriber to the *Journal of the American Medical Association* at $5 per year. Not a dollar less is charged for that *Journal* to members of "reorganized" societies. Virginia is entitled to the same representation in the House of Delegates of the A. M. A. that any other State Society having a like membership claims. Each member of the Virginia Society has an equal voice in the management of the affairs of that organization if he chooses to use it.

The Cincinnati *Lancet-Clinic* a short while ago, in speaking of the mal-use of power of one of the delegates of the Cincinnati Academy of Medicine, representing some 400 doctors, says in substance that on a certain measure he spoke and voted his personal sentiments, instead of voicing the wish of that Academy; and we hear of numerous such cases in other States. Many so-called "delegates" unfortunately conceive the notion that their individual opinions expressed and voted are representative of the body they represent, when such is not the fact.

From a legislative standpoint, what more has been accomplished in "reorganized" States than in Virginia? Where a legislative measure is advocated by the Medical Society of Virginia, city, county and district societies are advised of the measure, and urged to take action; and in addition each individual member of the State Society—throughout the entire one hundred counties of the State—is asked to work to influence his county or city legislator to secure the end in view. In addition well districted and well selected committees are chosen to take the matter in hand—committees that heretofore have worked faithfully and well.

From a scientific standpoint, we refer any one interested to the excellent papers and discussions had at the annually large sessions of the Virginia Society.

As Dr. F. E. Daniel, Austin, Texas, Presi-

dent of the Texas State Medical Association, 1904-1905, asserts: "We earnestly advocate organization—the building up, cohesion and harmony of our State Association—but not by means of intimidation, threats or coercion of those who, for reasons of their own, do not want to join. It should be voluntary, or not at all, and all physicians of standing are invited to come in."

Some speak of a journal as the official organ of each of the reorganized State Societies as of great advantage. There may be no objection to a society adopting a reputable journal as the *medium* for its publications. But it is a little risky for a State Society to own and adopt any journal as its own official organ. In a recent number we had occasion to call attention to the narrow escape of the Medical Society of California from a damage suit for libel because of a too hasty editorial in the official organ of that State Society. If a journal is adopted simply as a medium for the publications of a State Society, the risk of suit for damages under like circumstances, is altogether removed, for the journal itself, and not the society, would have alone to be held responsible.

When any advantages can be shown to grow out of the so-called "reorganization plan" not already possessed by the Medical Society of Virginia they will be advocated.

Substitution by the Pharmrcist.

That there are some unprincipled retailers in the drug trade who undertake to substitute in the doctor's prescription "something just as good" as the article prescribed, goes without saying. Such unprincipled pharmacists are often like thieves—hard to catch in the act. When charged with the substitution, their lack of principle or honor causes them to swear to a falsehood with the grace of an accomplished deceiver. Such parties sometimes lay the ground with well founded suspicion as to their dishonesty, when traps may be set to catch them. But we are glad to believe that in this community there are relatively few dishonest druggists pharmacists. Time and again are practitioners 'phoned or told that the pharmacist receiving a prescription has not the exact medicine prescribed but that he will send out and get the exact preparation, or else that he does not know where it can be found. Such a course allows the doctor himself to make such modification of his own prescription as the circumstances may justify.

But from the complaints on this question of substitution constantly coming to us from manufacturing chemists, etc., it is evident they have noticed substitutions. We hope that the bulk of such deceivers do not live in the neighborhood of our physician patrons.

Dr. T. D. Crothers, Hartford, Conn.,

Superintendent of Walnut Lodge Hospital, has accepted an invitation to deliver the first oration in the Norman Kerr Memorial Lectureship, at London, England, October 10, 1905. Dr. Kerr will be remembered as an eminent London physician who made a special study of inebriety, alcoholism and other drug disorders. He wrote several excellent books on this subject, and was instrumental in securing the enactment of laws for the control of inebriates, and the promotion of hospitals for their care throughout Great Britain. He founded the British Society for the Study of Inebriety, in 1884, and this Society and his friends have organized a memorial lectureship for yearly orations on his life and work. It is a very pleasant recognition of the progress of medical science in this country, that an American physician should be invited to deliver the first lecture.

Mississippi Valley Medical Association

Will hold its next session at Indianapolis, Ind., October 10th-12th. The subject of the address by Dr. Arthur R. Edwards, Chicago, will be "Certain Phases of Uremia—Their Diagnosis and Treatment." The address by Dr. W. D. Haggard, Nashville, Tenn., will be on "The Present Status of Surgery of the Stomach." The president, Dr. Bransford Lewis, St. Louis, Mo., will also deliver an address. The program is a most inviting one. Every physician in the Valley is invited to attend. Dr. Henry Enos Tully, of Louisville, Ky., is secretary.

Augusta County, Va., Medical Society.

During the meeting at Staunton, August 9, 1905, the following weer elected officers for the incoming year: President, Dr. C. W. Rodgers, Staunton; Vice-Presidents, Drs. Sam'l H. Burton, Parnassus; Wm. C. Roller, Mint Spring, and J. B. Catlett, Staunton; Secretary, Dr. J.

W. Freed, Hermitage; and Treasurer, Dr. T. M. Parkins, Mount Sidney. During the same session operations were done for *Hernia Under Cocaine,* by Dr. J. Shelton Horsley, Richmond; *Cataract Extraction,* Dr. F. M. Hanger, Staunton; also operations by Drs. J. B. Catlett and M. J. Payne, of Staunton, Va. Dr. J. B. Catlett also read paper on *When to Operate for Appendicitis.* The attendance was large and the interest well marked. Former Vice-President Dr. W. S. Whitmore, presided.

Important Changes in the New (8th Decennial Revision, 1900) U. S. Pharmacopeia.

So important are some changes in the strength of some drugs of the U. S. Pharmacopœia of 1900, which has just been issued, and which became effective September 1, 1905, that the special attention of every physician prescribing such drugs should be called to them. Various drug and pharmaceutical associations all over the country are issuing pocket circulars which contain a list of the more important of such changes. The Richmond Drug Club (Mr. T. A. Miller, president, and Mr. T. N. Curd, secretary) has issued a very handy and serviceable folder of four pages, containing a list of the more important changes, which may be secured by enclosing stamped envelope to the secretary.

The new Pharmacopœia contains the following highly important changes, which, unless noted by the physician, are manifestly fraught with serious possibilities. It becomes necessary for physicians, when prescribing such potent preparations, to indicate unmistakably whether the old or the new Pharmacopœia preparations are intended; and it is very properly suggested that the words, "U. S. P., 1890," or the "U. S. P., 1900," desired, be added after the names of these preparations—thus eliminating doubt from the mind of the dispenser, and insuring proper dosage for the patient. These special tinctures are:

Tincture of Aconite, heretofore representing 35 per cent. of the drug, will now represent only 10 per cent.—a *decrease* in strength of about 70 per cent. Average dose of new preparation is about 0.6 c.c., or ten minims.

Tincture of Veratrum Viridis (*Tincture Veratrum,* Phar. 1900) has been reduced from 40 per cent. of the drug to 10 per cent.—*a decrease* in strength of 75 per cent. Average dose of new preparation 1 c.c., or fifteen minims.

Tincture of Strophanthus, heretofore representing only 5 per cent. of the seed, will now be a 10 per cent. preparation—an *increase in strength of* 100 *per cent.* Average dose of new preparation 0.5 c.c., or eight minims.

The following tinctures are now required to contain *twice as much* of their respective drugs as heretofore:

Tincture of Calumba.
Tincture of Cardamon.
Tincture of Cantharides.
Tincture of Capsicum.
Tincture of Cinnamon.
Tincture of Quassia.
Tincture of Rhubarb.

Other noteworthy changes in which the active principles or ingredients are *increased* are:

Fluid Extract of Nux Vomica, 100 c.c. of which are required to contain one gramme strychnia, instead of one and half grammes *of total* alkaloids, as called for in Pharmacopœia of 1890.

Tincture of Nux Vomica, 1,000 c. c. of which is hereafter to contain one gramme of strychnine.

Basham's Tincture. The proportion of iron chloride is doubled in the new preparation.

Effervescent Citrated Caffeine. The proportion of caffeine is doubled in new preparation.

In the following preparations the active ingredients are *decreased:*

Effervescent Lithium Citrate. Decreased about 70 per cent.

Effervescent Potassium Citrate. Decreased about 60 per cent.

Cubeb Troches, Sulphur Ointment, Syrup Iodide Iron, Tincture of Kino and Tincture of Lobelia are all reduced 50 per cent.

Carbolic Acid Ointment (now *Unguentum Phenolis*) has been decreased 40 per cent.

The following preparations are reduced about 33 per cent.:

Tincture of Colchicum Seed, Wine of Colchicum Seed, Tincture of Cannobis Indica, Tincture of Gelsemium, Tincture of Hyoscyamus, and *Wine of Ergot.*

Powdered Opium, as also *Deodorized Opium,* is required to assay not less than 12 per cent. of morphine, nor more than 12. 5 per cent. of the same. The former minimum was 13 per cent., and the maximum was 15 per cent. This

involves corresponding changes in *Laudanum* and in the *Deodorized Tincture of Opium.*

Tincture Catechu Compound has been dropped, and replaced by *Tincture Gambir Compound,* and the astringent principal decreased 50 per cent.

Repeal License Tax on Physicians in Virginia.

Among the number of local societies that have taken action on the proposed appeal to the Legislature of Virginia to remove the license taxes—city, county and State—none will be more influential than that of the Augusta County Medical Society. During its meeting, July 6, 1905, Dr. T. M. Parkins, after noting the injustice of license taxes on practitioners of medicine, and after remarking that only two other States impose such taxes on their physicians, presented resolutions, which, with slight amendments by Dr. M. J. Payne, was unanimously adopted. These resolutions declare the assessment of such license taxes on doctors as unjust, and should be abolished; and a strong committee was appointed (consisting of Drs. J. S. DeJarnette, T. M. Parkins, C. W. Rodgers, W. C. Roller, Rawlings, J. B. Catlett, Hartman, M. P. Jones, Gibson, and J. N. Freed) to use their personal and conjoint influences with legislators from Augusta county to secure the end in view. This committee is also to act in concert with the committee of the Medical Society of Virginia (of which Dr. J. B. DeShazo, Ridgeway, Va., is chairman) on the same subject.

Now that the legislators in Virginia are practically agreed upon, and as they are to assemble in session in Richmond during the winter of 1905-1906, we trust that other county societies which have not acted will do so, and also that every individual member of the Medical Society of Virginia, each in his own home circle, will forthwith put forth his earnest efforts to show their legislators the iniquity of the present law, and use their influences to have it repealed. The committee of which Dr. DeShazo is chairman—above referred to—will gladly render any assistance possible, and will forward on application, such literature as may be helpful. We have so ardently urged the repeal in a number of editorial notes that it would be but reiteration for us to go over the subject again in detail.

Medical Society of Virginia, Session 1905.

Since our issue of August 25th, the titles of several additional papers for the session at Norfolk, October 24th-27th, have come in from:

Drs. B. B. Baker, Norolk.
J. Wesley Bovee, Washington, D. C.
Frank M. Cunningham, Macon, Ga.
J. Shelton Horsley, Richmond, Va.
Ernest C. Levy, Richmond, Va.
Roshier W. Miller, Barton Heights, Va.
John N. Upshur, Richmond, Va.

Applications for Fellowship are also continuing to come in from all parts of the State, and the indications from letters received show that the Norfolk session will be in every respect a memorable one in the history of the Society.

The official circular program for the session will be mailed to each Fellow about the time of issue of the next number of this journal.

Diphtheria

Is manifesting itself in various parts of the country. Perhaps as many as 20 cases have occurred in Richmond city and its immediate environments in the last two weeks or so. It is unfortunate that practitioners do not promptly report all cases occurring in cities to the health authorities. In fact, such practitioners are culpable under the law for not so doing. Parties who have been exposed to the cases of the disease should be more carefully watched. It is not going too far to advocate the use of diphtheria antitoxin in the beginning of decidedly suspicious cases, before opportunity presents itself for bacteriological diagnosis. For it is during the very commencement of the disease that the antitoxin reveals its most marked curative effect. In this community the diphtheria antitoxin as prepared by Messrs. Parke, Davis & Co., of Detroit, has proven one of the most efficient—both as an immunizer and also because of its curative results. Our purpose, however, in this note is simply to warn practitioners of the existence of the disease throughout this section, and to put them on their guard.

Dr. Joseph A. White, Richmond, Va.,

Who has spent the greater part of his summer vacation in Europe, has returned to the city, and resumed his practice in the specialty of eye, ear, throat and nose diseases.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 12.
Whole No. 227.

RICHMOND, VA., SEPTEMBER 22, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

COUGH DUE TO CAUSES OUTSIDE THE LUNGS.

By J. J. RICHARDSON, M. D., Washington, D. C.

"Given a case of cough without any previous examination, betting is ten to one in favor of the source of irritation being extra-pulmonary," said Mayo Collier, a distinguished English specialist. That it often exists without any pulmonary complications all observers admit The more of these cases we see and the oftener we attempt to search out their real origin, the greater justification we find for the advanced ground taken. As our knowledge of the anatomy and the physiology of the body in general increases, so does our understanding of the etiology of cough progress; and many cases which, a few years ago, would have been assigned to the lungs, we know result from irritation in other parts.

Coughing is the normal reflex from irritation in the lungs, as gagging is from the fauces, hawking from the rhino-pharynx, and sneezing from the nasal mucosa. We frequently see one passing into the other. Each is a modified respiratory act, like sighing, yawning, etc., and is governed directly by different nerve impulses. A centre for coughing exists in the medulla oblongata, near the respiratory centre.

A cough is always of interest to the profession, from an etiologic and therapeutic standpoint; but to the patient, when it continues beyond the time limit of an ordinary cold, it is a source of much concern. In the minds of the laity it is, and perhaps ever will be, an almost infallible indication of pulmonory tuberculosis. It is a conservative process, and has as its object the removal of foreign substances from the respiratory tract. Physiologically it may be likened to the action of the stomach, the uterus, and other muscular organs in expelling their contents, and like these organs, may be most violent where there is no foreign substance to be extruded.

If we note the movements of one who coughs, there is first observed a full inspiration, and this will be followed by a single or a number of expiatory efforts. At first the glottis is closed, but is suddenly opened and the air rushes out, carrying along with it any loose mucus or foreign substance that may be lodged in the bronchial tubes or larynx. The current of air carries it only to the larynx and from this part it is expelled by expulsion. The act is accompanied by a sound which differs widely under different conditions. It differs from a sneeze in that the isthmus of the fauces is held open in a cough, and the air passes out through the mouth, while in a sneeze the blast of expired air traverses the nasal fossæ.

The pneumogastric nerve in many respects is the most wonderful of all the "telegraphic lines" of our structure. Of the cranial nerves it has the most remarkable course and the largest anastamosis. Owing to the extent of its distribution and the great difference in the functions of the organs which it supplies, it has, perhaps, the most varied uses of all the nerves. It has its origin in the medulla oblongata, and is distributed to both voluntary and involuntary muscles, and is the principal cord of communication between the brain, the thoracic, the abdominal, and the pelvic viscera. It also sends many branches to the upper respiratory tract and to the ear. It responds differently to different forms of irritation or stimuli. In one form of stimulus it may manifest itself as thirst, in another as hunger, and in others as nausea. But this is not all. Any irritation or impression made upon it directly or to any of its communicative

branches, may set up a cough. It is at once apparent that almost any organ of the body may be the seat of origin of this symptom. Clinical observation confirms this physiological rule. It is not the hobby of the specialist.

When we have a case of cough to deal with, it is our first duty to make a thorough exploration of the chest, and after satisfying ourselves by the physical examination, the family history and the general appearance of the patient, that there is no pulmonary lesion to account for it, we must seek other areas for the seat of irritation. Our examination of the chest may reveal the presence of chronic bronchitis, as a cough is its pathological companion. Tne examination must not stop at this stage of our investigation. We must go deeper. The bronchitis itself is only a symptom of some other abnormal condition. It may be one form of organic cardiac, or real disease, or uric acid diathesis manifesting itself. In a great many cases it results from a lesion high up in the breathing apparatus which causes abnormal, unphysiological and improper inspiration—a state which cannot exist without seriously affecting the health and vitality of the body. To examine only one-half of the respiratory tract would be neither rational nor scientific. The laryngoscope, tongue depresser, rhinoscope, and nasal speculum, are just as essential to complete the examination as the stethoscope and the microscope. It is but natural that the parts nearest the atmospheric changes and exposed to the vicissitudes of temperature, poisonous particles floating in the atmosphere, and the myriads of virulent germs which are ever present guests in the air we breathe, should suffer first, and be more liable to be the seat of trouble than those parts enclosed in bony and muscular walls and guarded by those ever-watchful sentinels—the nose and larynx.

In a case of chronic cough with bronchitis, it is just as essential to discover the underlying cause and remove it as it is to remove a foreign body in the cornea or conjunctiva which is setting up an ophthalmia. In the one case we relieve the irritation temporarily by the use of a local anæsthetic, and in the other the cough may be allayed for a time by the use of various anti-spasmodics and nervines; but such treatment does not belong to modern medicine. The treatment will always depend on the pathological condition which excites it. Its importance is often overbalanced by the presence of other underlying conditions, which have frequently a fatal effect. After satisfying ourselves that it is of extra-pulmonary origin we must diligently investigate and search other regions or channels for its cause.

We must not lose sight of the physiology of its production, or the anatomical course and distribution of the pneumogastric and its various branches. Having the special form of excitant, its afferant path is along one of the sensory branches of the vagus to the special center in the medulla, and the motor or efferant impulse is carried by the nerves of inspiration and those that close the glottis. We will often find it a very difficult task to definitely locate the exciting cause, but it will be somewhere along the vagus or its communicating branches. *The character of a reflex cough will not direct us to its seat of origin, or the severity of the paroxysm to the extent of the lesion producing it.*

In my own experience the oro- and laryngopharynx have most frequently been the source of cough resulting from extra-thoracic diseases. It may be caused by the follicular, granular, or the dry, glazed mucous membrane of an atrophic pharyngitis. There is another pathologic condition of the pharynx which is very frequently the source of reflex phenomena, — including cough. It is a hypertrophy of the chain of lymphoid tissue extending along the lateral walls of the pharynx posterior to the faucial pillars and designated *pharyngitis lateralis hypertrophica*. I have met with three cases of small papillomata attached to the soft palate by a thread-like pedicle which admitted of rather free movement that was the cause of excessive coughing. They were small, and on first examination almost escaped my notice. These growths are not of frequent occurrence but when they do exist a cough is their prominent symptom.

The *uvula* is a common source of cough. It frequently becomes hypertrophied, elongated and relaxed, as seen in chronic alcoholics, those addicted to the excessive use of tobacco, and in strumous children with

hypertrophied tonsils. It may set up the irritation by its mechanical effect and by causing a hyperæsthetic condition of the pharynx. The most severe paroxyms come on when the patient is in a recumbent posture. In these cases with severe hyperæsthesia the irritation may be so great from the loss of sleep and appetite, nausea and vomiting that the resulting emaciation, anæmia and general depression may cause one, on superficial examination, to mistake it for beginning pthisis. The mistake has been made, but of course at the present day, with our instruments of precision, such an error would never be justified.

The tonsils are responsible for not a few cases. It is not every case of hypertrophy of the glands that excites the reflex, but it is more frequently seen in those cases with a broad base and extending low down in the naso-pharynx; also, where adhesion exists between the glands and the pharyngeal pillars. This latter condition often escapes our notice, unless the patient retches or we pull the palate forward with a retractor. Cholesteatoma of the tonsils is another causative factor, and no examination is complete without especially exploring the crypts for cretaceous masses.

The glosso-epiglottic space should always be examined in cases of persistent cough, for if it is not, serious errors in diagnosis will frequently result. Many cases are cured by directing the treatment to this part when all other treatment has proved of no avail. I believe *hypertrophy of the lingual tonsils* to be the most prominent etiological factor of coughs of extra-pulmonary origin. It will be hard, rasping in character, ineffectual and usually unattended by expectoration, and can be frequently allayed temporarily by the local application of cocaine. A small amount of hypertrophy of the lingual tonsil may be the source of much reflex disturbance, especially in those cases of great curvature of the epiglottis. Examination of the glosso-epiglottic space should be made with the tongue confined to the boundaries of the teeth, as well as protruded.

Varicose veins over the walls of the pharynx and lingual tonsils must not be overlooked in searching for an exciting cause. *Pharyngomycosis* is a rare form of parasitic disease of the throat that may be provocative of attacks of coughing, although this is not one of its constant symptoms. In two of the cases which I have seen it was the symptom which induced the patient to seek relief. The disease is characterized by whitish or gray excrescenses situated about the pharynx, pillars of the fauces and the base of the tongue. The spots are above the mucous membrane, are tough, and can only be removed with great difficulty. The etiology of this disease is uncertain, but supposed to be due to the rod-shaped bacillus, leptothrix-bucallis.

Cases of cough sometimes result from *lesions in the rhino-pharynx*, but they do not occur as frequently as in the nose proper and in the pharynx. Adenoids, polypi and scales of inspissated mucus from Thornwaldt's bursitis may excite it. The symptom from disease of this part is more of a hawking than a cough, although it may be prominent in the morning from the accumulation of mucus during the night.

The nose has many sins to answer for and cough is one of them. It is usually of a paroxysmal or hacking character and may result from various abnormal conditions of the organ. The causative factors most prominent are hypertrophic, atrophic and vaso-notor or intumescent rhinitis, septal spurs, deviation of septum, enlarged turbinate bodies and the usual forms of neoplasms which we find in the nose. I have found vaso-motor rhinitis and polypi the most frequent causes of reflex nasal cough. Very often associated with rhinitis and other nasal pathological conditions are areas of hyperæsthesia situated over the middle and inferior turbinate bodies and the septum. Frequently in some forms of rhinitis the whole nasal tract will be found abnormally irritable and the slighest irritation from dust, etc., will evoke cough.

All practitioners can recall cases of annoying, tickling cough experienced by their patients as an attack of acute coryza subsides. There will be some interference with nasal breathing. An examination of the post-nasal space with a rhinoscopic mirror will reveal the source of the trouble in a swollen condition of the ends of the turbinate bodies and the septum. They will present a thickened, pale, sodden appearance which is characteristic. In some

of these cases the slighest contact with a probe will set up a paroxysm of coughing. Cocaine will temporarily allay it and treatment directed to the seat of the disease permanently cure it.

There is a pretty general impression prevalent that disease of the larnyx has, as one of its prominent symptons, cough. This does not coincide, I feel sure, with the experience of those who are daily treating laryngeal diseases. It does occur at times, it is true, but it is *not a prominent symptom* of the inflammatory diseases of that part of the breathing tract. This is particularly true of the superior compartment of the larynx. There are, as in the nose, certain sensitive areas in which the reflex may be more easily excited than others, and diseases of these parts may have coughing as a prominent factor. These areas are found in the inter-arytenoid commissure and over the ary-epiglottic and the glosso-epiglottic folds.

In searching, however, for the causes of cough we must not lose sight of the fact that it may be due to the presence of mucus, inflammatory thickening of whatever cause and to papillomatous or other forms of neoplasms in the larynx. Those who are engaged in aural work cannot but be impressed by the number of cases in which the mere introduction of a speculum sets up a hacking cough, and continues as long as the instrument remains in the meatus. Foreign bodies or almost any lesion in the auditory canal in the class of cases who are thus affected may cause a persistent cough. The pneumogastric nerve sends a few filaments to the ear, and there is also in a limited number of cases a communication between it and the auricular magnus. This anatomical condition makes the nerve circuit or arc of its production complete—an impression starting in the ear.

In my treatment of catarrhal deafness I employ very generally the celluloid Eustachain bougies, both in cases of stenosis and patulous conditions of the tubes for the purpose, in the one case, of restoring the lumen and to facilitate intra-tympanic and intra-Eustachian medication; and, in the other, for its massage effect upon the relaxed muscular walls. I frequently, after engaging the end of the catheter in the orifice of the tube and introducing the bougie and passing it along the course of the canal have such violent paroxysms of coughing set up that the instrument has to be withdrawn. I am satisfied that there are hyperæsthetic areas in these tubes which, when irritated mechanically or by disease, will set up cough the same as those which have been demonstrated as existing in the nose and larynx.

Other remote causes must not be forgotten, such as hepatic, gastric and uterine disturbances, aneurism of the arch of the aorta, enlarged bronchial glands and tumors of the mediastinum, etc. There is a form of cough which has its origin in the ascending parietal convolution of the cerebrum, and so far every form of treatment has been tried without avail. *In most of the reflex coughs it is spasmodic and there is absence of expectoration, normal temperature; they resist the usual form of treatment and, as a rule, the patient's health remains unimpaired.*

The prognosis will depend on the underlying conditions which produce them.

The treatment will consist in removing the cause. If a local irritation is the cause treatment directed to it alone will effect a cure. Any constitutional diathesis should be corrected. A long list of illustrative cases could be cited, but a few typical ones, as follows, will suffice.

Case I.—Male, age 17, student, had an attack of la grippe three months previous to the time he consulted me. It was followed by violent attacks of coughing both day and night. The young man had become very much reduced physically; appetite was bad, he was anæmic and is in a sort of melancholic state owing to his condition and being obliged to give up his studies for the time. There was a history of three attacks of spitting of blood following or rather accompanying the spasms of coughing. At one time it was rather profuse and of a "bright red color," as he described it. The expectoration was scanty. Physical examination revealed no trouble in the chest other than a few moist rales scattered over both lungs. I was unable to discover any area of consolidation. Repeated examinations at different periods of the day showed no elevation of the temperature.

The examination of the sputum was negative. The posterior extremities of the turbinated bodies were very much hypertrophied, and impaired free inspiration. The uvula was hypertrophied, elongated and relaxed, and had attached to it a papillomatous growth. The hypertrophied turbinates were reduced by the use of the electro-cautery and the uvula excised. There was prompt exit of the coughing, and the slight bronchial irritation soon subsided af. ter physiological breathing was restored. The hemmorhage in this case was from a rupture of one or more of the laryngeal or bronchial arteries by the great straining efforts of coughing. He is now strong and well.

Casi II.—Male, age 65 years, was troubled with a cough of many years' duration. It had always been more severe at night and during the winter months. Moist rales were heard over both lungs, and the usual signs of chronic bronchitis. An examination of the nose revealed the presence of multiple polypi which had caused complete obstruction of both nostrils for twenty-two years. I removed the polypi and a portion of the right middle turbinate bone which was hypertrophied and assisted in causing the nasal obstruction. The restoration of normal breathing resulted in the disappearance of the bronchitis and accompanying cough. He now has undisturbed rest at night—no cough at all—and his general condition is much improved.

Case III.—Mrs. W., age 40, consulted me for a cough of several months duration. There was no expectoration nor any impairment of the general health. She had resorted to all the usual caugh mixtures with no lasting benefit. An examination of the nose revealed the presence of vaso-motor rhinitis and marked hyperæsthesia over the posterior portion of the inferior turbinate. I could set up a cough at will by irritating these sensitive points. The parts were cocainized and thoroughly cauterized with the electro-cautery. After a few dnys treatment she returned to her home in the country. Eight months after the operation I was informed that the treatment had been satisfactory; that there was no return of the cough after the cauterization of the hyperæsthetic areas.

Case IV.—Mrs. H., aged 60 years, had a violent cough for 20 years. The paroxysms would at times be so severe and prolonged that the patient would faint away from exhaustion. She had tried all sorts of treatment, including climatic changes. The discovery of a large mass of glandular tissue at the base of the tongue in direct apposition with the epiglottis, almost burying it, and its prompt removal resulted in a perfect cure after many years of the greatest agony.

Case V.—Mrs. A., age 65, with a harrassing cough of three years duration, following a long and savere attack of influenza. She had used all sorts of antispasmodics and restoratives with no result except disturbing digestion. There was no expectoration; normal temperature and general health good. No trouble except a constant, hacking cough. The throat examination revealed a greatly enlarged lingual tonsil filling the entire glosso-epiglottic space and impinging on the epiglottis. This mechanical irritation was removed by repeated cauterizations with a galvano-cautery and the cough cured by local treatment directed to the lingual tonsil alone.

Case VI.—J. M., male, age 30, had a hacking cough of six months' duration. He had no other symptom except occasional short, cutting pains in the throat. The pillars of the fauces, the lateral folds of the pharynx and the lingual tonsil, were dotted over with whitish excrescences about two or three millimetres in diameters. They projected beyond the mucous membrane, were tough and could not be removed except by energetic scraping. All attempts at the removal caused violent coughing. The diagnosis was pharyngo-mycocis. The treatment consisted in curetting each excrescence, followed by the application of the electro-cautery and frequent spraying of the throat with hydrogen peroxide. The removal of the mycocis resulted in the disappearance of the cough.

Case VII.—Male, age 40, consulted me for a cough with which he had been afflicted for several years. It was of a hacking

nature. His hearing was impaired, and there was a muco-perulent discharge from one ear, of several years duration. A dark colored mass could be seen in the right meatus auditorius, and on removal proved, under the lens, to be disintegrated cotton. A careful inquiry into the history of the case elicited the fact that he had had some ear trouble twelve years previous, and inserted cotton into his ear. He had no remembrance of ever attempting to remove it, and it had remained in his ear all these years. With the removal of the offending substance and antiseptic treatment for a short time, the discharge ceased and there w is a complete cessation of the cough which had become his constant companion. The membrana-tympani was destroyed, and the hearing permanently injured, as a result of his stupidity, to say nothing of the great discomfort he had experienced on account of the coughing for many years.

Case VIII.—I was recently called to see a lady 35 years of age, of neurotic temperament, who was having long and violent paroxysms of coughing. She was also suffering from acute indigestion. I was informed that she had frequently experienced such attacks of coughing, and they were always associated with gastric disturbance. Large and frequent doses of officinal liquor pepsin were administered, and in a short time all the symptoms subsided. She has since had similar attacks of indigestion with the same symptoms, and employed the same treatment with the similar happy result.

The following list shows most of the causes of cough of reflex origin :

1.—Aural.	Impacted Cerumen.
	Foreign Bodies.
	Cholesteatoma.
	Parasitic Otitis, Exterma—(Hypertrophic).
2.—Nasal.	Rhinitis—(Atrophic Vaso-Motor.)
	Deflected Septum.
	Nasal Spurs.
	Polypi.
	Foreign Bodies.
	Hyperæsthetic Areas.
3.—Rhino-Pharynx. .	Adenoids.
	Polypi.
	Thornwaldt's Bursitis.
	Inspissated Mucus from Naso-Pharyngitis.
4.—Oro-Paarynx. . .	Hypertrophy and other Diseased conditions of the Faucial Tonsils.
	Adhesions of the Tonsils to the Pharyngeal Pillars.
	Pharyngitis Hypertrophica Lateralis.
	Granular Pharyngitis.
	Elongated Uvula.
	Papilloma of the Soft Palate.
	Pharyngo-Mycocis.
5.—Laryngo-Pharynx	Hypertrophied Lingual Tonsil.
	Lingualvarix (Varicose veins).
	Greatly Curved Epiglottis.

1016 Fourteenth Street, N. W.

THE THERAPEUTIC USES OF THE RONTGEN RAY.*

By Ennion G. Williams, M. D., Richmond, Va., Professor of Histology, Pathology and Bacteriology, Medical College of Va.

If we would have a proper appreciation of a therapeutic agent we should know its nature, physical and chemical properties, and the conditions influencing them, its physiological action and finally the therapeutic results derived from experience and practice.

Not a decade has elapsed since the world was startled by the discovery of a new form of energy as wonderful and mysterious as it was powerful.

Our profession was especially interested because we were told it would reveal the hidden recesses of the body. The eye would be enabled to see broken and dislocated bones, calculi

*Read before Southside (Va.) Medical Society, Emporia, Va., Sept. 5, 1905.

in the kidney or bladder, and foreign bodies buried deep in the tissues; and still the wonder grew when a few years later it was announced that this mysterious power or influence would heal the heretofore most incurable and dreaded disease, namely, Cancer. The astonished imagination then took flight and carried the possibilities beyond the realm of reality into fiction. Some seemd to look upon it as a magic light which need only to be brought near the diseased condition to heal it. Great was the abuse and discredit heaped upon the newly-discovered and little understood force of nature because it would not respond to the will of every tyro, however ignorant he might be of its real power and method af application.

It is no wonder that there were instances of serious consequences following its early use. Fortunately the machines in those days were not so strong as are those built now, for then the disasters would have been more common. With the improvement of the machine, has come a more accurate knowledge of the regulation of the strength and the physiological action of the ray; so that now the treatment can be given with almost mathematical accuracy.

The X-Ray, and its exact place in nature is still an unknown quantity to us. Perhaps if we knew the force or vital principle that keeps in motion the sub-atoms or animates a mass of protoplasm, we would find it akin to the X-Ray, for it is this force that ceases when the living protoplasmic units have received a certain exposure to the ray.

The X-Ray, or the influence given forth from the tube, may be said to be made up of different qualities: A penetrating qaulity, a quality to affect photographic plates, and a qaulity to affect the living tissue, or what might be called physiological efficiency. Each of these qualities varies greatly in extent and intensity, and is regulated by the many factors concerned in the construction and manipulation of the apparatus. These factors are the windings of the primary and secondary coils, the character and speed of the interrupter, the current supplied to the primary, the resistance in the secondary circuit as represented by the spark-gaps in series, the frequency and duration of the exposures, the distance of the tube from the patient, and last, but by no means least, the tube with its degree of vacuum and other mysterious properties.

You can thus readily see that such an agent must give very dissimalar results in the hands of operators who might use different combinations of the many factors. The successful application of the ray is dependent upon the proper co-ordination of the factors for each individual case.

The physiological action of the ray must be based upon the changes observed in the tissues which have been exposed.

According to the effective energy, or rather the physiological efficiency of the ray, there are decided changes in the tissues as revealed by microscopic examination; cells are affected and undergo atrophy or granular degeneration. The nuclei stain feebly, become swollen, vacuolated and disappear or break into fragments. The cells swell, lose their outlines, become granular and disintergrate. These changes are especially noticeable in the cells of the glands, hair follicles, the skin and those lining the blood vessels, but to a less extent in the cells and fibres of muscles and connective tissues. The effects on these latter may be secondary, dependent on the inflammatory process resulting from the death of the cellular elements. There is more or less round cell infiltretion, depending on the degree of reaction. The ray may stimulate or may even increase the vitality of the less differentiated tissues.

From these observations, it is evident that the elements of the tissues which are most affected by the ray, are the cells, and in the proportion as they exhibit the manifestations of life. Dead organic matter is not influenced by the ray. Another evidence that the ray acts on the vitality or life of a cell, is the fact that a tissue, immediately after a destructive exposure to the ray, shows no macroscopic or microscopic change and it is only after the lapse of several days that the changes consequent on the death of the cells begin to appear. We would conclude therefore, that the tissues most influenced by the ray are those having a large proportion of cells, the vital processes of which are very active. Such tissues are found chiefly in maligant tumors, carcinomas and sarcomas. It is on them, therefore, that the ray has the most decided effect.

Sarcomas, as a rule, are more deeply seated than carcinomas; they contain more inter-cellular material and more blood vessels, and there is less rapid proliferation of the cells, as evidenced by the fewer microtic figures. These facts may explain why more carcinomas than sarcomas have been healed by the ray.

The benign tumors are composed largely of intercellular substance with a small proportion of cells not actively proliferating. They are, therefore, only slightly or not at all influenced by the ray. We thus understand why epithelial tissue, on account of the large proportion of cells, is affected more than any other normal tissue, and why the cells of the glands and hair follicles, because their vital processes are more active, succumb more readily to the ray.

If now, as it seems, the ray affects cells in pro-

portion to their vital activities, it is to be expected that the activity proliferating cells of the malignant growths will be more suceptible to the influence of the ray than the cells of the skin and subcutaneous tissues which exhibit the vital manifestation in a less degree. This explains the apparent selective action of the ray for malignant growths. If the ray is properly applied a tumor of this kind may be destroyed, and may disappear without any destruction of the surrounding normal tissues.

From these considerations, we conclude that the prognosis in the treatment of new growths depends on the character of the growths and on their accessibility to the proper quantity of radiant energy. Since we have shown that the tissues composing the malignant growths are especially susceptible to the ray, the prognosis in their treatment depends on their accessibilty to a ray of sufficient physiological efficiency. Success or failure depends on the accomplishment of these two objects, by the proper co-ordination of the variable factors in applying the ray. The light may have the proper physiological efficiency, but unless it reaches the whole of the tumor, especially the periphery, where the most rapid growth takes place, it will be of no avail. On the other hand, the light may reach every part of the growth, but unless it has sufficient physiological efficiency it will not accomplish its work.

From what has been said, it may be inferred that the growths most readily and most uniformly healed, are the superficial carcinomas and the superficial sarcomas. This is the result of actual practice.

The deeper the growth, the more doubtful becomes the prognosis, because of the difficulty of carrying deep into the tissues a ray of sufficient physiological efficiency to destroy malignant cells without destroying overlying tissues. That moderately deep growths can be affected has been shown by many well authenticated cases. The difficulty has been in establishing a technic by means of which results may be obtained with a fair degree of constancy.

Thus, for superficial malignant growths, the ray is to be preferred to any other form of treatment because by reason and practice it is the most successful, its application is painless, and there is less scar and deformity resulting. It has been my experience that those superficial growths invariably heal, which are attended by an elevation of the surface, or in which it might be said that the productive process is in an excess of the destructive process. This elevation is doubtless an evidence of the good resistance of the underlying tissues which must perform their part in assisting the ray to completely eradicate the disease.

For deep growths, until we can show more uniformly good results, radical surgical procedures should be recommended. We must give the patient the benefit of the probabilities and not possibilities. It is, however, but rational that the surgical procedure should be followed by a sufficient X-Ray exposure to destroy malignant cells several inches from the surface. This is possible, as has been shown, and the patient should have every possible chance to have the malignant cells completely eradicated or destroyed.

Inoperable cases should be treated with the Ray, because remarkable results have been obtained and the most distressing symptom, pain, may at least be relieved. It is by means of these cases that we must demonstrate the value of the X-Ray and so extend its usefulness.

Objection has been made to the X-Ray treatment of malignant growths because they so often recurred. A recurrence simply shows that the treatment was not continued long enough. If the cells will be destroyed to such an extent that all gross appearance of the growth disappears, it is but rational to assume that the remaining cells in microscopic quantity can also be destroyed if the treatment is continued. A recurrent growth, if treated promptly, will heal as readily as the original.

In the field of skin diseases the ray has shown itself to be of great value because of its destructive effect upon parasites and cells of low vitality, and its stimulant action upon the normal tissues to exert a reparative process.

Lupus vulgaris, lupus erythematosus, acne vulgaris and acne rosacea heal almost uniformly when the ray is properly applied.

It is also of value in the treatment of chronic tinea circinata, keloids and certain forms of eczema.

Patches of psoriasis usually disappear promptly but are likely to return later.

In many other diseases, such as the deeper forms of tuberculosis, leukaemia, goitre, epilepsy, locomotor ataxia, etc., the use of the ray should be considered experimental and not to be generally recommended, because its use is chiefly empirical and the results have not been very satisfactory.

We should remember that the ray has not been in use ten years. Much more will yet be learned about the apparatus, technic and therapeutic value. The greatest value of the ray is in the treatment of those diseased conditions most resistant to all other forms of treatment.

SPINAL ANALGESIA.*

By C. E. Young, M. D., Prescott, Arizona.

In presenting this subject of medullary narcosis, or spinal analgesia it is not our intention to burden you with an extensive review of the history of this method of surgical anaesthesia; but as our report is to show something in the way of the evolution of this method and its steadily improving technique we may be pardoned for a little historical retrospection.

To an American, Dr. J. Leonard Corning, of New York, belongs the honor of first experimenting in 1885 with cocaine solutions injected into the spinal canal through a puncture in the dorsal region for the purpose of inducing analgesia.

Quinckle of Kiel, in 1891, practiced lumbar puncture for the purpose of removing fluid to diminish intra-cranial pressure in cases of hydrocephalus, as much as 100 c. c. having been removed in some cases.

In 1899, Bier reported a number of cases operated upon successfully and painlessly under the influence of cocaine introduced into the subarachnoid space through the lumbar puncture.

Tuffer, in the same year, at the Hospital Beaujon, Paris, brought the matter prominently before the general profession, and there seems to have been quite a wave of enthusiastic experimentation in this method of anaesthesia, passing over Europe and America from 1900 to 1902—many operators having thoroughly tested it with varying degrees of success and failure, nearly all of them allowing it to fall again into innocuous desuetude because of the preponderance of failure, and not a few cases of cocaine poisoning.

In our review of current medical literature of the past year (in so far as our resources permitted) we are led to believe that but little has been written upon this subject of spinal analgesia, hence confirming our opinion as to its general unpopularity today.

In England we note the publications of A. S. Gubb and W. J. Greer on this method. In Germany three commentators only have we found, and in Austria two, one of whom, M. Silbermart, reporting 232 cases from Mosetege's clinic at Vienna. In France experimental work is still in progress.

My first experience with this method of analgesia occurred in November, 1900, at the Columbia Hospital for Women, Washington, D. C., as a result, so to speak, of the enthusiasm gathered from the French accoucheurs who were employing it with success to relieve the pain of childbirth.

The technique then employed was as follows: A glass svringe of 30 minims capacity with glass piston, capable of rapid and thorough sterilization; a slender needle about 1 m. m. diameter, point long and sharp (common salt solution needle); one-quarter grain cocaine tablets; sterile water heated to boiling, into which the cocaine tablet was dropped and boiled for a minute to sterilize the cocaine; this solution drawn into the syringe, which had been previously sterilized.

The back over the dorso-lumbar region was cleansed by scrubbing with soap and water, then ether and alcohol.

The fourth dorsal spine having been located by an imaginary line through the cresti illii, the needle puncture was made about 1 c. m. to the right of the spinous process and under the lamina of the fourth dorsal vertebra into the subarachnoid space, which space was announced by the appearance of the cerebro-spinal fluid in the cup of the needle. Immediately the syringe containing the cocaine solution was connected with the needle without loss of spinal fluid and its contents thrown into the subarachnoid space.

Case No. 1. Columbia Hospital for Women, Washington, D. C., November 10th, 1900. Name: N. O.; Age: 19; Color: Colored.

First stage of labor nearly complete. Lumbar injection of cocaine was practiced. Two attempts were made but canal was not reached in either attempt. No anaesthesia whatever. No bad after-effects.

Case No. 2. November 14th, 1900. Name: L. M.; Age: 33; Color: White.

Time of injection 7:10 p. m.; cocaine ¼ gr. Anaesthesia complete at 7:30; child born at 8:15 p. m. without pain. Labor pains increased steadily, but were not painful. Patient assisted birth by bearing down. Patient vomited during labor. She did not vomit in previous labors when cocaine was not used. Sensation normal at 5:45 p. m. Headache only bad after-effect.

Case No. 3. December 21st, 1900. Name: A. J.; Age: 16; Color: Colored.

Time of injection 2:50 a. m. Cocaine ¼ gr. Complete anaesthesia 3:15 a. m. 3:30 a. m. patient quiet, no pains and uterine contractions suspended. No nausea; no vomiting; no involuntary stools.

4:00 a. m. Uterine contractions still suspended.

4:48 a. m. Uterine contractions returning.

5:25 a. m. Uterine contractions stronger and pains beginning to be felt.

5:40 a. m. Birth of child, though not painless was much lessened. Child was certainly in parturient canal one hour and a half longer than it would have been without cocaine.

*Read before the Arizona Medical Association, June, 1905, with the addition of subsequent cases, bringing the paper up to date.

twitching of the muscles of the body. No symptoms of poisoning.

Case No. 4. January 15th, 1901. Name: E. D.; Age: 28; Color: Colored.

Time of injection:—12:15 a. m. Cholorofrm used for injection. Reacted from chloroform at 12:20. Pulse, 96; temperature 98. Uterine contractions diminshed. 12:27. Vaginal examination causes no pain, but uterine contractions do. 12:37 Uterine contractions good, but painful. Total anaesthesia of lower extremities.

1:05 Head distending perineum causes no pain, but uterine contractions are painful.

1:10 Birth of head painless, but pains in back severe.

1:24 Lower extremities insensible to prick of needle. Severe headache only bad after-effect.

Case No. 5. January 4th, 1901. Name: S. B.; Age: 23; Color: Colored.

9:10, Lumbar puncture attempted four different times, but failed to get needle in arachnoid space. No anaesthesia.

In summarizing the results of these five cases we note that only in three was the subarachnoid space entered and in these the headaches supervened in two cases and was of extreme severity—morphine alone relieving. The twitching of the muscles of the face and the throwing of the head from side to side pointing to profound centric disturbances and warranted the discontinuance of the method in obstetric work until some improved technique should be evolved. This I did not again witness until April, 1904, when Dr. A. W. Morton, of San Francisco, demonstrated before the Arizona Medical Association the efficiency and apparent harmlessness of what we consider a decidedly improved technique.

Again I hope I may be pardoned if I ask your consideration of the details, though many of you have already gotten them direct from Dr. Morton, who has employed this method in nearly 3,000 cases without a death or any alarming symptoms. The following resume differs from Dr. Morton's only in minor detail:

The two important differential features of this method are first that the cerebro spinal fluid serves as the solvent for the tropacocaine, thereby reducing to a minimum the danger of infection and avoiding increased intra-cranial and spinal pressure, as so often resulted in the old method when the cocaine was dissolved in a foreign solvent, its injection being followed by a train of unpleasant symptoms, viz.: Prolonged headaches, nausea, muscular twitchings and toxic symptoms.

The Luer glass syringe is used as before; the needle, however, is of larger bore than the one employed in 1900, and while the point must be sharp, the bevel is very short, differing from the old long bevel or salt solution needle.

The syringe is sterilized as follows: Its piston is withdrawn and barrel and piston are wrapped in gauze and sterilized by dry heat. If the piston is not withdrawn from the barrel the unequal expansion of the two glass parts may make it impossible to withdraw the piston—it had become "jacketed."

Dry heat is employed so that there may be no moisture within the barrel to take up the tropococaine and spread it over the piston, thus causing inaccuracy in dosage. If it is not convenient to sterilize by dry heat, the moisture within the barrel may be removed with sterile gauze.

The needles are sterilized by boiling water, never by dry heat, which destroys the temper and may dissolve the solder, causing the needle to leak. In one instance the excessive heat of sterilization (250° C. for half hour) so thoroughly destroyed the temper of a needle as to cause it to break off in the deep ligamentous tissues of the spinal column during the act of puncture, and required a tedious and embarrassing dissection under a general anaesthetic to locate and remove the fragments, of which there were five. (As the needle broke before entering the spinal canal there was no opportunity for analgesia, and the case is not reported in the following list).

The skin is prepared as formerly, and the hands as for major operations—and right here may we insist upon the most scrupulous observance of all aseptic detail.

Tropacocaine hydrochlorate of reliable manufacture is employed because it possesses less toxic properties than cocaine hydrochlorate. The absence of this toxicity, however, is found to be in proportion to its lessened analgesic power. Cocaine hydrochlorate possessing greater analgetic doses, but it is more often the choice where operations are done above the umbilicus.

R. Klapp, Germany, in his experiments upon dogs found that cocaine in an oily vehicle was capable of securing total anaesthesia without toxicity, but we have no personal experience with this method—tropacocaine being the safer in our judgment.

The Tropacocaine hydrochlorate is sterilized by placing the dose grain ¾ to one grain in small glass tubes, previously drawn out in the flame and sealed at one end, the other end being treated in the same manner after the tube is loaded. Care must be taken to have the tubes long enough, say three inches, so that sealing the open end will not subject the tropacocaine to excessive heat. A file mark is then made a little beyond the middle of the tube to facilitate breaking same when wanted for injection. It

has been our custom to load a number of tubes at one time, but to sterilize just before use, and it is not impossible that an old sterilized product loses its analgetic properties and develops toxic qualities. (See *Archives de Medicine et de Pharmacie Militaries*—Dr. T. Caccia, Translation by 1st Lieut. Sam'l. S. De Effre, Ass't. Surg. U. S. Army in the *Journal of the Association of Military Surgeons,* June, 1905).

We have tried numerous methods of sterilization. One, that of keeping the tubes at 232 deg. C. for one-half hour, has been found deleterious to the analgetic properties of the tropacocaine and we believe responsible for partial results in some of our cases. We now place the tubes in boiling water for five minutes and this has not been observed to impair analgesia nor has there been any manifestation of toxic or septic effects. This really means sterilizing at the temperature of boiling water (a little less than 100 deg. C. in this altitude plus the bactericidal effect of compressed air).

All the aseptic precautions previously mentioned having been carefully observed the syringe is loaded by breaking the glass tube and emptying the tropacocaine into the barrel of the syringe, the sterile fingers occluding its distal end. The piston is carefully pushed down upon the powder in the end of the barrel avoiding the premature expulsion of tropacocaine from compressed air. The loaded syringe is carefully laid aside in sterile gauze until wanted.

The patient is prepared as formerly and is required to bend the body forward, thus making a bow of the vertebral column, increasing the distance between the spinous processes. This may be done in the upright or Sims' position.

The needle is inserted between the 3rd and 4th or the 4th and 5th lumbar vertebra, and directly in the median line and instead of 1 C., to the right as formerly, which we consider an important point, as there is less obstruction to the needle's entrance. It is very important that the needle be patulous and any rust or foreign matter may be removed, by repeatedly passing a sterile wire through the needle and wiping same on sterile gauze until clean.

Having entered the subarachnoid space with the needle the spinal fluid usually escapes promptly into the cup of the needle, but should a fleshplug or blood-clot hinder this, the use of the sterile wire will remove same. The finger is immediately placed over the cup of the needle to prevent loss of spinal fluid. The syringe previously loaded as described is now connected with the needle; the spinal fluid slowly dissolves the tropacocaine and its pressure being greater than that of the atmosphere the piston is usually forced out. When the 15 minim mark is reached the plunger is held stationary; the syringe rotated in its articulation in the needle cup to facilitate soluton of tropacocaine. This dissolved, the plunger is sent home with gentle force, the back is straightened, the needle withdrawn; the puncture sealed with collodion or adhesive plaster. The patient can at once be made ready for operation and by the time the field is prepared analgesia is established.

All the cases since May, 1904, have been observed and operations performed in connection with Captain H. D. Thomason, Med. Dept. U. S. A.

Case I. P. B. White; male; æt. 59; occupation miner. Diagnosis urethral fistula membranous portion, result of urethral stricture. Operation external urethrotomy May 2nd, 1904. Tropacocaine grain ½ spinal injection 3rd and 4th lumbar interspace. Analgesia complete in ten minutes. Operation lasted one hour and ten minutes and absolutely painless. This was performed in the County Hospital which at that time possessed but primitive operative equipment. Patient held basins, trays, etc., and talked and laughed during procedure.

Case II. W. W., white; male; æt. 52; occupation miner. Diagnosis carcinoma maxillary glands secondary to carcinoma lip. Operation August 15th, 1904. Tropacocaine grain ½ spinal injection 2nd and 3rd lumbar interspace. Analgesia complete from umbilicus to toes in ten minutes, but only partial at seat of operation. Operation postponed. Severe headache followed. The tropacocaine had been subjected to excessive heat in sterilization.

Case III. Same individual 24 hours later. Same injection as day previous. Analgesia complete and prompt from diaphragm to toes, but only partial at seat of operation. Operation performed under chloroform. Slight headache followed. Tropacocaine had been subjected to excessive heat under sterilization.

Case IV. J. M.; white; male; æt. 45; occupation miner. Diagnosis necrosis right inferior maxillary. Tropacocaine grain ¾ spinal injection 2nd and 3rd lumbar interspace. Analgesia prompt from border of lower ribs to toes; partial only over field of operation and chloroform was employed. Analgesia lasted in lower extremities one hour and fifteen minutes. No after effects. Operation August 29th, 1904.

Case V. T. C.; white; male, æt. 45; occupation miner; perineal urethrial fistula, complete

urethal stricture. Operation September 5th, 1904. External urethrotomy. Tropacocaine grain 1 spinal injection 3rd and 4th lumbar interspace. Analgesia complete in six minutes. Operation entirely painless, patient laughing and talking during performance. Complete analgesia lasted four and one-half hours. No after effects.

Case VI. M. W.; white; female; æt. 23; occupation none. Diagnosis ingrowing nails both great toes. Operation September 19th, 1904. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Powder as in former cases over sterilized (subjected to 232 deg. C. dry heat for 30 minutes). Analgesia complete above knees to umbilicus in 20 minutes. Operation on toes 40 minutes after injection with but slight pain. No after effects.

Case VII. E. T. Prt. Co. "I" 29th Infantry. Diagnosis bubo left groin non suppurative. Operation October 4th, 1904. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Analgesia not complete in field of operation due to faulty technique in the over-sterilization of the powder, thus reducing analgetic property. Excision of large gland without other anaesthetic or excessive complaint from patient. No after effects.

Case VIII. Same individual. Operation for circumcission November 11th, 1904. Tropacocaine grain ¾ spinal injection as before. Operation entirely painless. Analgesia complete from umbilicus to toes, lasting two hours. No headache, nausea nor other unpleasant effects.

Case IX. W. E. T. Prt. Co. "I" 29th Inf. æt. 25. Operation January 7th, 1905. Amputation distal phalanx right index finger. Tropacocaine grain 1 spinal injection second and third lumbar interspace. No appreciable effects in upper extremities, and according to patient's statement none in lower. Though the same mistake had been made in over-sterilization of the cocaine rendering its effect unreliable, this patient was an individual totally lacking in fortitude or "nerve." The sight of instruments and preparation for operation threw him into violent hysterics before injection was given. Pointing a needle at him to test analgesia produced loud complants of pain without coming in contact with skin. It is uncertain in this case whether analgesia was produced or not. Operation performed under chloroform.

Case X. N. N. S. Prt. Co. "I" 29th Inf. æt. 29. Diagnosis external and internal hemorrhoids. Operation January 29th, 1905. Patient walked into operating room and prior to spinal injection promptly fainted at sight of instruments and preparations for operation. Quick recovery. Ten minutes later tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Injection 11:50 a. m. Operation 12 o'clock. Forcible rectal dilatation and removal of hemorrhoids by clamp and cautery, absolutely painless. Analgesia lasted two hours. Complained of slight headache after. Duty February 6th.

Case XI. P. T. Prt. Troop "L" 5th Cav. æt. 23. External hemorrhoids. Operation February 1st, 1905. Tropacocaine spinal injection grain ¾ 3rd and 4th lumbar interspace 11 a. m. Operation 11:20. Forcible rectal dilatation, removal hemorrhoids clamp and cautery with entire absence of pain. Patient conversed and laughed during performance. Analgesia complete umbilicus to toes lasting two hours. Complained of slight headache for a few hours after. Duty February 22nd.

Case XII. A. W. K. Corp. Co. "I" 29th Inf. æt. 28. External hemorrhoids. Operation February 8th, 1905. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace 11:37 a. m., losing about 10 minims cerebro spinal fluid from slip of syringe. Operation 11:40 forcible rectal dilatation, clamp and cautery, entirely painless, patient talking and laughing during performance. Analgesia lasted two hours and fifteen minutes. No after effects. Duty February 15th.

Case XIII. A. H. Musician Co. "I" 29th Inf. æt. 22. Operation February 17th, 1905. Extensive growth of venereal warts on glans penis and foreskin. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace 11:00 a. m. Complained of slight nausea immediately following, but passed off at once. Operation perfectly painless. Analgesia lasted two hours and twenty minutes.

Case XIV. C. K. B. Prt. Troop "L" 5th Cav. æt. 25. February 21st, 1905, sustained a compound fracture both bones right leg, middle third, by fall from a horse at Cossack drill. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace 11:30 a. m. Analgesia complete 11:50. Fracture reduced, dressed and placed in plaster cast with entire absence of pain. Analgesia lasted three hours. No after effects. Returned to Quarters for kitchen and police duty May 15th, 1905. Excellent union.

Case XV. M. M., Prt. Troop "L" 5th Cav. Exostosis 2½x½ in., 3 in. above knee, femur anterior portion. Operation April 16th, 1905. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Analgesia appeared promptly and operation began without pain. Analgesia lasted only ten minutes, and operation completed under chloroform. It subsequently developed that the tropacocaine used was an old tube that had previously been subjected to excessive heat,, 232 deg. C. for half an hour, and this is believed to have been the cause of the short analgetic effect. No headache or after effect.

Case XVI. J. W. L., Prt. Troop "L" 5th Cav. æt. 22. Rectal fissure, and ulceration anus and rectum. Operation May 24th, 1905, in the presence of Lieut. Colonel Edward B. Moseley, Chief surgeon of the Department. Tropacocaine ¾ grain spinal injection 3rd and 4th lumbar interspace at 10:02. Operation at 10:10, forcible dilatation of rectum, and cauterization of fissures and ulcers; entirely painless. Analgesia in this instance extended over entire body, needle inserted through cheek or scalp without pain or complaint and an operation could have been performed on any part of body. Analgesia lasted for three hours. No after effect.

Case XVII. H. H. white; male; æt. 22. Diagnosis psoas abscess, tubercular, pointing just below apex Scarpa's triangle right thigh. Patient suffering from advanced tubercular pulmonary involvment. General anaesthesia contraindicated. Tropacocaine ¾ grain spinal injection 3rd and 4th lumbar interspace. Operation twenty minutes after injection. Patient nervous and excitable, and during operation complained of some pain, but the following day acknowledged it was painless, and his complaint was due to fright. No after effects.

Case XVIII. W. W., white; male; æt. 47. Laborer. Infected gland of neck indurated and partially suppurative. Tropacocaine grain 1 ¼ spinal injection 2d and 3rd lumbar interspace. Operation May 31st, 1905. Analgesia complete from umbilicus to toes. Partial in field of operation. No other anaesthetic required.

Case XIX. P. B., Mexican; laborer; æt. 72. Marked debility, malnutrition and emaciation. Diagnosis left indirect complete inguinal herna. Administration of a general anaesthetic unjustifiable. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Analgesia over seat of operation immediate. Operation for the radical cure of hernia, a Bassini, lasting one-half hour. Absolutely painless operation. No after effects. Operation performed June 2nd, 1905.

Case XX. T. G., white; male; miner; æt. 54. Diagnosis, prostatic hypertrophy. Operation perineal prostatectomy June 2nd, 1905. Tropacocaine ¾ spinal injection 3rd and 4th lumbar interspace. Analgesia over seat of operation immediate. No pain from incision or decapsulation gland, but complained of trifling discomfort from traction and pressure of hand in perineal wound and during extirpation. Patient talked and laughed during operation.

Case XXI. M. G.; white; male; occupation miner; æt. 43. Displaced astragalus right foot of several years standing, rendering foot practically useless. Operation June 2nd, 1905. Tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Analgesia complete and immediate. Excission of astragalus and lower portion of tibia accomplished with entire absence of pain. Length of operation fifteen minutes. No after effects.

Case XXII. S. M. E.; general military prisoner; æt. 23. Diagnosis external hemorrhoids. Operation June 3rd, 1905. Tropacocaine ¾ grain spinal injection 3rd and 4th lumbar interspace. Analgesia immediate. Forcible rectal dilatation, clamp and cautery; operaton entirely painless. No after effects. Duty, June 10th.

Case XXIII. C. Y.; white; female; wife of physician; æt. 31. External and internal hemorrhoids. Operation June 12th, 1905. Tropacocaine spinal injection grain ¾ 3rd and 4th lumbar interspace. Analgesia immediate from ribs to toes. Forcible rectal dilatation, clamp and cautery entirely painless. Analgesia lasted one hour and twenty minutes. No after effects.

Case XXIV. D. G.; white; male; retired miner; æt. 62. Diagnosis Empyema right cavity; patient very low condition; disease had existed seven years; dysponea marked; paracentesis had been performed one week previous with but very slight and temporary benefit; some cyanosis present; heart's action weak, labored and rapid; emaciation and cachexia marked; haemoglobin 45 per cent; employment of a general anaesthetic positively contra-indicated. Operation June 15th, 1905. Tropacocaine grain 1 spinal injection 2nd and 3rd lumbar interspace. In this instance unusual difficulty was experienced in entering canal, due to the spinal curvature incident to the empyema. Analgesia present over thorax in fifteen minutes

Operation resection 2 inches right seventh rib. No pain experienced from incision nor separation of thoracic muscles or detachment of periosteum, but when rib itself was excised patient complained of pain. Large quantities of pus evacuated with immense relief. No unpleasant after effects.

Case XXV. J. S.; white; male; occupation miner; æt. 50. Diagnosis vesical calculus. Operation June 26th, 1905. Tropacocaine grain 1 spinal injection 3rd and 4th lumbar interspace. Analgesia immediate median perineal operation with entire absence of pain. Patient talked and laughed and when told incision was being made made remark: "You are joking." Large stone removed in fragments. Length of operation twenty minutes. Analgesia lasted one hour. No after effects.

Case XXVI. M. C.; white; male; occupation miner; æt. 45. Diagnosis necrosis of calcis and tibia right ankle. Operation June 28th, 1905. Tropacocaine grain 1 spinal injection 3rd and 4th lumbar interspace. Analgesia immediate; removal os calcis entire and resection lower portion of tibia, with through and through drainage of foot with entire absence of pain. Length of operation fifteen minutes. Analgesia one hour. No after effects.

Case XXVII. W. N.; male; white; occupation druggist; æt. 65. Diagnosis prostatic hypertrophy, and complete urethral stricture. General conditon of patient alarming and urgent from prolonged uraemia; pulse and respiration rapid and weak; general anaesthesia out of the question; operation perineal prostatectomy June 29th, 1905. Tropacocaine spinal injection ¾ grain 3rd and 4th lumbar interspace. Analgesia immediate. Painless operations lasting 40 minutes. Analgesia two hours. No after effects.

Case XXVIII. C. B.; white; male; occupation carpenter; æt. 43. Compound comminuted fracture both bones left leg, received by being forcibly blown off stand 8 ft. in height by premature explosion of fireworks, and thrown 50 feet, July 4th, 1905. Fracture tibia 2 inches below knee right side; compound fracture same 3 inches above ankle; fracture fibula at middle. Tropacocaine ¾ grain spinal injection 3rd and 4th lumbar interspace. Analgesia immediate; fractures reduced, dressed and plaster cast applied with entire absence of pain or suffering. Analgesia lasted two hours and a half. No after effects.

Case XXIX. M.; white; female; æt. 32; occupation, housewife. Diagnosis retained secundines following incomplete abortion of a few days previous. Pain and tenderness severe left iliac region, causing patient continuous suffering; temp. 104; pulse 110. July 21st, 1905, tropacocaine grain ¾ spinal injection 3rd and 4th lumbar interspace. Relief of pain immediate; complete analgesia prompt; relaxation of genitalia most satisfactory. Operation instrumental and digital curettarge, with entire absence of pain. No abscess discovered. No after effects. Recovery prompt.

Case XXX. P.; male; white; occupation carpenter; æt. 45. Diagnosis Osteomyolitis following typhoid fever, right tibia. August 5th, 1905, tropacocaine ¾ grain spinal injection 3rd and 4th lumbar interspace. Analgesia complete lower extremities. Operation lasted 15 minutes; analgesia one hour. No after effects.

Case XXXI. G. V.; white; female; occupation housewife; æt. 28. Pregnant multipara (4). August 20th, 1905, at full term premature rupture of waters. Pain severe; patient hysterical; pains continued violent, and progress of labor slow; patient begged and pleaded for relief; chloroform short of complete anaesthesia ineffectual. At 2:25 a. m. August 21st, 1905, tropacocaine grain ½ spinal injection 3rd and 4th lumbar interspace. Pains entirely absent five minutes later, but uterine contractions continued without interruption. Painless birth at 2:47 a. m. Mother smiling, as head passed upon and over perineum. Crede's method failed to deliver placenta; accomplished by introduction of hand into uterus with entire absence of pain. Prompt contraction and no ill after effects.

Case XXXII. E. O.; Prt. Troop "L" 5th Cav. In the first week of an attack of typhoid, this soldier exhibited marked abdominal symptoms suggestive of intestinal perforation; tympanites, muscular rigidity, rapid and weak pulse, etc. Exploratory operation August 20th, 1905. Tropacocaine grain 1 spinal injection 3rd and 4th lumbar interspace. As pain was most marked over McBurney's point and as large per cent. of perforations in typhoid occur within twelve inches of caecum incision was the usual one for an appendectomy. Incision was painless. The peritoneum inflamed, and when opened evidences of acute peritonitis. No perforation but appendix showed inflammatory involvement. Appendectomy performed. No appreciable pain until traction with rat-tooth forceps made upon inflamed and adherent

peritoneum in the act of suturing. A few breaths of chloroform, not to exceed twenty respirations tided over the closure of the peritoneum without pain, and the muscular and integumentary tissues were closed under the original analgesia entirely free from pain. Patient at this writing (Sept. 9th, 1905) just beginning the convalescent stage from typhoid fever. Abdominal pain and discomfort entirely ceased after operation. Union by first intention. Patient passed through an ordinarily severe case of typhoid fever.

Case XXXIII. C. K.; Prt. Co. "I" 29th Inf. æt. 22. Diagnosis, extensive prolapsus recti. Operation August 31st. Tropacocaine spinal injection 3rd and 4th lumbar interspace. Analagesia immediate. Operation per cautery scarification prior to reduction and subsequently, with entire absence of pain. At this writing (Sept. 9th, 1905) rectum has retained normal place. No after effects.

Case XXXIV. W.; white; æt. 24; wife of an officer. Diagnosis, chronic metritis. Tropacocaine spinal injection 3rd and 4th lumbar interspace, grain ¾. Analgesia immediate. Operation uterine curettarge September 1st, 1905. Entirely painless. No after effects.

Case XXXV. F. H.; white; male; æt. 25. Occupation, stone cutter. Third week of typhoid fever developed indications of intestinal perforation. Onset of intestinal symptoms sudden. Condition serious. At 2 a. m. Sept. 2nd, 1905, tropacocaine spinal injection grain 1, 3rd and 4th lumbar interspace. Analgesia complete by time field of operation was prepared. Painless incision over McBurney's point. Evidences of purulent peritonitis. Perforation four inches above caecum. Operation lasted twenty minutes and though patient was entirely conscious was accomplished without pain. Patient died at 9 a. m. Sept. 2nd, 1905. Some improvement following operation, but at 8 a. m., collapse occurred.

Cases XIX. to XXXV. were operated upon subsequent to presentation of my report to Arizona Medical Association.

Cases XIX. XX. and XXI. were operated upon before the Arizona Medical Association by Dr. A. N. Morton, of San Francisco, and reported with his permission.

In summarizing the results in the foregoing report we note headache of severe character in one case profoundly anaemic from carcinoma. Slight headaches were complained of in 5 per cent. of the cases, but these were so trival as to scarcely be worthy of mention, and stand out in brilliant contrast when compared with those following chloroform or ether.

There was failure of analgesia below the umbilicus in only one case, and that doubtless due to over-sterilization of the tropacocaine.

In 5 per cent of cases a partial analgesia only at field of operation was obtained. In 5 per cent. only, of our cases did analgesia extend over the entire body.

The duration of analgesia varied from ten minutes to four hours, with an average of one hour and twenty-seven minutes, and we believe that with our present method of sterilizing the tropacocaine that the period may be considerably lengthened.

I trust that I may not be considered facetious if I venture *a few conclusions* based on such a limited number of cases. Our facilities for extensive surgical work are extremely limited, yet our results warrant continued investigation of this method.

I am of the opnion that in operations covering the field from umbilicus to toes, tropacocaine spinal injection, when proper technique is observed, is a reliable and advantageous anaesthetic. That it may be used successfully in a certain percentage of operations above the umbilicus.

In weighing the chances and advisability for operation, the depression and dangers attendant upon general anaesthesia can be eliminated and the prognosis confined to the patient's resisting powers of the operation *per se*.

There is no necessity for undue haste in performance of operations because of jeopardy from prolonged anaesthesia.

Tropacocaine analgesia usually continues a sufficient length of time for the performance of any ordinary operation and there is no objection to a repetition of the injection when called for.

Operations can safely be performed upon a class of cases in which general anaesthetics are contra-indicated.

We believe this method of anaesthesia has a future in obstetrics, especially when employed near the end of the first stage of labor. In gynecology it is particularly well adapted for plastic work.

From the patient's standpoint we do not find the method popular, for they have been educated for two generations to believe that absolute unconsciousness is necessary during a surgical operation and the "thought" of seeing and knowing what is going on has a powerful influence against spinal analgesia. The surgeon too, is often more at ease if his patient is oblivious to all that is being done to and about him.

In conclusion, I wish to thank Dr. A. W. Morton for the careful elucidation and demon-

stration of his improved technique; Captain Henry D. Thomason, for his hearty co-operation and assistance; and to the physicians of Prescott, who kindly furnished cases, and Dr. W. H. Syme,

---

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Virginia.

Professor Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE X.

The Status of Hyperemia—The Symptoms of Inflammation — Local: Pain—Heat—Swelling—Redness—Impaired Function — General: Fever and Attending Complications—Terminations—Diagnosis and Prognosis of Inflammation.

The question of the relationship of hyperemia to inflammation has been purposely avoided under what might seem its proper heading, because it was desired to present the subject of the pathology of inflammation unbroken by the insertion of divergent views. It will now be briefly discussed.

As already stated, there are many authorities who claim that inflammation is a destructive process and consequently opposed to the repair of injuries received by tissue. Finding their arguments refuted by the manifest tendencies of hyperemia to aid regeneration, they insist that the process is not a part of inflammation but a distinct and separate phenomenon. In other words, that hyperemia is not a stage of inflammation, as has been taught, but is essentially the antithesis of inflammation. In justice to the position taken in these lectures, namely, that inflammation is a defensive, and therefore a conservative process, and that hyperemia is merely one of its several stages, the following is submitted.

Hyperemia is a condition of local plethora in which the excess of blood is mainly upon the arterial side of the circulation, a distension of the capillaries by arterial blood in contradistinction to the later stage known as congestion, in which the blood present is essentially venous. The causes of hyperemia or excess of blood on the arterial side of the local capillaries, are found upon investigation to be the same, fundamentally, as those of inflammation, namely, various irritants, bacterial or non-bacterial. As it is most probable that the exciting cause acts through the vaso-motor system, it is believed that irritation may produce hyperemia by withdrawing the stimulus of the vaso-constrictors (neuro-paralytic hyperemia), or by stimulating the vaso-dilators (vaso-tonic hyperemia). As an example of the hyperemia produced by physiological irritants may be cited the effect of food when introduced into the healthy stomach and the increased flow of blood to the part, which results. As an example of hyperemia produced by thermal influence, recall the effect of exposure to cold. As an example of hyperemia produced by certain chemical bodies remember the effect of the application of nitrate of silver to the mesentery of the frog. Whether hyperemia will cease to exist and the tissues involved be restored to the normal by what is known as resolution, or whether the process will progress and go through the several stages described as inflammation will depend on the early withdrawal of the cause on the one hand, or its continued action on the other. Withdraw promptly the cause at the stage of hyperemia, and whether the irritant be infectious or non-infectious the inflammotory process will cease. But continue the injurious action of the cause, whatever be its nature, and hyperemia is succeeded by the other and unquestioned stages of inflammation. This is not merely theory, but can be shown to be true by practical illustration. Take the physiological hyperemia of digestion. If the ingesta, the etiological irritant, be removed by the normal process of digestion, hyperemia promptly subsides. If, however, the food remains in the stomach, the continued irritation results in gastritis or inflammation of the stomach. Take the mesentery of the frog and irritate it with the nitrate of silver. Continue the cause, and under the microscope you can observe hyperemia progress into fully developed inflammation. Withdraw the cause at the stage of hyperemia and you can actually see she process resolve. Ocular demonstration is worth more than academic logic!

---

* These lectures on Principles or Surgery embrrce a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

Unresolved hyperemia tends to progress to the further stages of inflammation. The etiology of the two is the same; — the termination of the one into the other is inevitable (unless resolution follows upon withdrawal of the cause), and therefore one must be a stage of the other. If the one be conservative it is only logical to suppose that its further stages are likewise conservative, and really are only a further expression of the efforts made by Nature to rid herself of a noxious irritant. Granting the foregoing statements there is no escape from the conclusion that the only difference to be found between hyperemia and inflammation is that dependent upon the continuance or withdrawal of the active, exciting cause.

SYMPTOMS OF INFLAMMATION.

The symptoms of inflammation are both local and constitutional. The time-honored classification of the local symptoms under the heads "*dolor, calor, rubor, tumor et functio læsa,*" will be adopted. The constitutional symptoms will be discussed under the head of "Fever and Its Attending Complications." We will take the symptoms up in order, referring again to what was taught in the last lecture whenever the association of the pathological changes with the symptomatic result will serve to impress the former or explain the latter.

A. Local Spmptoms.

1. Pain is usually one of the first of the local symptoms of inflammation. It is caused by pressure on the sensory nerve terminals in the part, from the increased tension due to the transudation and exudation. It is due also, in some cases, to direct extension of the inflammatory process to the nerve fibres themselves. Pain, though always present, varies in degree, character, and location. The degree of pain suffered by the patient is influenced by the temperament of the individual. The amount of inflammation which may cause only discomort in a plethoric subject will often produce excruciating agony in a patient of nervous emperament. It is not a question so much of the ability of an individual to bear pain as it is a question of the perceptive power to appreciate it, that makes the difference between the so-called "good" and "bad" patient. The personal equation left out of the problem, the degree of pain is largely dependent upon the anatomical part involved. As pain is due to pressure on nerve terminals it is illogical to infer that it will be greatest where tissue is least distensible and most abundantly supplied with sensory filaments, and this is found to be practically true. Pain is the pronounced symptom in unyielding structure like bone, and in sensitive organs like the eye-ball or finger tips. It is comparatively trivial in loose, insensitive parts like the areola tissue of the back. The character of the pain also varies, and man's vocabulary has been taxed to find words to describe its variations in this respect. Thus, it is said to be "burning," when it attacks the skin, "stabbing" when it invades serous surfaces, "throbbing" when suppuration threatens, and "dull," "aching," "boring," when it involves bone.

In certain chronic, inflammatory troubles pain may be absent in the day and ever-present at night—nocturnal pain. The location of pain varies. Usually it is referred to the seat of inflammation, but often it is said to be in some other part of the body—"reflected" or "radiated" pain. Thus, in Potts' disease of the spine the inflammatory focus is in the vertebral column, but the patient complains of pains in the abdomen. In morbus coxalgia the disease is in the hip joint but the pain is said to be above and to the inner side of the knee. In the early stages of appendicitis the inflammation is in the lower right quadrant of the abdomen, but the pain is felt most severely about the umbilicus. These and other illustrations that could be mentioned are due to the irritation of the nerve trunk, the source of irritation being referred by the brain to the terminal distribution of the nerve, or to irritation of one branch of a sensory nerve, and the source being referred to another branch of the same trunk. In locating the seat of inflammation, tenderness or the pain produced by pressure is much more reliable than spontaneous pain. The point where tenderness is most acute usually indicates the primary focus of infection, and the area of tenderness usually shows the boundaries of the inflammatory area. Firm pressure usually relieves nervous or neuralgic pain, while it increases pain when it is caused by inflammation. Light pressure increases the

pain in a part the seat of functional disturbances, while it does not markedly affect the pain resulting from inflammatory lesions.

2. Redness. The Caucasian's boast that he is a white man, is untrue. As long as the blood circulates in his skin it is pink, and it is only when the superficial capillaries are empty, as in shock or death, that it is white. Just as the normal amount of blood in the part gives it the flesh tint of health, so does an excess of blood in a part give it the redness of inflammation. Although the flow of blood to and fron the part varies in the three stages of inflammation, there is this fact common to them all —there is more blood in the part. The proof that the change of color in inflammation is due to the increased amount of blood in the part is that firm pressure, continued until the vessels are emptied, will blanch the tissues, and that the color will return as soon as the pressure is discontinued long enough to allow the vessels to refill In the early stages of inflammation the color is of a bright scarlet redness from the excess of arterial blood. In the later stages there is a bluish, purplish tinge from the impeded access of arterial and the retention of an excessive amount of venous blood. In the so-called hemorrhagic form of inflammation where the exude contains an unusually large number of red corpuscles the tissues may become more or less permanently pigmented from the disintegration of the red corpuscles and the liberation of hemoglobin.

3. Swelling is rarely absent in inflammation. It is due to the dilation of the local blood vessels and to the saturation of the tissues with inflammatory transudate and exudate. Two bodies cannot occupy the same space at the same time, and if the size of the blood vessels is doubled and the amount of fluid and cellular elements largely increased, the locality must become swollen. The amount and the rapidity with which swelling occurs varies with the distensibility of the tissue. In the bone and other dense structures it is inconspicuous and slow, while in loose tissues like the eye-lid, scrotum or vulva, it is marked and rapid. If the inflammatory exudate is excessive the part is firm and "cake-like." If the transudate is in excess it is "dough-like" and pits on pressure.

4. Heat. Increase of local temperature seen in inflammation, like redness, is also due to the increased amount of blood in the parts. At one time it was thought that it was due to chemical changes or combustion in the part, but it has been proven that it is due to the increased afflux of blood to the part. The temperature of the inflamed area is never in excess of the temperature of the blood. It must of couese be remembered, however, that in inflammrtion the blood may be warmer than normal, owing to co-incicent fever, and that the part may feel hotter than it really is, from a hypersensitive condition of the nerves distributed to the locality. A fall in the local temperature may be a favorable indication, pointing to termination by resolution. It may, however, be an unfavorable symptom, indicating arrest of circulation and threatened or actual termination in gangrene.

5. Impaired Function. or, to be more accurate, disturbance of function. is the last of the local symptoms to be noted. It may be in the direction of temporary increase of the physiological function of an organ from over-stimulation, and is seen in the increased secretion of mucous in catarrhal inflammation, or it may be in the direction of diminution of function, as in the case of inability to retain urine in cystitis, or to tolerate light in retinitis.

B. Constitutional Symptoms.

The constitutional symptoms of inflammation are fever and its attending complications. Toxic substances produced by the microbes in the inflammatory area are rapidly absorbed by the blood and carried throughout the system. They are highly pyrogenous substances, and acting on the thermic centres of the brain, disarrange the delicate mechanism by which the normal temperature of the body is maintained. Whether they stimulate heat production or diminish heat elimination makes but little practical difference—the recult is fever. The febrile condition of the patient is attended by other general derangements, such as a feeling of prostration, chilliness or rigors. The pulse becomes rapid. There is pain ni

the back and limbs. The skin becomes dry, the tongue coated, the bowels constipated. There is loss of appetite, nausea, and perhaps vomiting. The urine is scant and high-colored. Sometimes there is insomnia, and again drowsiness. Sometimes delirium and again coma.

TERMINATION OF INFLAMMATION.

Inflammation may terminate in one of three ways: by (1) resolution, (2) suppuration, (3) gangrene.

1. Resolution means that the symptoms gradually subside, and the function and structure of the tissue will be more or less perfectly restored to the normal condition. In other words the inflammatory products are removed, and the damage suffered by the tissue is repaired. Many of the leucocytes that have retained their vitality, return into the circulation, either through the walls of a capillary or through a lymphatic vessel. Other leucocytes, embryonal cells and colored corpuscles are broken up, disintegrated and absorbed Fibrin undergoes granular degeneration and, together with edematous fluid, is removed from the tissues. The defects in the capillary walls are repaired, the circulation is re-established and the part eventually shows little evidence of the drama that has been enacted within its confines. Resolution is the happiest termination of inflammation, and is only possible when the irritant is withdrawn early and, as a consequence, the amount of transudation and exudation is limited.

2. Suppuration, the second of the three terminations of inflammation, cannot be described at this point without anticipating future lectures. It may be said to consist, however, in the death of the leucocytes and embryonal cells and their transformation into pus corpuscles, the liquefaction of the fibrin and the conversion of it, together with the fluid transudate, into pus serum, and the combination of the two into a substance known as pus. When suppuration takes place and pus is formed there is extensive destruction of the pre-existing cells of the inflamed tissue. A defect is created which requires considerable time to be repaired, and the result is the formation of a scar or cicatrix.

3. Gangrene is the third and most disastrous termination that may follow inflammation. It means death of the tissue, and is usually indicative of infection of great virulency of tissue of lowered vitality. Death of cells that compose the part is due either to pressure or poison or both combined. If the tissue is unyielding and the exudate and transudate abundont, the pressure may be sufficient to stop the circulation, and blood no longer conveying nutrition, the cells die of starvation. Again, the toxin produced by the germs may be of such potency that the cells, bathed in fluid saturated with the poison, may die of toxemia. It will be noted that when gangrene takes place, it usually begins in the centre of the inflammatory area, because here the cells have been longest subjected to pressure and first exposed to the action of tocsins. Like suppuration, the subject of gangrene will be more fully discussed later.

THE DIAGNOSIS OF INFLAMMATION.

Usually the symptoms of inflammation are so well marked that there is no difficulty in making a diagnosis. In some cases, however, there is the absence of one or more of the cardinal characteristics, and then it is important to thoroughly weigh those that are present. Fever varies greatly as the toxins of different germs act with different phlogistic power. The suppurative inflammation caused by infection with the micrococcus pyogenes tenuis is not attended by so high a temperature as when produced by the staphyloccocus or streptococcus. Fever rises or falls with the increase or decrease of the infective process. Of the local symptoms the one of greatest diagnostic importance is the increcsed heat in the part. A local rise in the temperature is more indicative of inflammation than a general elevation of temperature, as the latter may be due to many causes, while the former, if permanent, is strongly suggestive of inflammation. In doubtful cases the use of a surface thermometer will often differentiate between an inflammatory mass and a malignant growth.

THE PROGNOSIS OF INFLAMMATION.

The prognosis in a given case of inflammation is based upon:

1. The Character of the Cause. As illus-

trative, it is merely necessary to recall the well-known facts that infection with certain species of micro-organisms such as the gonococeus, does not often cause death, while infection with others such as the bacillus tetanus or anthrax, is commonly fatal.

2. The Anatomical Tissue Involved. Infection of certain anatomical tissues is more dangerous than the inoculation of other localities with the same germ. For instancee inflammation of the vocal cords would be more likely to cause death from asphyxia than inflammation of the tonsils. Inflammation inside the cranium would be attended by more hazard from pressure on the brain than a similar amount of extra-cranial disease.

3. The general Condition of the Patient. The strength, health and agé of the patient have an important bearing on the result of the inflammatory process. Young children and the aged bear disease less well than persons of middle life, and those broken down from disease or dissipation do not offer the same resistance as individuals in robust health.

4. Accessibility of the Disease to Surgical Treatment. Suppurative inflammation of the skin which can readily be reached, is not as serious as suppurative inflammation in the appendix, and an abscess on the scalp is not attended by the same danger as one located in the brain.

Analyses, Selections, Etc.

NATURE AND TREATMENT OF ARTERIO SCLEROSIS.

Dr. Manfred Fraenkel, of Berlin, contributes a paper on this subject to the *Wiener klin Rundschau,* July 23 and 30, 1905, in which he states that at a recent session of the Balneological Society in Berlin, Burwinkel maintained that arterio Sclerosis is not a wasting disease—occurring as it does more especially in sedentaries, and not among the working classes. Its cause is to be found in the decreased rapidity of the blood current and the faulty composition of the blood. Prof. Winternitz, of Vienna, called attention to the fact that all habits and factors have been blamed for the process, it being ignored that it differed in kind, occurs both in youth and in age, might be partial or general, do slight harm or endanger life.

Thoma's histo-chemical theory explains all the phenomena: The incessant action of the heart and the vessels puts a strain on them and on their capacity of accommodating their continuously-changing contents. This leads to a gradual diminution of their elasticity, a paralysis of the media. Hence ensues dilatation of the vessels and diminution in the speed of the blood stream, which in turn reacts injuriously on the vessels. A kind of compensatory hypertrophy of the muscular tissues remedies the process for a time. When that becomes insufficient there develops between the endothelium and the internal elastic coat a connective tissue layer which may re-establish normal circulatory conditions for long periods. This is marked by thickening and tortuosity of the vessels, but without real sclerosis. This new connective tissue arises from mechanical conditions, being the effect of the dilatation of the vasa vasorum and vascular nerves and of the altered direction of the vessels. New vascular formation leads to the appearance of connective and even of elastic tissue. There is a limit to this, however, and retrogressive action sets in. Fatty degeneration appears in the new connective tissues; smaller and larger areas become atheromatous. Superficial ulceration or deeper losses of tissue result; and the irregularities of the vessel-walls lead to thrombosis and its sequelæ. Or secondary deep-seated inflammation of the walls may occur, causing masses of scar tissue which may or may not undergo calcification. Even before macroscopic changes appear there is a plain loss of vascular elasticity. The primal cause of arteriosclerosis is a congenital or acquired weakness of the vascular system.

Increase of blood pressure alone is not a sufficient cause, as has been shown by L. Braun in animal experiments. Hence iodine can have no influence on the condition. Indeed, if we regard the new connective tissue and the possibly present inflammatory products as supports of the arterial walls, iodine is not at all appropriate. The only thing it may do is lessen the tension on the vascular walls.

A rational therapy must act favorably on the metabolism of the vessels, strengthen the vasomotors and free the blood channels from pressure. Excellent results from Trunecek's serum have been reported. Its efficacy is due to the action of the salts on the lime phosphate, the discreased alkalinity of the blood, and the soda salts appearance of dyspnea being caused by the inhave a direct effect on the heart and the vascular endothelium. There is also an action on the

vasomotor system from chemical processes. The salts present in normal blood certainly exercise a stimulating irritation on the general circulation and the nerves of the vessels.

Trunecek's serum, however, is painful, and the practitioner cannot devote 45 minutes daily for weeks to its injection. Its prophylactic use is still more difficult, for patients object to the tedious and painful treatment for a beginning disease.

Now Levy, Goldschmidt, Zgorski, Burwinkel and others have found that there is no perceptible difference in the action of the salts when given by injection or by mouth. I have therefore rejected the serum and give my patients *antisclerosin,* which consists of the salts of which the serum is composed.

The first group of 25 patients I treated with it includes marked cases. In many the vessels showed far greater changes than did the radial, which was sometimes apparently free from schlerotic process, while the brachial was distinctly changed, hardened and elongated. Of course I did not expect complete recoveries. My observations extended over about 12 months in each case. In 19 the subjective and objective symptoms were relieved for varying periods or disappeared for long periods, sometimes for four months. In the 6 others the subjective symptoms were relieved but slowly, disappeared only for a short time, and promptly reappeared when antisclerosin was stopped. As Zgorski remarks, in a disease of so much gravity and distress, even moderate relief gives great gratification to physician and patient.

The chief field for antisclerosin is prophylaxis —its use at the very beginning of difficulties that point to arteriosclerosis. Fairly certain signs thereof are a peculiar indefinable feeling in the precardial region, slight dyspnoea, especially on walking, slight dizziness, temporal beating, frequent "going to sleep" of the extremities, tinnitus, visual disturbances without lesion, and general gastric troubles. The age of the patient, the somewhat tense and hard pulse and the presence of symptoms of plethora, gout or rheumatism substantiate the diagnosis. It is in these cases that the prophylactic use of antisclerosin removes the subjective and objective manifestations.

I have never seen undesirable effects from it. Two tablets three times daily is the average dose, continued until subjective difficulties vanish. Then I stop it for two or three weeks before resuming. The reappearance of symptoms indicates the need for immediate renewal of the medication.

TURPENTINE IN PUEPERAL INFECTION.

Dr. M. Fabre communicates to the *Lyon Medical,* August 6, 1905, a paper on the "Treatment of Streptococcic Puerperal Infection by the Intra-Uterine Injections of Oil of Turpentine and Subcutaneous Injections of Turpentine Serum," an abstract of which occurs in the *N. Y. Medical Journal and Philadelphia Medical Journal,* Sept. 9.

Fabre distinguishes two stages of puerperal infection—one, in which the infection is local; the other, in which the infection has become generalized. When the infection is local, treatment is *confined to intra-uterine lavages of an emulsion* made by agitating 15 c. c. of oil of turpentine and a like quantity of alcohol, with a litre of sterilized water. But when the infection is general, an emulsion made by triturating 1 c. c. of rectified oil of turpentine and 1 c. c. of absolute alcohol, with 200 grammes of artificial serum, is also injected into the circulation. Fabre states that he has treated in this manner 17 cases of puerperal infection, in 15 of which the streptococcus, and in 2 anerobic micro organisms, were the infectious agents. In the latter cases, the results obtained were not favorable. Of the 15 streptococcic cases, however, ten were very serious clinically, but only one was fatal. The autopsy in that case revealed two collections of pus in the Fallopian tubes, with streptococci in the blood.

Book Notices.

Text-Book on Chemistry. By WILLIAM RUSSELL JONES, M. D., Ph. G., Professor of Medical Chemistry and Toxicology, and Lecturer on Medical Diagnosis in University College of Medicine, Richmond, Va., etc. *Illustrated.* Philadelphia: P. Blakiston's Son & Co. 1905. Cloth. 8vo. Pp. 462.

The author states in the preface that he "has endeavored [to supply] all that is needed in chemistry for students of medicine, dentistry and pharmacy." Experience for a number of years as Professor of Chemistry has taught him what facts the student mostly needs. The subject is presented in an inductive manner, commencing with simple statements and avoiding technical terms until the student has begun to

acquire familiarity with his work. The chemistry of official medicinal preparations and chemicals is made to conform with 8th (1905) Revision of the U. S. Pharmacopœia; so that the book is right up to date. A number of the illustrations are original where they simplify the matter in hand. We predict for this book, as it deserves, a standard position as chemical authority for the physician, the dentist and the pharmacist especially. The excellent index greatly helps in the way of ready reference to a point. We are glad to learn that this has been adopted as the text book in some medical, dental and pharmacal colleges for the ensuing session. Dr. Jones is one of the few Southern teachers that has assumed the role of a text-book author. An examination only of the work is sufficient to show any teacher of chemistry that it well covers what is expected to be taught in a medical, dental or pharmacal institution.

Acute Contagious Diseases. By WILLIAM M. M. WELCH, M. D., Diagnostician to Bureau of Health, and Consulting Physician to the Philadelphia Municipal Hospital for Contagious and Infectious Diseases, etc., and JAY F. SCHAMBERG, A. B., M. D., Professor of Dematology and Infectious Eruptive Diseases, Philadelphia Polyclinic and College for Graduates of Medicine, etc. Illustrated with 109 Engravings and 61 full page Plates. Lea Brothers & Co., Philadelphia and New York. 1905. 8vo. Pp. 781. Cloth, $5 *net*; leather, $6 *net;* half-morocco, $6.50 *net.*

The recognized ability of the authors for the special work undertaken, and the scope of the work itself, as indicated in its title, should at once assure a very large demand for this book by practitioners. The subjects considered are vaccinia, its relationship to smallpox, and variolous diseases in lower animals; smallpox, its complications and sequelæ; chickenpox; scarlet fever, and its diagnosis; measles; rubella; typhus fever; diphtheria, its treatment, serum theory, etc.; disinfection. While full enough descriptions are given of each disease named, including its etiology, symptomatology, etc., it is with special reference to diagnosis and treatment that this work will prove of special service to practitioners. Whoever has to do with Boards of Health, especially, will find this book of special service—those who have to make or verify diagnoses. The engravings are of great value, many of them being reproductions from photographs. We might have wished that the authors had included a chapter on yellow fever by some experienced practitioner, of the same degree of excellence as the other chapters. We cannot more highly express our appreciation of the book as it stands than to wish every practitioner of medicine owned a copy, and would benefit himself by reading every page carefully.

Progressive Medicine. Edited by HOBART AMORY HARE, M. D., assisted by H. R. M. LANDIS, M. D. Vol. III. Sept. 1, 1905. Lea Brothers & Co., Philadelphia and New York. Paper. 8vo. Pp. 298. $6 *per annum.*

This number of the "Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences," is, as usual, replete with information. This issue is devoted to diseases of the thorax and its viscera, including the heart, lungs and blood vessels; dermatology and syphilis; diseases of the nervous system; obstetrics. The usual good index is appended.

Ready Reference Handbook of Diseases of the Skin. By GEORGE THOMAS JACKSON, M. D., Chief of Clinic and Instructor in Dermatology, College of Physicians and Surgeons, New York, etc. *With 91 Illustrations and 3 Plates. Fifth Edition, Thoroughly Revised.* Lea Brothers & Co., New York and Philadelphia. Large 12mo. Pp. 676. Cloth. $2.75 *net.*

The author preserves in this edition the alphabetical arrangement of diseases, reference to any one of which having several names is made easy by the full index. Symptomatology, diagnosis and treatment are the special features of this Handbook. In the present edition eighteen new sections are added, describing as many different diseases of the skin which were not in former editions; in addition, eleven new illustrations have been added. As the Preface states, "each recurring demand for a new edition has been used as an opportunity for bringing the subject matter up to date."

Editorial.

Delay in Issue of this Number

Has been due to the strike of printers in Richmond. It is likely the worst is over, and subsequent numbers will appear on time. The "Strike" accounts also for the use of different kinds of type, etc. used in this issue.

Medical Society of Virginia.

The Program for the Thirty-sixth annual session at Norfolk, Va., October 24-27, 1905, has recently been issued. Including the President's Address and the Address to the Public and Profession, and the papers by the leaders of the discussion on *Nephritis*, there are over sixty papers on the Program—and this without reference to any of the Reports of the special or standing committees—such as that on the Removal of Specific License Taxes from Practitioners of Medicine, etc., and also without reference to the five minutes' Reports of Clinical Cases on Wednesday morning; nor does it include reference to the titles of papers received too late for inclusion in the Program. There are not over 20 hours of sessional work—beginning Wednesday morning—if any time whatsoever be given to the enjoyment of hospitalities so bountifully provided by the profession of Norfolk and Portsmouth.

Twenty minutes is the full limit of time allowed an author to read his paper, and five minutes for each speaker in discussion. Notwithstanding this, it may be safely affirmed that some of the papers, with the discussions thereon, will take up about an hour each. Allowing an average of half an hour for each paper and its discussion, thirty full hours would be required. Now, what is to be done?

The Executive Committee of the Society, after full consideration of the entire matter, has decided to recommend, after finishing the discussion of the subject (Nephritis) selected for general discussion on Wednesday morning, that the Society be divided into at least two sections—one Medical and one Surgical; that a temporary Chairman of each section be chosen; and that the meetings of each section be in halls as convenient as possible to the hall of general meetings—thus enabling members to pass from one section to the other at pleasure, whenever a subject in a section, as announced in the program, is about to be reached. With an average of thirty minutes for each paper and its discussion, if the Society divides itself into two sections, it will be easy to complete the program, and leave ample time as well for general sessions for the consideration of such general questions as interest every member.

It is not probable that in future years, if an opportunity is allowed this year for the reading and discussion of papers that have been carefully prepared, there will be any material lessening in the number of papers. But if year after year authors find no opportunity to present their papers for consideration, the natural apprehension is that they will lose interest in their preparation for future sessions. No one who examines the Program for this year can do less than recognize that it is exceptionally fine, and that the authors generally are able men. The Society cannot afford to lose the interest in its meetings of such men.

Some criticisms may have been thoughtlessly made of the Committee on Program for the arrangement of papers this year. Such parties should recall that alternation of the character of papers has been a part of the policy of the Society for many years. Thus at Roanoke, 1903, papers on medical subjects were to have been the first on the program; but that session was wasted by intrusion of the subject of the Reorganization Plan. At the Richmond session, 1904, papers on surgical subjects had the first place. This year, 1905, the specialties occupy the first position; medicine the second, and surgery the third. Such rotation is essential to keep enlisted the members of the Society who work mostly in different fields of practice—unless the suggestion as to division into sections be carried out.

The outlook for the Norfolk session is most encouraging in every respect. Already the largest State medical society of any of the Union in proportion to the worthy regular medical population of the State, many more will be added to the membership at the Norfolk session—still having the record—almost exceptional—of having Fel-

lows in each of the one hundred counties of Virginia. With the addition to the membership at the Norfolk session, over 80 per cent of the worthy regular doctors of Virginia will be members of the State Society. Remember that homeopaths, eclectics, negroes, quacks, charlatans, etc., are not solicited for fellowship in the Medical Society of Virginia. From carefully corrected lists sent in by representative Fellows in the different counties, only about 300 eligible doctors in Virginia are not members of the Medical Society of Virginia.

Illustrations of Intestinal Parasites.

Messrs. Battle & Co., St. Louis, have just issued the Seventh Series of twelve illustrations of the intestinal parasites, copies of which they will send free to physicians on application for the same.

The Medical Examining Board of Virginia Reciprocates

With the Medical Examining Boards of the following States in issuing medical examination licenses since June, 1904: Indiana, Illinois, Michigan, Nebraska, Delaware, Maryland, South Carolina, New Jersey, and partially with Texas.

SUBSTITUTIONS BY THE PHARMACIST.

That there are some unprincipled retailers in the drug trade, who undertake to substitute in the doctor's prescription "something just as good," as the article prescribed, goes without saying. Such unprincipled pharmacists are often like thieves—hard to catch in the act. When charged with the substitution, their lack of principle or honor causes them to swear to a falsehood, with the grace of an accomplished deceiver. Such parties sometimes lay the ground with well-founded suspicions as to this dishonesty, when traps may be set to catch them. But we are glad to believe that in this community there are relatively few dishonest druggists and pharmacists. Time and again are practitioners 'phoned or told that the pharmacist receiving a prescription has not the exact medicine prescribed, but that he will send out and get the exact prepartion, or else that he does not know where it can be found. Such a course allows the doctor himself to make such modification of his own prescription as the circumstances may justify.

But from the complaints on this question of substitution constantly coming to us from manufacturing chemists, etc., it is evident that they have noticed substitutions. We hope that the bulk of such deceivers do not live in the neighborhood of our physician patrons.

ESTABLISHED PRACTICE AND HOME FOR SALE.

A most excellent opportunity for a physician looking for location is offered by one of our patrons, who will give good reason for contemplating removal. The location is about six miles from Richmond, Va., in a thickly settled trucking farm district. The dwelling is comfortable, and a few acres of rich garden land surrounds it. A worthy and capable practitioner would practically have a monopoly of the good paying practice around this home.

MOORE'S BROOK SANATARIUM, CHARLOTTESVILLE, VA.

Is an ideal country home for the treatment of alcohol and drug habits, as also mental and nervous cases. While possessing the quiet and retirement of the country, it combines the conveniences of a city home in the way of daily mails, telephones, heating, lighting and bathing facilities. What strikes one most forcibly is the absence, so far as possible, of all institutional features. So marked is this feature that at the table, which is attended by patients and members of the staff, it is almost impossible to tell one from the other, unless one knows the parties personally.

Dr. D. M. Trice, the Resident Physician, who is a native Virginian, has had a wide experience in this work, having served five years in the Long Island State Hospital, under the superintendency of Dr. O. M. During; three years in Dr. Hamson's private sanitarium, at Whitestone, L. I.; ten months at Oakwood Sanitarium, Wisconsin, under Dr. W. E. Dold, and two years in his present position.

All objectionable mental cases are completely isolated, while at the same time they have fresh air, exercise, proper attendance, etc.

The business of Moore's Brook is conducted in an ethical manner, as no patronage is solicited save through the medical journals or direct communications with physicians. We are glad to call attention to this place where unfortunate patients of the classes indicated can be treated within the borders of Virginia.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 13. Whole No. 229. RICHMOND, VA., OCTOBER 7, 1905. $2.00 a Year. 10 Cents a Copy.

Original Communications.

APPENDICEAL ABSCESS, PATHOLOGY AND TREATMENT—REPORT OF CASES.*

By S. M. MASON, M. D., Clarksburg, W. Va.
Superintendent and Surgeon-in-Charge, Kessler Hospiral.

My reason for bringing before the Society this much discussed subject is to emphasize as well as possible nature's attempt to protect its victims, and not to urge the peri-appendiceal abscess formation as the condition *par excellance* for appendiceal operations. I wish to present for your consideration and discussion the pathological conditions, both gross and and microscopic, found in the different forms of appendicitis, and to describe and advocate one method of operating after the formation of an abscess.

It was in 1827 that this minute portion of the human anatomy first attracted attention as a source of danger to life; its ailments were first described in 1846 by Volz. It was not until 1848 that any one knowingly operated upon a case of appendicitis, and this had progressed to the stage of abscess formation, so that the first operation we have any knowledge of for this disease was performed for a large peri-appendical abscess. Since then books and papers have been written by the thousand, and as many different methods of treatment ardently advocated. Heroic methods of treatment have been practiced against the ravages of this little organ, and even though quite normal, when its abode is once invaded it seldoms escapes being either removed or inverted. Yet, we seem unable to eliminate the vermiform appendix from our anatomical equipment, and its afflictions have repeatedly caused uncertain medical advice given until the patient is in a moribund condition, when they are sent to a surgeon with every promise of an un-successful result. So it behooves each and every practitioner of medicine or surgery to be always on the alert, and thorough in his examinations, lest he find many cases of dyspepsia, intestinal colic, or belly-ache to be well defined cases of appendicitis, already progressed to the abscess formation before their true nature has been recognized. Before going into the pathology of the disease, it is well to note that there is no one specific micro-organism as the sole etiologic factor in the production of appendicitis, but that it is usually a mixed infection, and any or all of the following organisms may be found: bacillus coli; streptococcus pyogones; bacillus lactis aerogenes; bacillus pyocyaneus etc. It is worthy of mention that the streptococcus is not usually present, and that when present it signifies a virulent infection with a grave prognosis. For scientific as well as practical purposes appendicitis is conveniently divided into the following stages or classes:

1st, *Catarrhal;*
2nd, *Ulcerative;*
3rd, *Perforative;*
5th, *Gangrenous.*

In the first class we find the mildest form of the disease, consisting of congestion and oedema of all the coats of the appendix, especially the mucosa and muscularis, with retention of its contents which are geenrally of a muco-purulent character.

Microscopically, there is an intense infiltration of all the coats with polynuclear leucocytes accompanied by destruction of the mucosa with hemorrhagic and necrotic areas distributed throughout the entire organ. The microscopic conditions differ only in degree in all these cases, and are not so varied as would seem from the gross appearances.

In the second class there is an exaggeration of the inflammatory condition found in the first class. The fluid contents become purulent in character; there is increased tension of the walls of the appendix, and ulcers, one or more, are

*Read before the West Virginia State Medical Society, May 1905.

formed on the mueous surface, being caused largely by the mechanical pressure of the contents or foreign substances. As the ulcer deepens, the inflammatory troubles extends, exciting fibrinous peritonitis with adhesions, involving the surrounding coils of intestines, omentum and parietal-peritoneum, -as a result -of which the distended tube is bound fast in this inflammatory mass. In a large majority of these eases an abundant sero or fibrino-purulent exudate, geenrally grayish in appearance, is found surrounding the appendix in the peritoneal eavity even before any evidence of perforation. This condition is most often present from the beginning of the third day to the seventh or tenth day after the beginning of the attack. Microscopically, the same polynuclear leucocytic filtration is present, but extending more uniformly into all the coats of the appendix, with more general and extensive hemorrhagic, necrotic and gangrenous areas. In cases where nature does her work well, these hemorrhagic, necrotic and gangrenous areas either become infiltrated with leucocytes -and undergo resolution with absorption of the contents of the tube and the peritoneal exudate, or these ulcers extend and terminate in rupture of the tube and the formation of a localized abscess or a general peritonitis.

In the third class, we find the appendix perforated or ruptured; when the tension on the walls of so small a tube is not relieved in from 24 to 48 hours, the circulation is cut off and rupture or gangrene soon sets in. It is here that the periappendiceal abscess is formed. The rupture of the appendix takes plaee in the direction of least resistence; sometimes this is through the bowel, in which event a spontaneous reeovery speedily sets in, but the most frequent site of rupture is through one of the ulcers. Often when the peritoneal adhesions are sufficient, there is a temporary subsidence of the acute symptoms with the rupture of the tube and relief of pressure, so now we have the small abscess, or contents of the appendix ruptured into the walled off portion of the peritoneal cavity forming the peri-appendiceal abseess, the walls of which are made up of the intestines, the omentum and fibrinous peritoneal adhesions. This abscess will burrow in the line of least resistence, either toward the liver, the pelvis, or the abdominal wall, and will finally rupture either into the bowel, the vagina, the bladder, the ureter, into the general peritoneal the remaining pus mopped out thoroughly with dry sterile sponges. At this time, if not beeavity, or through the abdominal wall. When it ruptures into the peritoneal cavity general peritonitis and death soon end the scene. Microseopically; the walls of this abscess cavity are found to consist of a resistent pyogenic membrane, composed of leucocytes imbedded in a fibrino-plastic exudate uniting the neighboring structures, in order to strengthen the barrier against the invasion and spread of the infection.

In regard to the treatment of these cases I will assume that you are all agreed as to the advisability of surgical intervention in all eases of appendicitis, and shall simply deal with the best time and method of operation. Whenever possible, I consider the ideal time for operation, within 48 hours, and better still within 24 hours from the beginning of the first symptoms, but think that the best practical guide is to operate as soon after the diagnosis is made as possible, and the diagnosis should be made in the first 24 hours and not wait until the third or fourth day dilly-dallying. The only exception in regard to this rule as to when to operate, should be some unforseen conditions governing the particular case. However, the operation that I am about to deseribe is taking for granted that an abscess has already formed, and consists of free incision and drainage of the eavity or cavities extra-peritoneally whenever possible, and without irrigation.

Operations Make the skin incision after the fashion of either McBurney or Sonnenburg, as near Poupart's ligament as is consistent with the position of the abscess, expose the field thoroughly, pack sterile gauze over the surface of the incision, and any unprotected peritoneal surfaces or coils of intestine that may be exposed. It is not safe to allow any pus to come in contact with uninfected peritoneum. When the field for entering the abscess has been exposed and the tissues all well proteeted by gauze, then the opening is made, and not before. As soon as the pus begins to escape it is rapidly absorbed on small pledgets of gauze in holders, a fresh one being ready before the saturated sponge is removed from the opening, and this is continued until all the pus is absorbed, and during the entire process none or as little as possible, is allowed to come in contact with the uninfected tissues. When the spontaneous flow of pus eeases, the incision may be enlarged, and

fore, when there is a fecal communication, you will notice an escape of gas and feces which must also be sponged out. Then the exploring finger should be introduced to ascertain if there are any other abscess cavities, or if the appendix is to be found. In the first case, the abscess must be opened through the one already entered, and in the other case, the remainder of the appendix is enucleated from the adhesions, when this can be done without fear of opening into the peritoneal cavity, but under no circumstances should the search for the appendix or other abscess cavities be carried to the extent of breaking up protective adhesions and entering the peritoneal cavity.

I would absolutely condemn the method often advocated of washing out the abscess cavity, or flushing out the peritoneal cavity with antiseptic solutions, as these are sure means of disseminating the infection, producing general peritonitis, and adding one to your mortality list.

The operation is finished by packing sterile gauze gently into all parts of the cavity, arranging the gauze so as to drain from the most dependent part of the incision, but not to make any pressure upon the intestines. The remaining portion of the incision is then closed with interrupted silk-worm-gut sutures. The chief features of this gauze drain are: the entire infected area will be drained; it is a protective pack and must be loosely applied; it must have free exit—when too tight it may be loosened, but must not be removed too soon. In all cases uncomplicated by a fecal-fistula, the gauze should not be removed until the 4th or 5th day, and in small abscesses, it need not be touched for 5 or 6 days. It is by the too early removal of this drainage that the patient's only chance of recovery is often taken from him. In the fecal abscess the adhesions are usually well formed, and no harm is done by changing the dressing whenever soiled. The cases where the abscess has already ruptured and general peritonitis exists had better be left to the tender mercies of those who advise that more die from operation than from appendicitis, for by operating upon this class of hopeless cases others who deserve the benefits of the operation are persuaded against submitting to it at the proper time, and the general cause of surgery is given a black eye. It is my belief, that there is or has been, a period in every case that could have been operated upon in perfect safety.

I shall report to you the histories of a few patients that have come under my care for operation during the past two years as serving to illustrate most admirably this class of cases. These are selected from 24 cases of chronic appendicitis operated upon by the above method without a death.

Case No. 1. C.J., aged nineteen; admitted to the Kessler Hospital, August, 1903, less than six hours after development of first symptoms, in condition of profound collapse, tongue coated white, expression anxious, temperature 99, pulse almost imperceptable at wrists. At operation three hours later, vermiform appendix was found necrotic and gangrenous, containing a small amount of pus; was covered with a fibrino-purulent exudate, and there was considerable exudate in the peritoneal cavity. Appendectomy performed, gauze drain instituted for four days; recovery was rapid and complete; patient was discharged cured on the 26th day. On further inquiry, it was learned that this patient had suffered from sub-acute attacks, having been mistaken for indigestion.

Case No. 2—L. D., male, aged eleven; patient of Dr. H. V. Varner, Clarksburg, W. Va., admitted to the Hospital August, 1903. Had been sick four days with symptoms of intestinal obstruction, persistent vomiting and constipation, but no localization of pain or muscular rigidity. I found upon operation the next day a large deep-seated peri-appendiceal abscess which extended both towards the liver and down into the pelvis. In spite of thorough opening and every effort to keep the incision open it closed too rapidly; on the 21st day he was again brought to the operating-room, and the incision enlarged, a large quantity of pus evacuated, two other abscess cavities were found, and drained through the original opening; recovery complete and rapid after this.

Case No. 3—W. B. D., male, aged forty-six; admitted to Hospital May, 1904. Had been sick two weeks with symtpoms of acute indigestion, having been taken with severe pains while walking on the street, pain so severe and sudden that he was unable to stand or walk; he had to sit down on side-walk for sometime. All attempts to elicit evidence of appendicitis or other suppurative condition negative for two weeks, though examinations were made with that in view. On fourteenth day, evidence of inflammation appeared near and parallel to Poupart's ligament. I removed him to the Hospital and operated the next day, finding the appendix situa-

ted low down and adherent to the posterior aspect of eeeum and ruptured; large abscess found extending in direction of ascending colon; pus evacuated, appendix removed and gauze drain instituted; recovery complete.

Case IV.—J. C., male, aged 32; admitted to Hospital March, 1905. Had been taken siek while at work two days before with what appeared to be severe acute intestinal eolie attended with general abdominal pain and vomiting, and followed by obstinate constipation up to time of operation. At operation seventy-two hours after first symptoms developed, the appendix was found ruptured and an abseess containing several ounees of pus was located at its base. This ease was treated by ineision, removal of the remaining portion of the appendix and gauze drainage; recovery satisfactory, wonnd completely healed and patient left Hospital on 27th day. This ease was typieal of intestinal obstruction, no localization of symptoms, no rise of temperature, yet the suppuration had progressed to rupture of the tube and abseess formation.

Case No. V.—D. F., Italian, aged 20; admitted to the Hospital July 1905. He complained of a lump in right side of abdomen extending towards right lumbar region; it appeared to contain pus and upon operation the same day was found filled with a large quantity of purulent fecal matter; the cavity connecting with the bowel by a large opening. Operation consisted of incision and gauze drainage; the bowels moved freely through the ineision for three or four days, but the feeal-fistula closed completely in ten days, the wound completely elosed and patient diseharged on the 28th day. This ease had been of several months duration, had caused no aeute symptoms —he worked as a laborer the day previous, and walked to the Hospital the day of the operation.

Case No. VI.—C. W. H., male, aged about twenty-two; patient of Dr. H. V. Varner, Camden-on-Ganley, W. Va., admitted to the Hospital Mareh, 1905. Patient had been siek about one week before admission; he presented a ease of well developed appendiceal abscess; incision was made very near Poupart's ligament; disseetion was continued external to the peritoneum, and thus the abscess was entered without contaminating the peritoenal cavity. After the flow of pus eeased, the eseape of gas and fecal matter proved the presenee of a bowel communieation; ganze drainage used. Bowel opening elosed in one week, otherwise, convalescence uneventful and complete.

I have mentioned the above cases not to illustrate any one point, but to recall to all present their responsibility when in attendance upon what appears to be a case of the mildest nature, also to impress upon you the importanee of ever bearing in mind the possibility of appendieitis, so that as many as possible may have the option of the early operation, and that the percentage subjected to the complications of abscess, fecal-fistula, peritonitis, adhesions and seeondary hernia may be greatly reduced.

APPENDICITIS: WHEN TO OPERATE.*

By J. B. CATLTTT, M. D., Staunton, Va.

,Not from my limited experienee alone are my deductions made, but from the experienee of others well known to you as to the importanee of early operations in appendicitis in all eases, as soon as a positive diagnosis is made. The few cases I have been fortunate in gaining the consent to operate early have made an uneventful recovery; and I believe the same would hold good for each and every member of this Soeiety who does surgery, provided he operates early. On the other hand, our most brilliant surgeons have a high mortality if surgieal interferenee be delayed. To impress upon you the urgency of early operation, I will quote the views of some of our most prominent men, both surgieal and medical, and let you formulate your ideas from same.

Holt claims appendicitis to be a surgieal disease, and that many lives are lost beeause operation is postponed too long. Some eases he claims are operated on that might terminate in resolution; but the dangers from the operation *per se* are, at the present time, slight, while even in cases which resolve, the danger of subsequent attacks is always preent, and we have no means of knowing in what eases symptoms of perforated peritonitis may suddenly develop. The tendency at the present time is certainly towards more frequent operative interferenee, and in all cases of doubt it is safer to operate.

Osler says, "So impressed am I by the faet that we physicians lose lives by temporizing with certain cases of appendicitis, that I pre-

*Read before the Augusta County Medical Society, August 9th, 1905.

fer, in hospital practice, to have the suspected cases admitted directly to the surgical side. The general practitioner does well to remember, whether his leanings be towards the conservative or the radical method of treatment, that the surgeon is often called too late; never too early." He further says that there is no medicinal treatment for appendicitis. There are remedies however, that allay pain, but there are none that are capable in any way of controlling the disease.

Boas, a noted specialist of gastro-intestinal diseases, of Berlin, claims that the American profession, taught by sad experience, appreciates the dangers which attend postponement of operations, and, emboldened by the success of modern surgical methods, has learned to be more radical, in their treatment of appendicitis. He also claims there are no specific internal remedies for appendicitis, Treated conservatively, mild cases often recover; and exceptionally, an extra-appendicular abscess ruptures externally or into a hollow abdominal viscus, as a bladder, caecum, rectum, etc., and spontaneous cure follows. The danger, however, and inconvenience of such a condition, are too apparent to call for any comment. We cannot tell how near the appendix is to perforation; and with but few exceptions, the profession have therefore come to regard appendicitis as a surgical affection. A few valuable suggestions are made by Boas, that I have followed in my work, as to urgent symptoms calling for prompt surgical interference. I have found them most trustworthy, and will here briefly enumerate, in hope others may be equally benefitted; Immediate operation is called for in cases of ordinary severity, with sharply defined symptoms.

(a). Whenever there is a tumor present in ileo-caecal region.

(b). Whenever there is a sudden or progressive increase in the gravity of the symptoms.

(c). When, after 36 to 48 hours, the case does not show any tendency to improvement but the condition remains the same.

(d. Whenever there is any doubt as to the existing condition and the patient's improvement, most authorities advise immediate operation.

Deavers, whom we all admire, in his late work on Appendicitis, advises operation in all cases, early if possible, and late otherwise, provided you are not in the face of spreading peritonitis. He states, however, it will be impossible always to tell when you have spreading peritonitis.

Dr. Kelley considers the ideal time to operate in acute appendicitis is in the first 24 hours, the earlier the better. The advantages of early operation given by him are, first, it is safest because it can never be foreseen which cases will go on to suppuration, and which not. Moreover, fatal complications may arise at any time absolutely without warning. Second, the operation is more easily done, as there are no adhesions, as a rule, and, if present, they are not dense; no pus outside of the appendix; the appendix is more easily reached than it can be at a later stage, through dense adhesions and matted intestines. Third, the patient is spared days of suffering, as the attack is cut short, and he has a brief surgical illness, with rapid recovery, instead of a protracted convalescence of weeks or months. He is also saved the pain which attends the changing of gauze where drainage is required. Fourth, liability to recurrent attacks is obviated, and this is not always the case in later operations, for the longer the delay the less the likelihood that the surgeon will find and remove the appendix. It must always be remembered that recovery from the attack does not always mean recovery from the disease. Recovery from the attack may take place under conservative treatment. Recovery from the disease, as a rule, is certain only when the appendix has been removed. Fifth, an early operation obviates the risk of hernia, which is so common in suppurated cases.

In conclusion, I venture to say, most of us have seen the bad results from delay; and none of us have witnessed bad results follow operation within the first 24 hours; and I trust you will carefully consider the importance of prompt surgical means in all cases, early if possible, and late otherwise.

In regard to late cases, I will quote a few lines of an article by Van Buren Knott, of Sioux City, in the *Annals of Surgery* for July, 1905. He gives 19 cases of diffuse septic peritonitis, ten of which were of appendicular origin, treated by irrigation, free drainage, and the sitting posture, with 17 cures. The old methods of handling such cases gave, almost without exception, bad results—as many getting well medicinally as surgically.

As to the handling of patients previous to turning them over to the surgeon, internal medicine does not cure. Where you have to delay operation until a surgeon arrives, I would ad-

vise not to mask the symptoms with opiates, etc., but to try and localize by rest, ice bag, and starvation.

MASTOIDITIS.*

By J. G. PARSONS, M. D, Brookings, S. D.

*Prepared for the 24th annual meeting of the South Dakota State Medical Association, at Deadwood, S. D., July 5th-7th, 1905, but not read because of author's absence.

It has been the observation of the writer that too little attention is paid to infections of the middle ear and its surrounding tissues. It seems that the gravity of such conditions together with the danger of extension to vital parts is not appreciated as it should be. This paper is written in the hope that it may stimulate an interest in infections of the middle ear and their sequelae.

If we but recall our student days we will remember, however fleeting our knowledge of anatomy, that the temporal bone presents a multitude of anatomical points crowded together in a small space. The tympanic cavity is connected with openings into the pharynx and the mastoid process. The mastoid is filled with cells of varying sizes which communicate with the tympanic cavity through the antrum. In connection with these are to be considered certain cells which occupy the root of the zygoma. All these cavities are lined with mucosa throughout, which serves as periosteum. The bony walls of these cavities are in places very thin, so that a slight amount of necrosis would perforate into the cranial cavity.

The groove for the lateral sinus cuts deeply into the mastoid process. Its position varies greatly, rendering it liable to injury in operation. Necrosis of its walls may result in infection of the sinus. The anterior cells of the mastoid are in close relation with the posterior wall of the external auditory meatus. With these few anatomical points in mind we may consider the pathological conditions which may arise from their infection in course of otitis media.

Of the different infections atacking the middle ear, probably influenza and streptococci are chiefly concerned in causing extension into the mastoid.

The opening into the antrum is so situated that the recumbent position allows pus from the middle ear to gravitate into it. Nearly all cases of otitis media are accompanied by empyema of the antrum, which in most cases drains itself when the drum-head is perforated. If the infection be a very virulent process and attended by profuse suppuration, there is great danger of extension beyond the antrum into smaller cells from which drainage is difficult. This may come from continuity of tissue, increased pressure brought about by congestion, profuse suppuration and gas formation, or capillarity. This backing up of pus into smaller cells with small openings affording poor drainage, makes new foci for infection. From these points the infection may extend by continuity, or by metastases, through blood and lymph channels until the whole process is involved. The metastatic foci of infection may be in the midst of healthy tissue.

Destruction of the mucosa cuts off the nutrition from the underlying bone and adds necrosis to osteitis by which the bone has been affected. The inflammatory process may not go on to this extent. The exudations may be absorbed. A necrotic mass may be surrounded by new bone. An effort to extrude the sequestrum may be made as in inflammations of bone elsewhere. The extension of the inflammatory process to the surface, either by metastases or necrosis will result in an inflammation of the membrane covering the surface. If, fortunately, it is the external surface, there will be periostitis, with swelling and abscess formation. If the inner surface is reached, it may result in meningitis, epidural or cerebral abscess, or, if the wall of the sinus is affected, phlebitis, pyaemia and metastatic abscesses.

With the foregoing brief pathological outline in mind, we are in a position to interpret the significance of symptoms which may be encountered in a case of otitis media.

Every case of otitis media should be carefully watched and the patient informed of the serious nature of such infections. The laity are as a whole ignorant of such things. Many of them are greatly concerned about every belly-ache lest it prove to be appendicitis, but they regard a running ear as lightly as a common cold.

Every case should receive careful examination with head mirror and speculum. The appearance of the drum-head and posterior wall of the external meatus should be noted. Swelling of the posterior superior wall and the adjoining quadrant of the drum-head is indicative of inflammation of the antrum and cells lying next to the posterior wall of the bony meatus. The size of the perforation and amount and character of pus, should be noted. A profuse suppuration continuing several days after a free opening in the drum-head has been made, points to a suppurating surface greater than that of the tympanic cavity alone. It may be then inferred that the antrum and adjoining mastoid cells are contributing to the suppuration.

Tenderness on pressure, indicates inflammation

order: Over the antrum, tip, opening of the mastoid emissary vein and posterior bony wall.

Swelling over the mastoid process with abscess formation is a late symptom. The diagnosis should be made before this occurs. The pain felt is deep-seated in character, radiating from the mastoid to the parietal, occipital and temporal regions. Temperature is usually slight, and out of proportion to the amount of inflammation and pus formation.

A furnucle of the external meatus might confuse the diagnosis. The following points of difference are noted: Mastoiditis follows otitis media. The swelling develops after pus discharge. Pain and tenderness are not relieved by discharge. The auricle is usually not sensitive. The mastoid is sensitive. A furnucle is not associated with otitis media. Discharge follows painful swelling and relieves it. Auricle is tender and swollen. The mastoid is not sensitive to pressure.

Good surgery has been described as a combination of knowledge of anatomy and pathology with common sense. This is especially true of aural surgery. With a clear picture of the pathological anatomy in mind, Schwartze applied the common sense principles of surgery to mastoditis and gave us the rational method of treatment, namely, the complete removal of all necrotic tissue and thorough drainage.

If drainage were perfect in all cases of otitis media, there would be few mastoid complications. Hence the importance of an early free incision of the drum-head.

Wilde's incision has for some years been condemned as an ineffiecient and temporizing measure. The cases in which it seems to be beneficial are cases of good luck, whch is a poor surgical asset to depend upon. Much valuable time may be lost in waiting to see what Providence is going to do after a Wilde's incision, external or internal.

The applcation of heat and cold in a case where mastoiditis has been diagnosed, belongs in the same class with Wilde's incision and for like reasons. We can not tell to what extent the inflammatory process has gone. It may be slight, or it may be on the point of perforating internally into the sinus or meninges. With these possibilities confronting us, all such temporizing measures should be left out of consideration and radical measures promptly taken. This is true conservatism. By operating early, we not only save valuable time, but get better results, as far as hearing is concerned. McCaw's statistics show that cases operated during the first week of the disease recovered with normal hearing in 72½ per cent., and severe deafness in none. During the second week, 60 per cent. normal hearing and severe deafness in 13 per cent. During the third week, 16 2-3 per cent recovered with normal hearing, and 50 per cent. with severe deafness.

Preliminary to operation, it is well to administer a brisk cathartic to promote elimination. The hair, for a radius of three inches from the external meatus is clipped, and the rest of the scalp washed. A good shampoo for a male patient, and careful combing back of the long hair of the female, makes an approach at cleanliness which is desirable to have outside the field of operation. The whole field is scrubbed thoroughly, and shaved. It is then to be washed with a good antiseptic, 1 per cent lysol being the writer's preference. The auricle and external meatus and adjoining part of the face are cleansed in a similar manner. After cleansing the external canal, it is packed with antiseptic gauze. The field of operation is surrounded with antiseptic towels.

Proceeding under strict asepsis an incision is made extending from the tip of the mastoid to the upper attachment of the auricle, following the line of the posterior attachment at a distance of about 1-4 inch. The incision is carried through periosteum to bone. All bleeding points are stopped and the periosteum retracted well in all directions, taking care not to injure this membrane unnecessarily. The wound may then be held open with a self-retaining retractor, like Allport's or Jack's.

If there are any fistulous openings in the bone, they are to be explored with a probe and followed up with curette and chisel. If the bony surface is sound, it is chiselled away in thin chips until an opening into the cells has been made. The first opening should be made as far forward as practicable to avoid the sinus. The direction of the blows should be away from the supramastoid spine, to avoid possible perforation into the middle cranial fossa.

As soon as a cavity has been encountered it is explored with a flexible probe and an effort made to find a channel leading toward the antrum. The antrum will be found in nearly all cases in the lower angle of the suprameatal triangle of Macewen. This triangle is formed above by the supramastoid crest, in front by the margin of the upper half of the posterior wall of the bony meatus, and a line perpendicular to the former erected at the lower end of the latter.

The bone is chipped away from the surface as far up as the site of the antrum and overhanging edges removed with ronguers. Necrotic tissue is scooped out with curettes and the whole cellular structure of the mastoid made into a funnel-

shaped cavity leading into the antrum. Whiting urges the removal of the tip and clearing out of the zygomatic cells in every case. Blake and Hammond seem to get results equally as good with less destruction of sound tissue.

If the necrotic process has extended through the inner table, it should be followed up and drained, as should the sinus in case of thrombosis. The walls of the cavity made are smoothed carefully with curette and gouge, and cleansed with an antiseptic douche. My preference is, 1-1000 alphozone. This is powerfully antiseptic and nontoxic. A douche of this kind gives the granulations a fair start without having to combat as much infection. The wound is dried and packed with iodoform gauze. The ends of the wound may be brought together with a stitch or two. The external canal is cleaned again and a strip of iodoform gauze inserted. A sterile dressing is placed over all, so arranged that the gauze in the ear may be removed without disturbing the mastoid dressing.

The ear is dressed daily, but the mastoid packing is left in four or five days, unless there is a great amount of oozing and a rise of temperature. The wound is packed in a similar manner, leaving the dressing two or three days, using the same aseptic precautions as at operation. This is continued until the wound has granulated in well from the bottom. Care should be taken to have the gauze used in packing, free from loose fibers. These are liable to become entangled in the granulations and delay healing.

After the wound is filled in well at the bottom, it may be filled with boric acid and the gauze packing dispensed with. The bandage may then be displaced by a collodion dressing.

Care must be taken to avoid inversion of the skin in the healing process. This is something unavoidable, but with care in packing and curetting away the overgrowing edges, a fairly smooth scar may be obtained.

The length of time required for healing is very variable. From three weeks to as many months, and sometimes longer, may be required. The delay may be due to feeble granulations. These may be stimulated by balsam Peru or gentle curetting, Too-tight packing is to be avoided. The skill required in the successful dressing of a mastoid wound is not less in its way than the operaton itself.

THE DIAGNOSIS OF PREGNANCY AT TERM.*

By GREER BAUGHMAN, M. D., Richmond, Va.,
Lecturer on Hygiene and Hemotology Demonstrator of Physiology Medical College of Virginia.

The diagnosis of pregnancy at term involves much more than the simple knowledge of the foetus. If that were the only question involved, the procedure would be so simple as to scarcely justify a discussion before such a represeneative body of physicians as those present. The diagnoisis of pregnancy at term includes the position of the child, the size and state of health of the foetus; the date of impending birth; the size of the mother's pelvis and her state of health. „ ,

It is a praiseworthy custom for the physician who has been honored by geing employed to attend a case of labor, to make an abdominal examination of the mother within the last month of her pregnancy to ascertain if all's well. Not only should such an examination be carefully made, but a sample of urine from a 24 hour supply should be examined to see whether the kidneys are properly performing their function.

This examination should be made at the woman's home. She should be dressed in her gown or a loose-fitting wrapper, so that the abdominal manipulations may be made with accuracy. It is not usually necessary at this time to make a vaginal examination which should be done only where we have established a narrow pelvis or where we suspect any tumorous or other impediment to the oncoming head.

In making the external abdominal examination, it is well to follow a definite method, and not to have a hit or miss system. Out of the chaos of external examination, my honored teacher, Geheimtath Leopold, of Dresden, has arranged the best system. He directs that the examinations be made in the following order:

I Movement. Sitting on the right side of the reclining woman, the finger tips are placed together and the hands slide over the abdomen from symphysis to fundus. When the fundus is reached, the hands envelop it and the distance beneath the ribs is ascertained in finger breadths. This movement gives us much information: (a) the size of the uterus; (b) the relative amount of amniotic fluid present; (c) the power and thickness of the abdominal walls; (d) whether the foetus is in a cross or lengthwise position.

II Movement. Beginning at the fundus with the hands lying flat, the fingers are pressed into the uterus, the hand on the one side pressing uniformly in, while the hand on the opposite side presses in finger after finger. This movement is continued on each side from fundus to symphysis until the parts of the child are well made out.

This movement gives us (a) the head or the breach in the fundus, or, in case of a cross position, the absence of these parts there; (b) the long, curved back on one side or the other in the case of a lengthwise position; (c) the presence of small parts on one side or the other (the foot, when pressed upon, will kick, the hand will usually be withdrawn); (d) the activity of the child.

III Movement. The thumb of the right hand is extended from the compressed fingers as far as possible. The arch between the thumb and fingers is pressed into the lower portion of the abdomen just above the symphysis, until a marked resistance is felt; then the fingers and thumb are brought together and the part of the child between them is felt and carefully examined.

Of all the movements, this is the most important. With its aid we are often able to diagnosticate the position without bringing the other movements to our aid. It demonstrates to us (a) what part is presenting (the head is hard and resisting, the breech soft, the small parts can be readily ascertained); (b) it gives us an idea of the fixity of the part, *i.e.* whether the woman has entered into labor; (c) if it is the head, the position of the foetus can be readily made out (the sharp, pointed forehead can be distinguished from the rounded occiput; (d the quantity of vertex within our grasp, indicates whether the os is completely dilated or not; (d) it shows that the foetus is narrowed and indicates what variety of contraction we have to deal with a generally contracted pelvis; if the head stands high and is pushed over the symphisis, then we are probably dealing with a flat pelvis, etc.).

IV Movemeit. The physician stands with his face towards the patient's feet; the palms of his hands are towards the abdomen and he thrusts his hands on each side, into the true pelvis from above. This is used only when the head has passed through the os and is on its way to the outer world. It again indicates the position, because the pointed bregmon can be found on one side or the other.

V Movement. The fingers are pressed upon the labia and the position is felt without entering the vagina.

Geheimrath Leopold proves his diagnosis position before birth by the heart sounds. The diagnosis of position is made, and the point between the shoulders is marked with the finger. If the heart sounds are not loudest at this point, then the diagnosis is incorrect.

The internal diagnosis is to be resorted to as a last resort; but the skilled obstetrician ought never to be compelled to use this merely for diagnosis. It is so familiar that it would be supererogation to bring out the diagnostic points here.

The size of the child, and particularly the adaptability of the foetal head to the pelvis, can

The state of the foetus' health can be found out by its activity and by the frequency and regularity of the heart sounds, bearing in mind always that the foetal heart sounds disappear during a firm contraction of the uterus. Arhythmic and pronouncedly accentuated sounds are be ascertained during the abdominal maneuvers. suspicious. When both of the heart sounds become accentuated, that alone is often sufficient to justify the use of forceps.

One of the most difficult things to ascertain is the date of impending birth. We know that, as a rule, the uterus at the end of the tenth lunar month, is two finger breadths below the ribs. We know that the length of pregnancy is usually 280 days. The old fashioned rule of counting seven days and nine months from the first day of the last menstruation, is also familiar. None of these methods is infallible because the women often forget when they menstruated last, and because they often see their flow after pregnancy has set in. The best way is to be not too positive, especially with primiparae.

A pelvimeter should be in the obstetrical bag of every doctor. Not that the contracted pelvis is very frequently met with in this community, but because it is always best to be on the safe side. Our women have plenty of meat; hey do not go into the factories and work as the European women do; consequently, a contracted pelvis is a great novelty.

Distance between the spines, 26 cm.

Distance between the crests, 28 cm.

Distance between the trochanters, 31 cm.

Distance between the oblique 10 to 14 cm.

A good rule to follow is that with a head not engaged, if the promontory can scarcely be felt we may rest easy—we have a normal pelvis. If on the other hand, the promontory is readily touched through the vagina, the pelvis is contracted and we would be criminally negligent if we did not carefully measure the pelvis and proceed to make such an interference with natural labor as was indicated.

IMPORTANT CHANGES IN THE NEW PHARMACOPOEIA.*

By FRANK M. READE, M. D., Richmond, Va.,
Professor of Materia Medica and Therapeutics, Medical College of Virginia.

Every civilized country in the world has a pharmacopoeia. In all of them except the United States it is issued by the government, but in this country the work is left to a convention consisting of delegates appointed for the purpose by the various medical and pharmaceutical colleges, the State medical and pharmaceutical associations, the medical corps of the Army and Navy, the Marine Hospital Service, the American Medical Association and the American Pharmaceutical Association, the number of delegates not exceeding three from each body. While not having the authority of a work issued by the government, it is officially recognized by it and by most if not all of the States, and penalties are prescribed for deviation from its standards in many of them.

The first United States Pharmacopoeia was issued in 1820, and since that time, it has been revised every ten years. Heretofore, it has been customary to designate each revision by affixing the year of the meeting of the convention for revision, the preceding revision being known as the Pharmacopoeia of 1890 although it did not become official until Jan. 1, 1894. The work of revision has increased to such an extent, however, and the time of publication is now so many years subsequent to the meeting of the convention, that it has been decided to drop this custom, and the present Pharmacopoeia, which became official Sept. 1, 1905, is known as the "Eighth Decennial Revision."

In 1890, the Pharmacopoeial Convention refused to accord recognition to any proprietary article. In the present revision, the Committee was authorized to admit any product of nature of known origin; also any synthetized product of definite composition which was in common use by the medical profession, the identity, purity or strength of which could be determined. The Committee was further instructed, however that no compound or mixture should be introduced if the composition or mode of manufacture thereof was kept secret, or if it was controlled by unlimited proprietary or patent rights. Because of this limitation, many preparations which are now largely used could not be admitted. Some synthetic products, however, which are still controlled by patents have been admitted as the patents will soon expire on account of the time limit. These preparations have not been listed under their trade names, but new names based on their chemical composition have been given to them. Their names will seem awkward at first, but constant use will make them familiar and suitable abbreviations will soon take their place in prescription writing. The following table shows the official names of some of the new preparations and the proprietary, trade or common names by which these or similar preparations are known.

Official Name.	Proprietary, Trade or Common Name.
Acetphenitidinum	Phenacetine.
Aethylis Carbamas	Urethane
Aethylis Chloridum	Kelene.
Antipyrina	Antipyrina.
Benzosulphinidum	Saccharine
Benzaldehydum	Synthetic Oil of Bitter Almond.
Cataplasma Kaolini	Antiphlogistine.
Chloralformamidum	Chloralamide
Cinnaldehydum	Synthetic Oil of Cassia.
Cresol	Cresol
Eugenol	Synthetic Oil of Cloves
Hexamethylenamina	Urotropine.
Iodolum	Iodol.
Liquor Antisepticus	Listerine
Liquor Cresolis Compositus	Lysol.
Methylthiononae Hydrochloridum	Methylen Blue.
Pulvis Acetanilidi Compositus	Antikamnia
Saffrolum	Synthetic Oil of Sassafras.
Sulphonmethanum	Sulphonal
Sulphonethylmethanum	Trional.
Thymolis Iodidum	Aristol
Syrupus Hypophosphitum Compositus	Fellows' Syrup

Including those just mentioned, 117 new drugs and preparations have been added and 151 which were formerly official, have been dropped. The drugs and preparations which have been dropped constituted nearly one-sixth of those that were official in the Pharmacopoeia of 1890, but so few of them were used by the practitioner of modern times, that they are not of sufficient importance to be mentioned in the limited time allotted to this paper. Of the other new pre-

*Read before Richmond Academy of Medicine and Surgery September, 1905.

parations added to those official, some are worthy of special notice. The preparation of witchhazel frequently prescribed as distilled extract of witchhazel, is now official under the name of aqua hamamelidis. The alkaloid cocaine has been made official. Formerly, the hydrochlorate, or as it is termed in the new Pharmacopoeia, the hydrochloride, was the only official salt. The latter is soluble in water while the former can be dissolved in an oily preparation thus affording the means of using this drug in oil sprays, etc. Emulsion of cod liver oil and emulsion of cod liver oil with hypophosphites have been made official so that it will be no longer necessary to prescribe proprietary preparations when these remedies are indicated. Emulsion of oil of turpentine is also official, and contains approximately ten minims to the teaspoonful. Among other additions, are extract of Malt, aromatic fluid extract of cascara sagrada, dried suprarenal and thyroid glands, guaiacol, guaiacol carbonate, homatropine hydro-bromide (formerly known as Homatropine Hydrobromate a compound solution of sodium phosphate which represents approximately a drachm of the salt to the teaspoonful, an effervescent magnesium sulphate, oleates of atropine, cocaine and quinine, pelletierine tannate, antidiphtheritic serum, wine of coca and zinc stearate.

A new feature which will commend the book to all teachers of materia medica and to many general practitioners, is the introduction of average approximate doses for adults, and where deemed advisable, also for children. Heretofore, we have had no official standard of doses and have had to depend on the authors of text-books whose opinions differ widely, modified by our own clinical experience. In establishing this standard for doses, no attempt has been made to specify minimum or maximum doses, and in the preface, the Committee makes the following distinct declaration: *"That neither this Convention, nor the Committee of Revision created by it, intends to have these doses regarded as obligatory on the physician or as forbidding him to exceed them whenever in his judgment this seems advisable."*

Reasonably simple processes of assay for many of the potent drugs and preparations have been given, thus assuring to the physician assayed preparations of these remedies which are mainly used in important cases where reliability and rapidity of action are demanded.

In this, as in the last revision, the metric system of weights and measures is exclusively used in designating quantities, except in the case of doses which are given in both metric and English quantities.

The Committee of Revision makes an entirely reasonable request that physicians and pharmacists will use the official Latin or English name in prescribing or speaking of remedies, so that synonyms will gradually become obsolete. They say that much confusion in prescribing and dispensing will, in the future, be averted if this request is granted. In the furtherance of this desire, they have printed very few synonyms in the text of the book, but in the index the synonyms are printed in smaller type under the official Latin titles and in alphabetical order in ordinary type, followed by the official Latin title, so that no difficulty will be found in ascertaining the proper title for the names of the substances or preparations which are regarded as synonyms.

For many years an effort has been made to establish an International Pharmacopoeia. This has been practically abandoned; but in September, 1902, a conference was held in the city of Brussels for the purpose of establishing uniform formulas for the preparations of the more potent remedies. Nearly every civilized country in the world was represented; and the recommendations of this Conference have been adopted by the Committee of Revision except in a few instances. This has made necessary a number of changes in the strength of important official preparations. A uniform strength of 10% has been adopted for the tinctures of the potent drugs and 20% for practically all of the others. It is important that all physicians should be familiar with these changes, as it has resulted in a decrease of strength of some and an increase in others; and unless the changes are known, the result will be a disappointment in the effect expected to be obtained in some cases, and excessive dosage in others. The following preparations have been increased in strength:

Aromatic Sulphuric Acid from 18.5 to 20 per cent.

Alcohol from 91 to 92.3 per cent.

Diluted Alcohol from 41 to 41.5 per cent.

Effervescent Citrated Caffeine from 2 to 4 per cent.

Extract of Opium from 18 to 20 per cent of morphine.

Basham's Mixture from 2 to 4 per cent of tincture of iron.

Solution of Ferric Tersulphate from 28.7 to 36 per cent.

Oleate of Mercury from 20 to 25 per cent.

Ointment of Chrysarobin from 5 to 6 per cent.

Tincture of Sweet Orange Peel from 20 to 50 per cent.

Tincture of Calumba strength doubled.

Tincture of Cardamon strength doubled.

Tincture of Cinnamon strength doubled.

Tincture of Quassia strength doubled.

Tincture of Rhubarb strength doubled.

Tincture of Serpentaria strength doubled.

Tincture of Tolu strength doubled.

Tincture of Cantharides strength doubled.

Tincture of Capsicum strength doubled.

Tincture of Strophanthus strength doubled.

The following preparations have been reduced in strength:

Chlorinated Lime from 35 to 30 per cent.

Solution of Ferric Chloride from 37.8 to 29 per cent.

Effervescent Lithium Citrate from 17 to 5 per cent.

Effervescent Potassium Citrate from 48 to 20 per cent.

Glycerine Suppositories from 6 Gm. to 3 Gm. in weight.

Syrup of Ferrous Iodide from 10 to 5 per cent.

Troches of Cubeb from 0.25Gm. to 0.125Gm. of oleoresin in each.

Ointment of Phenol from 5 to 3 per cent.

Ointment of Sulphur from 30 to 15 per cent.

Tincture of Ferric Chloride from 13.6 to 13.28 per cent.

Tincture of Veratrum from 40 to 10 per cent.

Tincture of Aconite from 35 to 10 per cent.

Tincture of Lobelia from 20 to 10 per cent.

Tincture of Belladonna Leaves. Strength reduced 33 1-3 per cent.

Tincture of Indian Cannabis. Strength reduced 33 1-3 per cent.

Tincture of Colchicum Seed. Strength re- 33 1-3 per cent.

Tincture of Digitalis. Strength reduced 33 1-3 per cent.

Tincture of Gelsemium. Strength reduced 33 1-3 per cent.

Tincture of Hyoscyamus. Strength reduced 33 1-3 per cent.

Tincture of Physostigma. Strength reduced 33 1-3 per cent.

Tincture of Sanguinaria. Strength reduced 3 13 per cent.

Tincture of Squill. Strength reduced 33 1-3 per cent.

Tincture of Stramonium. Strength reduced 33 1-3 per cent.

Wine of Colchicum Seed. Strength reduced 33 1-3 per cent.

Wine of Ergot from 15 to 10 per cent.

Tincture of Benzoin Compound from 12 to 10 per cent.

Tincture of Gambir Compound 10 to 5 per cent.

Tincture of Kino from 10 to 5 per cent.

Some of the other changes in the standards of strength are as follows:

	U. S. Pharmacopœia, 1890.	*Eighth Decennial Revision.*
Pow'd Opium	13.5 p.c. to 15 p.c.	12 p. c. to 12. 5 p.c. morphine.
Deodorized "	13.5 p.c. to 15 p.c.	12 p. c. to 12. 5 p.c. morphine.
Tincture "	1.3 p.c. to 1.5 p.c.	1.2 p. c. to 1.25 p.c. morphine.
" Deod. "	1.3 p.c. to 1.5 p.c.	1.2 p. c. to 1.25 p.c. morphine.
Whiskey	44 p.c. to 50 p.c.	37 p. c. to 47. 5 p.c. abs'l'te alc.
White Wine	10 p.c. to 14 p.c.	7 p. c. to 12 p.c. " "
Red Wine	10 p.c. to 14 p.c.	7 p. c. to 12 p.c. " "
Cinchona	At least 2.5 p.c. of quinine.	At least 4 p.c. of ether—soluble alkaloids.
Extract of nux vomica	15 p.c.	total alkaloids, 5 p.c. strychnne.
Fl. " "	1.5 "	" " 1 " "
Tincture " "	0.3 "	" " 0.1 " "

In addition to these, there are 55 drugs and preparations which are now required to conform to a definite standard, for which no standard was fixed in the Pharmacopoeia of 1890.

Perhaps of less importance, but having interest for those who take pride in correct prescription writing, are the changes in official Latin titles. The following are a few of those which refer to drugs and preparations which are in common use:

Pharmacopoeia of 1890.	Eighth Decennial Revision.
Acidum Arsenosum	Arseni Trioxidum.
Acidum Carbolicum	Phenol.
Ammonii Valerianas	Ammonii Valeras.
Amyl Nitris	Amyli Nitris
Apomorphinae Hydrochloras	Apomorphinae Hydrochloridum.
Aqua Chlori	Liquor Chlori Compositus.
Chloral	Chloralum Hydratum
Cocoainae Hydrochloras	Cocoainae Hydrochloridum
Extractum Fluidum	Fluidextractum

Morphinae Hydrochloras	Morphinae Hydrochloridum.
Quininae Hydrochloras	Quininae Hydrochloridum.
Resorcinum	Resorcinol.
Salol	Phenylis Salicylas
Sodii Hyposulphis	Sodii Thiosulphis
Sodii Sulphocarbolas	Sodii Phenolsulphonas
Spiritus Glonoini	Spiritus Glycerilis Nitritis.

In closing, I wish to commend the Pharmacopoeia as a book which ought to be in the library of every physician who is not willing to practise with proprietary preparations about which he knows little except what may be told him by the detail men who bring him samples. It contains a great deal of information of value, and the price, $2.50, places it within the reach of all. There is no other medical work of so great importance which is sold at so small a price, and when you consider that it will remain unchanged for ten years and that calculating on this basis, it costs but 25c a year to have this valuable book of reference at your command, it seems hardly reasonable that any physician should be without it.

Among the valuable practical features to be found in it, are a list of articles added to the Pharmacopoeia; a list of articles dismissed from the Pharmacopoeia; a list of changes of official Latin titles; a list of changes of official English titles; a comparative table showing the strength of the more important pharmacopoeial substances and preparations in the preceding and in the present Pharmacopoeia, and a list and description of all the official drugs and preparations. These are only a few of the features which ought to commend the book to all physicians; but aside from these, to have an authoritative list of doses is worth the price.

307 Grace Street East.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE. M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery,
University College of Medicine, Richmond, Va.

Lecture XI.

Varieties of Inflammation Classification. (A) By Cause—Microbic; (B) By Degree—Acute—Sub-Acute—Chronic; (C) By Product—Transudate—Exudate; (D) By Tissue—Vascular—Non-Vascular.

While all inflammatory processes present the same pathological changes and the same symptomatic results that have just been described, there are many different varieties of inflammation. There is but one kind of inflammation, but the process in a given case may be so modified by the character of the cause, by the acuteness or chronicity of the attack, by the product which results, and by the variety of tissue primarily affected that many types may be distinguished.

A. By Cause.

The first and most apparent division of the different types of inflammation is based on the character of the cause. Thus the germ of suppuration will produce suppurative inflammation; the germ of erysipelas will produce erysipelas inflammation; the germ of tuberculosis will produce tubercular inflammation, etc.

B. By Degree.

The second division is based on the rapidity with which the inflammatory process develops. If it comes on quickly, it is called "acute inflammation;" if more slowly, "sub-acute inflammation; and if even more tardily, "chronic inflammation." The three types may be due to a modified intensity of the same cause or to a difference in resistance of the same tissues. The difference as stated is merely one of degree, and it is often impossible to say in a given case whether a patient has an acute or sub-acute process, or in another whether it is sub-acute or chronic. When we contrast the extremes, however, there is a distinct symptomatic and pathologic difference. Acute inflammatory processes are caused by the action of germs of great virulency acting on tissue of low vitality, the symptoms develop rapidly and characteristically, and the condition soon reaches one of its three possible ter-

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University Colleie of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

minations, namely, resolution, suppuration, or gangrene. Chronic inflammatory processes are caused by the action of germs of attentuated power on tissue of good resistance, the symptoms develop slowly; frequently some of them are inconspicuous or absent, and the process is more or less abiding with the patient; that is, it shows little tendency to select the method of its termination. The most distinctive difference between acute and chronic inflammation, however, is in the source of the new cells which form the inflammatory exudate.

In acute inflammation the intensity of the toxins elaborated by the microbic cause produces extensive alteration in the capillary walls and there is the emigration of immense numbers of leucocytes. The formative cells in the perivascular structure are killed and no embryonal cells are formed. Therefore in acute inflammation practically all of the exudate consists in the leucocytes that have escaped from the vessels. In sub-acute inflammation, a condition mid-way between acute inflammation and chronic inflammation, the poison is of sufficient intensity to cause some alteration in the capillary wall and to permit the escape of a moderate number of leucocytes. It is not potent enough to kill all of the formative cells and some are stimulated to increased proliferation. Therefore in sub-acute inflammation the exudate consists of cells derived from both emigrated leucocytes and from embryonal or granulated tissue.

In chronic inflammation the toxines do not markedly increase the porosity of the capillary walls and but few of the histologic elements of the blood escape. The noxae act principally upon the formative cells. They are not powerful enough to kill them but they are sufficiently irritating to stimulate them, and as a result there is rapid proliferation. Therefore in chronic inflammation nearly all of the exudate consists of newly formed embryonal cells.

Chronic inflammation frequently results in the production of an accumulation of embryonal cells, the deposit being technically spoken of as a 'granuloma." This is especially true in chronic inflammation of syphilitic, tubercular or actinomycotic origin. Often the development of granulomata are so insidious and the local symptoms of inflammation are so inconspicuous that the swellings are taken for tumors. Microscopic examination will show, however, the characteristic appearances of inflammation and will demonstrate the fact that the pseudo-tumor is formed of elements derived from the proliferation of the formative cells of the part under stimulation of attenuated toxins, the result of microbic infection. If a granuloma be mistaken for a tumor and carelessly incised there is likely to follow secondary infection with pyogenic organisms and disastrous results to the patient. The proper treatment of granulomata consists in an effort to eliminate or render harmless the primary microbic cause by medicinal treatment. The feeble embryonal cells should not be exposed by an incision to the danger of secondary infection unless the surgeon feels reasonably certain that by an operation he can completely remove the entire inflammatory deposit.

C. By Products.

A third classification of the different types of inflammation is based on the product or results produced in the tissues involved. Thus, for instance, inflammatory action is sometimes followed by saturation of the tissues with fluid, again by infiltration with cells, again by the pigmentation with blood, again by the formation of pus, and finally by the death of the part.

1. *Transudative inflammation* is that type of inflammation in which transudation, or the escape of the fluid element of the blood from the vessels, is greatly in excess of exudation or the escape of the corpuscular elements of the blood. This condition usually occurs when the tissues infected are elastic and distensible and do not afford mechanical support to the vessel walls or offer resistance to the percolation of fluid between their fibres. In transudative inflammation there is rapid swelling, the overlying skin becomes thick and glazed and the edematous part becomes "doughy" to the touch and pits on pressure.

2. *Exudative inflammation* is that type of inflammation in which exudation or the escape of the corpuscular elements of the blood is in excess of the transudation or escape of the fluid element. This is a condition most often seen in the compact type of soft tissue, and is generally indicative of an acute well localized inflammatory action such as follows infection with the staphylococci of suppuration. In exudative inflammation swelling is not great, but the part becomes "brawny" and on palpation a "cake-like" mass can be felt which is sometimes so sharply defined as to feel like a foreign body.

III. Hemorrhagic inflammation is that type

of inflammation in which the red blood corpuscles are present in the tissue or in the discharge, in sufficient numbers to give them a reddish tinge. In every case of inflammation a few colored corpuscles escape from the vessels, but it is only under exceptional conditions that their presence can be detected without the use of the microscope. When the red blood cells escape sufficiently to cause the case to be classified as hemorrhagic inflammation it is indicative either of infection of the part with germs of great virulency or else of local or constitutional weakness on the part of the patient from age, debilitating disease, or organic affections of the heart, liver or kidneys.

IV. Suppurative inflammation is that type of inflammation in which the exudate and transudate become converted into pus. Owing to the specific action of pyogenic germs the escaped leucocyte, or the newly formed embryonal cell, is transformed into pus corpuscles and the transudate, fluid or coagulated, changed to pus serum. Often in acute inflammation the infection is primarily with pus germs, but sometimes in chronic inflammation the infection with pyogenic organisms is secondary. As an illustration of the latter may be cited a granuloma produced by the bacillus of tuberculosis, which after months of apparent inactivity suddenly becomes the seat of acute suppurative changes due to the secondary infection of the deposit of embryonal cells with pyogenic cocci.

V. Gangrenous inflammation is that type of inflammation in which as a result of the inflammatory process there is death of the part. This condition may be due either to the intensity of the poison elaborated, or to the arrest of the circulation from pressure on the blood vessels. It is the most malignant type of inflammation and is usually seen in very acute infection of soft structures, such as in a carbuncle, or may sometimes follow infection of unyielding structures like bone, as in the case of osteo-myelitis.

D. By Variety of Tissue Affected.

The fourth and last general head under which the types of inflammation are classified is based on the variety of tissue primarily affected. Tissues may be divided into vascular tissues, or those containing blood vessels, and non-vascular tissues, or those containing no blood vessels and depend for nutrition upon plasmic streams. Under vascular tissues we consider the following:

1. *Parenchymatous inflammation* is that type of inflammation in which the parenchyma or essential secreting structure of an organ is primarily involved. Sometimes this results from the direct infection of the cells of the organ, but usually the germs are conveyed to the part through the circulation and effect localization by reason of lowered vitality owing to functional derangement. The cells after infection undergo cloudy swelling and later coagulation necrosis. Illustrations of this type of inflammation are parenchymatous nephritis, and parenchymatous hepatitis, conditions treated more often by the physican than the surgeon.

2. *Interstitial inflammation* is that type of inflammation in which the stroma or connective tissue frame-work of an organ is primarily involved. Inflammation of the connective tissues of an organ results in cicatricial contraction and a consequent diminution of the blood supply. As a result the organ becomes smaller, harder and nodular. Examples: interstitial nephritis, interstitial hepatitis, etc. Practically the distinction between parenchymatous and interstitial inflammation is not of great importance as sooner or later infection of the one structure will by extension involve the other.

3. *Serous inflammation* is that type of inflammation in which serous surfaces, such as the peritoneum, pleura, meninges, or synovial membranes, are involved. The peculiar characteristics of this type are that the inflammation tends to remain superficial, that it spreads in a peripheral direction, and that the inflammatory exudates and transudates are poured out on the free surface and that they are retained in the cavity enclosed by the membrane. When inflammation involves, for example, the peritoneum it may be attended by excessive transudation and the abdominal cavity become distended with a fluid, or it may be attended by excessive exudation and numerous adhesions form between the viscera and adjacent structures; or it may terminate in the conversion of the inflammatory product into pus through primary or secondary infection with pyogenic organisms. This explains the production of the three most common types of peritonitis, namely: serous adhesive and suppurative.

4. *Mucous inflammation* is that type of inflammation in which mucous surfaces, such as the lining of the respiratory passages, the alimentary canal, and the genito-urinary tract, are

involved. This type of inflammation possesses the same characteristics as noted as peculiar to inflammation of sèrous surfaces with the exception of the last, namely, retention of inflammatory product in a pre-formed cavity. As all mucous spaces have normal outlets the inflammatory products are not retained but escape along with natural secretions or excretions.

The first effect of inflammation on mucosa is to increase its physiological function, manifested by an increased secretion of mucus, as is seen in the early stages of coryza, enteritis, or cystitis. If the process stops here it is called catarrhal. If, however, there is infection with pus germs and there is a muco-perulent discharge, the process is called suppurative. If, owing to desquamation of superficial cells, there is the outpouring of lymph, which by coagulating and entangling cellular debris, forms an artificial membrane on the surface, it is called croupous.

Having considered the types of inflammation seen in vascular tissue we finally come to consider inflammation as it occurs in non-vascular tissue—say the cornea. It has been stated that the essential features of inflammation consist in the changes that occur in the circulation and blood vessels. Hence, if this be really true, the student will at first wonder how tissues normally non-vascular can present the phenomena of inflammation. It will, however, be seen that the absence of blood vessels in certain tissues and their ability to undergo inflammatory changes proves the truth of the proposition. For non-vascular tissues do not present the pathological changes or the local symptoms of inflammation until they have undergone vascularization. When the cornea is infected there is dilatation of the circle of blood vessels which surround it and from these vessels escapes a certain amount of fluid and cells which render the cornea opaque. Soon new blood vessels can be seen growing from the pre-existing vessels into the previously non-vascular structure. The cornea becomes "blood-shot" or more strictly speaking shot with blood vessels. When vascularization is complete all the characteristic changes of inflammation may be observed. When the process terminates the blood vessels disappear. If there is resolution there is restoration of normal translucence. If there is suppuration there is substitution of a cicatrix for corneal cells and there is permanent impairment of vision.

EPILEPSY.*

By JOHN W. SELMAN, M. D., GREENFIELD, IND.

Epilepsy is defined as a disorder of the nervous system, characterized by sudden convulsive seizures of temporary duration. The muscles of the parts affected are first in tonic spasm, then alternately contracted and relaxed; the attacks generally occur at irregular intervals and are always accompanied by loss of consciousness, more or less complete in the typical disease. The movements also have no relation with those of ordinary life. In rare instances, however, one or more of these symptoms may be absent and yet the disease be epilepsy.

As far back as we have records of events the disease called epilepsy reaches. Long before medicine, as we know it it the present day, took the shape Civil writings incidentally spoke of it, either describing the dsease in detail or giving it a name which in its meaning, described the affection. Long before the time of Galen and Hippocrates we find mention of its character, and the famous Greek just mentioned has described it with a characteristic accuracy which seems as true of the disease to-day as it was hundreds of years ago.

Almost every century since their time has borne in its medical annals some account of its symptoms, and probably no disease has ever given rise to more discussion, both medical and otherwise, than the one before us. Epilepsy by its constancy at all times and in all places fastened itself upon individuals and left accurate impressions in the minds of its observers. The very fact that epilepsy asserted itself in the bodies of its victims at the most opportune times and before all men caused it to be brought to notice of the people more than all other affections even more widespread, but which by reason of their hidden nature were less frequently seen. Every form of explanation was attempted by the clergy. The laity and the most ignorant of the people shared the universal privilege of inventing new theories and therapeutic measures, and yet not one opinion has survived, and our building of knowledge of epilepsy contains no stone save those gathered in the last few years.

One of the first and most marked symptoms of an oncoming attack of Epilepsy is a peculiar

*Read before the Missippi Valley Medical Association, Indianapolis on October 11, 1905.

sensation felt in some portion of the body, generally below the brain, which gradually rises up over the patient, either rapidly or slowly, like an oncoming cloud, until the head having been reached the patient is immediately convulsed and unconscious, and almost instantly is seen to be in the very acme of the nervous storm. The duration of these tonic contractions rarely exceeds two minutes, and in most cases is limited to but a few seconds. The excessive movements of the muscles of mastication force the increased quantities of liquid secreted by the salivary glands from the mouth into the form of froth, which is often stained with blood by reason of the injuries to the tongue. The spasms having ceased, the patient lies before us relaxed, unconscious and exhausted, and passes into a deep sleep or coma, which lasts a variable length of time and from which he or she cannot be aroused, except very rarely and then with great difficulty. Even when the sleep has passed away the brain is evidently disturbed in its functions for several hours, or perhaps days, and headache is not rarely complained of after the patient seems like himself in other respects.

One of the most ineresting and important of all symptoms is the so-called *aura*; and some difference of opinion has arisen as to the frequency of its occurrence, some authors stating it to be very rare while others see it very constantly. There can be little doubt that in many cases it is as constantly present as in others it is absent, and it would appear that the nationality of the subject has something to do with the occurrence of this signal of the attack, at least if we may judge by the statements of the chief authors of each nation. In America the aura is wanting in a very large proportion of the cases of true epilepsy. In England it occurs in about one-half the cases. In France and Belgium the aura appears to be present in more than half the cases in one form or another, as it is also in Germany, according to the most prominent neurologists.

The word aura is derived from the Latin signifying vapor, and its application to certain symptoms of epilepsy arises from the old Greek theory that the fit began by the ascent of a vapor in the veins of the extremities. In later times it was imagined that the nervous impulse causing the spasm arose in the part when the aura first appeared, since the attack could be put aside by the tightening of a ligature around the arm or leg, but this is held by most of the students of the disease at the present day to be impossible.

The Circulation: the only changes are those brought about by he accompanying asphyxia, In some cases there is a stoppage of pulse. This occurs when the inhibitory cardiac filaments of the vagus are affected. Every one agrees, of course, that during the violence of the muscular movements the force and rapidity of the circulation is increased, and particularly the arterial pressure. It is shown that during the clonic stage of the convulsion the arteral pressure is increased to a very great extent, as well as the pulse rate, but that during the first or tonic stage the pulse rate falls and the rhythm is so altered that a complete systole and diastole may occupy six times the normal period. Afterward the pulse passes to the normal, or a condition of increased force and frequency.

So far only the regular symptoms of an attack have been given, and it must not be considered that all cases of epilepsy are so fully accompanied by a long train of constant signs as have been described for it is evident that almost every "case is a law unto itself." and is only surrounded by an atmosphere which stamps it as epilepsy.

A very important question connected, not only with the prognosis of epilepsy but also with it relation to medical jurisprudence lies in the influence which the disease may exercise on the mental condition of the Epileptic. And while we know that some of the greatest men that ever lived were afflicted with epilepsy, in my opinion epilepsy does not necessarily involve any mntal change. Great mental impairment exists in some cases, but this is the exception rather than the rule. Females suffer in mental vigor more commonly than males. The apprehension is more frequently preserved than lost. Ulterior mental changes are rare. Depression of spirits are common in males, rare in females, but that excitability of temper is found in both sexes.

With regard to the hereditary transmission of epilepsy, as indeed with regard to the causation of all diseases by supposed hereditary taint, it must be remembered that in as much as the large majority of cases owe their malady to other causes than inherited tendency, a certain number of those whose parents exhibit a like affection to their own may have become morbid independently of any hereditary taint. It is well known that many of the children of epileptic parents are free

from the disease, and it is quite clear that many epileptics descended from epileptic stock have been exposed to causes of the malady, which would of themselves have been held sufficient to induce the disease independently of any constitutional taint.

In the largest and most correct sense of the word the Etiology of epilepsy is advanced but little by the discovery of hereditary taint. The causation may be thus thrown backwards but it is not explained, for too great an amount of importance has been attached to excessive venery or masturbation. It is very common to hear suspicions expressed upon this point. Much more common, I think, than to hear any such statement of facts as should prove that epilepsy and masturbation have any special character or frequentcy of relation to one another. The one is a tolerably prevalent disease; the other a very widely distributed vice. There are multitudes of epileptics with regard to whom no such suspicion could ever be entertained, and there are, it is to be feared, much larger multitudes of masturbators who have never become epileptic. I speak of these two causes as they are considered by physicians, and the laity in general, as the main causes of epilepsy. Espcial pains should be taken to diagnose epilepsy from many of the reflex epileptic phenomena which occur in nervous children. These cases are those so frequently reported as being cured by trifling surgical operations such as circumcism, vutting of eye muscles, etc. Abnormal movements of the head, a nodding movement of the head, may be a form of Epilepsy. In children it would be accompanied by a momentary loss of consciousness.

In regard to hereditary cases, I desire to state that in the treatment of over six hundred cases of epilepsy I only had one case that I could in any way trace back. The mother of this girl, aged nine years, had convulsions when 13 years old. She would have one or two a week. The attacks were pronounced by the attending physician epilepsy. When she menstruated at the age of 14 years the attacks stopped and she had no symptoms until one year ago. She is now 45 years old and the mother of four children, all vigorous and healthy except the youngest, a girl 9 years old, who has had regular epileptic seizures for two years. The father and mother, who live in the northern part of this State, started to bring the girl to Greenfield to see me: they arrived safely in Indianapolis, and while standing on the street corner waiting for the interurban car, the girl had a seizure and in an instant the mother fell in a hard fit. She had an attack every day for eight days, but she is now to all appearances well; as is also the girl.

This spring a gentleman and his wife were out riding when a street car frightened the horses causing him to run away, and throwing the man and his wife out. The man was badly bruised but the woman escaped injury. In fact physically she had not been injured, but the shock was of such magnitude as to produce an indelible impression upon her nervous system, causing seizures resembling epilepsy, and so pronounced by several physicians and treated as such. This was a case of pure Hystero Epilepsy, and soon yielded to proper treatment.

Every physician acknowledges that the great cause of epileptic convulsion is the sudden liberation or explosion of nerve force which sweeps everything before it. It must be remembered that epilepsy and other diseases may exist hand in hand, and for this reason the prognosis and diagnosis are to be carefully formed and given. January 2nd, a man 28 years old was brought to me. He was 5 feet and 10 in. tall and his weight was 110 lbs. He was having epileptic seizures five or six times a week. There was no warning, no Aura. Like a flash he was in hard convulsions. The general appearance of this man indicated great anaemia and nutrition with diarrhoea. I at once used the subcutaneous injection of the normal seline solution with the bitter tonics and arsenic, and at the expiration of ten days the change in his condition was wonderful, and in three months he returned home apparently well. The causes of epilepsy are "toxic, reflex, and traumatic."

I will not follow out the common custom of detailing remedies as useful or not useful. It should be borne in mind that the treatment of epilepsy is as various as the disease is variable in its forms and phases, and should in nearly all cases resolve itself into three divisions consisting in the removal of any exciting cause, in the checking of the convulsive tendency already set up, and in the prevention of any further attacks by suitable drugs or other measures of relief. The treatment is governed largely by the cause and is medicinal or operative, according to the Etiological factors at work. In Idiopathic epilepsy medicinal means must be followed. While in a case resulting from traumatism the depressed bone abscess or tumor must be removed. In

those due to reflex irritation the peripherial source of trouble must be sought out and relieved. For it is illustrative of the true birth of medicine that the treatment of epilepsy is rapidly passing from the cloud of ignorance into the bright light of modern science. For years it has passed among men as something too intangible to explain; too far beyond their power of treatment to yield to any one, however skilful he might be, yet in the past years more progress has taken place in our knowledge as to its entire course than in all preceding years, and it is now acknowledged that by proper treatment a large per cent. of cases of epilepsy are curable, but each case of epilepsy is a study within itself and should be so treated.

Correspondence.

Life Insurance Examiners' Fees.

Editor Virginia Med Semi Monthly,

Your editorial of Aug. 25 last, and the letter of Dr. Ellis of Sept. 8th last, on the Payment of the Life Insurance Examiner, were most timely. As you wrote, his services are "dirt cheap," while they are indispensable.

In your comparisons you might have written that he has to resolve himself into a notary, without the benefit of the seal. That he has to do such work with his own hand, usually with a pen, that he is not allowed to abbreviate with the ditto mark, and that for such an equivalent amount of work a notary would charge $5.00. Besides, by the use of acids in the examination the examiner may spoil a pair of trousers worth more than $5.00. Yet his fee outside of large cities is very seldom more than $3.

Dr. Ellis raises a point which cuts like a two-edged sword. He intimates between the lines that the examination for which only $3 is received is done without much care.

If this follows then the company, the *bona fide* policy holder, and the public are all affected. In *American Medicine* for Sep. 2nd, 1905 its editor contends that the companies should pay the examiner on a basis of the face value of the policy. "The proper fee is half of 1 per cent, or even 1 per cent. of the amount."

At first I agreed with him, but upon a little more consideration it appears that the equities would be better subserved by *basing the fee upon the amount of the premium.*

For the face value of a policy is rather intangible. It is a contingent liability, which on the other hand, is seldom paid in by the policy holder, although there is now a greater tendency for the policy to "persist." The companies could not be expected to pay the examiner upon such a fictitious basis. And they will protest, until the medical examiners compel them, that they cannot afford to pay more on any basis. Their method of getting business in the field is *sui generis,* and may be called vicious. The agent receives neither salary, nor are his expenses paid while on the road. As a consequence certain companies receive only 80 to 95 per cent of the first premium! It is chiefly divided between general agent, and the man who got the application. That one of the economies of modern times is so conducted is however, not to be charged up to the examiner.

In equity to all parties interested, I would suggest that the medical examiner receive a fee *based upon the amount of the first premium paid,*

The lowest fee to be $5.00. This matter concerns hundreds of doctors in Virginia. They are taxed before they can pursue their avocation, and they cannot afford it, and should no longer indulge the companies for such low fees.

Let the matter be taken up at the Norfolk meeting of the Medical Society of Virginia, and the life insurance companies be given an ultimatum.

We have too long piped for such Luculli as the Hydes and others. Life insurance is a business. Make it pay us something as it pays others.

An examination fee based upon the amount of the first premium paid is just and feasible.

Other organizations when underpaid, strike. Why shall not the Medical Society of Virginia use its power in this case?

Thos. R. Evans, M. D.

Olcott, W. Va.

Proceedings of Societies, Etc.

The Wise County Medical Association.

Through its Secretary, Dr. T. M. Cherry, of Glamorgan, Va., makes the follofing report of one of its most enthusiastic meetings which was held at Wise, Va., September 27th:—

"Dr. N. F. Hix of Wise, read a very interesting paper on "Puerperal Infection.—Causes and Treatment." Discussion was participated in by all present.

Dr. H. M. Miles, of Wise, read a paper entitled: "The Inebriate.—Are we as a profession doing our duty by him?" The author of the paper took the advanced ground that as we have the inebriate, the State should provide a hospital for his treatment.

Dr. F. M. Cherry opened the discussion on the subject: "The Condition of Contract practice in South-west Virginia—What it is and what it should be." This produced a lively discussion among all the members present, as it was a subject of vital interest to them. They appointed a committee to be present at the meeting of the State Medical Society next month, to discuss with the Legislative Committee means whereby this condition may be relieved.

Because of the prolonged discussion of the above topics, the remainder of the programme was deferred until the next meeting.

Owing to the present status of everybody practicing Midwifery in this section, Drs. M. L. Stallard and T. M. Cherry were appointed a Committee to investigate this matter, and report at the next meeting a remedy for this condition.

With the addition of the new members admitted at this meeting, we believe we have the "Banner" County Society in the State. Out of 29 legally qualified practitioners we have a membership of 28.

One year ago at the meeting at this place the passed a resolution that none of its members should make examinations for Life Insurance for a less sum than $5.00, and that it was immaterial whether the Company or agent paid this amount. This was again brought up for discussion at the meting held at Norton, at which time representatives of various Life Insurance Companies were present and insisted upon the repeal of the above resolution, and upon vote of the Society, every member present voted to abide by the resolution as it was originally passed. This has proven very successful."

Analyses, Selections, Etc.

THREE CASES OF EXTRAPERITONEAL RUPTURE OF THE BLADDER COMPLICATING FRACTURE OF THE PELVIS WITH RECOVERY.

In a paper read by Dr. Joseph Rilus Eastman, Indianapolis, Ind., before the Mississippi Valley Medical Association at Indianapolis, October 10-12, 1905, he said that injuries of the pelvic bones are attended with more or less risk to life, which, of course, does not ensue solely from the damage done to the bones themselves, but arises usually from the injuries done to the viscera of the region involved.

Formerly death occurred in a large percentage of cases of rupture of the bladder. The mortality was naturally much higher in those cases in which a tear of the peritoneum made possible the entrance of urine into the peritoneal cavity. However, extravasation of urine through the pelvic connective tissue in cases of purely extra-peritoneal bladder rupture also formerly caused a high mortality rate. This mortality rate has been decidedly decreased by modern methods of dealing with shock, and free and rational bladder drainage.

The immediate and characteristic symptoms of the injury are intense pain in the abdomen, collapse, and great irritation of the urinary reflex, with ineffectual attempts to void urine. Inability to void the urine is usually present whether the peritoneum be torn or not. If the peritoneum is injured, peritonitis of the sthenic type duly develops. As the injury usually occurs while the bladder is full, an area of dullness and tenderness is to be found over the bladder, extending irregularly beyond the normal limitations of bladder dullness, and a large amount of bloody urine may usually be withdrawn by catheterization.

As to the diagnosis of fracture of the pelvis itself, this can occasionally be made visually. Usually, however, the surgeon must depend upon his senses of sight, touch, and hearing for the well known signs of fracture, deformity, abnormal mobility and crepitation. The deformity is usually not pronounced.

In the three cases described by the writer, the treatment consisted in brief, in combating shock, (chiefly with normal salt solution and adrenalin , in the removal of clot, suture of the rent in the bladder, appropriate bladder drainage, rest, and the application of a bandage in such a manner as to prevent movement of the pieces of bone which were broken off.

Book Notices.

System of Physiologic Therapeutics. Vol XI. Edited by SOLOMON SOLIS CHOEN, A.M., M.D., Professor of Clinical Medicine Jefferson Medical College, etc. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1905. 8vo. Pp. 388. Complete Set of 11 volumes, Cloth $27.50; half Moroco, $33. net.

This eleventh Volume of the "practical exposition of the methods, other than drug giving, useful for the prevention of disease and in the treatment of the sick" completes the Series. This Vol XI treats of Serum Therapy; organotherapy; radium, thorium and radioactivity; counter-irritation, external applications, bloodletting; and contains an outline of the principles of therapeutics, with especial reference to physiologic therapeutics. The Volume concludes with an addendum on X-ray therapy, and an index-digest of the complete system of eleven volumes. Each subject is edited by a distinct author of distinction in the specialty on which he writes. A full notice of this system is impracticable within the space at our command. But our readng of each volume as it has appeared has impressed us that this *System* is one of the monumental publications of the day—containing valuable information not readily accessible elsewhere, which throughout becomes of great service to the scientific practitioner of the healing art.

Maternitas. By CHARLES E. PADDOCK, M.D., Professor of Obstetrics, Chicao Post-Graduate Medical School, etc. Chicago: Cloyd J. Head & Co. 1904. Cloth, 12mo. Pp. 189, $1.25.

This is "a book concerning the care of the prospective mother and her child." It is not, so the author says, intended to take the place of the doctor's advice. And yet the "prospective mother" who tries to follow out all the advice given in this book will get herself confused and the doctor worried. It would have been better had the author designed the book as a guide book for the nurse and as furnishing some detailed advice to the young physician. We do not object to the book itself, but to the intended purchaser and reader—the prospective mother, who so often looks at detailed instruction of books and of grannies and busy bodies generally with distorted ideas. Here and there, the practitioner of experience will differ as to some of the advice given, and then the prospective mother begins to doubt the advice of the doctor, for she has read differently "in a book." The work is a good one for young doctors and for nurses.

Principles and Practice of Medicene. By WILLIAM OSLER, M.D., Regius Professor of Medicine, Oxford University, etc. Sixth edition. Thoroughly Revised from New Plates. New York and London. D. Appleton & Co. 1905. Lare 8vo. Pp. 1143. Cloth.

If any one man of the present age has the *ipse dixit* authority, it is the author of this book. Neither he nor his book need introduction to the profession. Yet, as compared with previous editions, "so many sections have been re-written, and so many alterations made that, in many respects, this is a new book." While in every respect this book describes diseases as accurately as the space allows and gives an almost perfect clinical picture, and abounds in accurate pathology and is clear in matters of diagnosis —thus making it an invaluable work for the practitioner—it is not the book that will satisfy the majority when they seek therapeutic suggestions. The day has not yet arrived when the average run of doctors do not wish more detailed suggestions, not only as to the general line of treatment, but as to the selection of special drugs for given diseases. But no general practitioner's library is complete without a copy of this work in it, for in all else than richness in the line of therapeutic suggestions it has no superior, and in many points no equal.

International Clinics—A Quarterly. Edited by A. O. J. KELLY, A. M., M. D., Philadelphia. *Vol. II. 15th Series.* 1905. Philadelphia and London: J. B. Lippincott Co. 1905. Cloth. 8vo. Pp. 310. Price, $2.

This is an unusually interesting and instructive volume of the *Clinics*—taking up nearly every department of medicine, surgery, etc. Every practitioner should be a subscriber to these volumes, for in each number there is

something of value to him—whether a general practitioner or specialist.

Conservative Gynecology and Electro-Therapeutics. A Practical Treatise on the Diseases of Women and Their Treatment by Electricity. By G. BETON MASSEY, M. D., Attending Surgeon to the American Oncologic Hospital, Philadelphia, etc. *Fourth Edition, Revised, Rewritten and Greatly Enlarged.* Illustrated with 12 Original Full-Page Chromolithographic Plates; Full-Page Half-tone Plates of Photographs taken from Nature, and 157 Half-tone and Photo-Engravings in the Text. Pages xvi-468. Royal Octavo. Extra Cloth, Beveled Edges. Price, $4.00 *net*. F. A. Davis Company, Philadelphia.

The author has been before the professional world for many years as the advocate of electrical treatment of various conditions and diseases that were formerly looked upon as necessarily fatal or else removable only by very decidedly radical surgery. Many a one less satisfied than he has been would long since have discarded the use of electricity in the treatment of given conditions. Undoubtedly he has proven by results that many previously considered incurable conditions are relieved—even cured—by the proper use of the electric agent; and surgeons themselves of high repute have been made to change their opinions, and acknowledge that in numerous conditions electrotherapy is more valuable than radical surgery. The work is very instructive as to the details of application of electric current, etc. In fact, the fullness of description and of quotations from the addresses of others borders on wearying the busy practitioner. It seems to us that a better arrangement o the book would have been to have made Part II the introductory part. But these remarks do not affect our opinion as to the true merits of the book; for it is very instructive, and deals with the limitations as well as uses of electricity. The plates and figures throughout the book are, as a rule, as true to nature as it is possible to make them.

Natural Salvation—a Message of Science Outlining the First Principles of Immortal Life on Earth. By C. A. STEPHENS, M. D. The Laboratory, Norway Lake, Maine. 1905. Cloth. Small 12mo. Pp. 184.

Abstruse reasoning, undertaking to demonstrate a greater new era of Humanity which Science ushers in, is the effort of the author. In the next annual edition (1906) of his publication, the author will "attempt to point out what has to be done to regenerate the physiological cell, and along what lines research must be pushed to that end." If the "attempt" of 1906 is no more practical than that of 1905, we doubt if the book will have many readers.

Handbook of Nursing—Revised Edition. For Hospital and General Use. Published under the direction of the Connecticut Training School for Nurses, etc. Philadelphia and London. J. B. Lippincott Co. 1905. Cloth. 12mo. Pp. 319.

While this is not intended to supplant any of the text-books in training schools for nurses, its general character and the excellence of its teachings are such as to entitle it to a high position. It is extremely plain and practical in its directions, which if properly adopted by the nurse as her guide book, would make her an invaluable help in the sick room, both to doctor and to patient. In this sense, it is one of the very best of books for the practical nurse. The illustrations are all good. It is a book for the graduate nurse.

Diagnosis of Internal Medicine. By GLENTWORTH REEVE BUTLER, Sc. D., M. D., Chief of Second Medical Division, Methodist Episcopal Hospital, Brooklyn, etc. *With 5 Colored Plates and 288 Illustrations and Charts in the Text. Second Revised Edition.* New York and London. D. Appleton & Co. 1905. Cloth 8vo. Pp. 1168.

This "Clinical Treatise upon the Recognized Principles of Medical Diagnosis, prepared for the Use of Students and Practitioners of Medicine," is a work of incalculable value to the physician. As compared with the first edition, issued in 1901, the amount of material added in the present edition may be estimated by the addition of over 100 pages, and this after eliminating such obsolete or useless material as may here and there be found in the first edition. It is hard to conceive how a book of the size of the present edition could contain materially more on a subject of the kind, indicated by the title. The author recognizes the services of Dr. Wm. A. White, Superintendent of the Government Hospital for the Insane, in adding a chapter on diagnosis of diseases of the mind; as also those of Dr. Paul Pilcher, Assistant Surgeon to Methodist Episcopal Hospital, for a chapter on Medical X-Ray Diagnosis. A notice can not bring out the valuable qualities of this work; it must be examined when in need of diagnostic information about a series of cases, to properly appreciate its great worth to every practitioner.

Editorial.

Legislative Provision for the Consumptive:

The results of "open air treatment of pulmonary tuberculosis," as it is called, have been so pronounced in its favor, that no one who has studied the reports of various Sanitaria for tubercular patients can now doubt its value. Massive walls of stone or brick which are imposing in their effect and costly to maintain are not the essentials for the consumptive. The establishment and support of proper tent life, gymnastics, etc., including the purchase of suitable farms are relatively inexpensive. Suitable locations for the establishment of such homes for consumptives in Virginia are easily found. Such establishments could in great part be made self sustaining—after the original outlay.

It is a commonly recognized fact that by far the majority of consumptives are poor. While able to attend their daily rounds of labor, they were able to provide for themselves and their families. But when they become victims of tuberculosis, their means of living are cut off, and their families become, with the patients, the objects of common charity, which soon becomes onerous upon the generous hearted neighbor whose sympathies are awakened. They become a burden on the profession of doctors who are unjustly taxed by Virginia and its cities and counties for doing practically charity work with the poor.

The State very properly provides for the insane within its territory—the rich and the poor. It may be that the hospitals for this class of disease are overcrowded, and that public sentiment may demand enlargement of quarters or the establishment of new institutions for the care of the insane.

But no State provision is made for the consumptive—A class of patients who have an infectious disease, and who, under the ordinary environments of their home life in their poorly provided homes, are scattering the disease to their home companions. These patients cannot well be made, in their pitiful homes, to appreciate the danger they are to wife, or sisters and brothers, and children. Indeed, in many cases, the members of the families themselves, in their distress of sympathy for the sick cannot be prevailed upon to avoid and acts as expose them to infection. Where the fawilies are financially able to afford it, the patient may be sent to suitable sanitaria, etc., and thus avoid communicating the disease to home people. But not so with the poor.

Unlike questions of purely professional interest where lawyers, or doctors, or engineers, etc., must fight unassisted their own battles before legislative bodies, the question for proper provision for the consumptives by the State is a matter of common interest—that affects all classes of citizens. And if doctors, in their respective fields of practice can be induced only to teach their patrons the value of open air tent life, treatment of consumption, and especially impress well known facts upon the minds of their more intelligent patrons, such an arousal of public sentiment would be created as to make it almost certain that the Legislators to assemble this winter would not delay in establishing State homes for consumptive citizens.

It is not the purpose of this note to discuss the question of advisability with doctors for such establishments as recent events have proven to be valuable; such a discussion with doctors would savor of a reflection upon their medical education and knowledge. Our purpose is rather to get the profession to take the initiative, and to get a move on the legislatures.

HEALTH OFFICERS AS PUBLIC OFFICIALS.

Communities often become terrorized by concealment of facts. In times of epidemics or the marked prevalence of certain infectious diseases, public policy demands that the record be made known. It is due to the unsuspecting visitor to a city as well as to the citizens themselves, in order that they may appreciate the danger, and avoid subjecting themselves to the causes of an epidemic. Epidemics may be prevented by a recognition of this principle.

It is unfortunate that some local health authorities take too commercial a view of such a question. They should remember the text "What is it that a man would not give in exchange for his life?" Very justly, quarantines are established against yellow fever sections in times of epidemics of that disease. In well-governed cities, homes in which smallpox is prevailing are tagged. Homes in which diptheria is existing are marked, under the law of various cities. The law is sufficient in many places. But what is the

use of the law if health authorities are inefficient, or negligent of duty under the fear that some commercial interest may suffer if facts and figures are given?

We can not conceive of any tangible reason why concealment should be allowed by the health officers of a city or town under such circumstances. That diptheria, for instance, is often present in a city the size of Richmond is a fact commonly known. That there has been something of an unusual demand for diptheria antitoxin in this city, for instance, during the past month or two, almost any drug store will assure you. That typhoid fever is beginning its usual autumnal outbreak is too well attested by common professional report. To announce the existence of a case or so of smallpox in a community brings about a healthy outlook, and the popularization of vaccination.

State Boards of Health are dependent upon city and county health officers to keep them advised of the prevalence of certain infectious diseases especially. Publications by the State Boards of such diseases do much to put physicians and communities on their guard. But such health or disease reports of State Boards must of necessity appear often times relatively long after the existence of disease in a given community. Such reports, therefore, become valuable rather as statistics. But cities, towns and country communities should be apprised of a present danger when it arises.

It is not our purpose to arraign any special official for misguided judgment in concealing facts and figures, when called on for them; but rather to caution them that such a course is not in keeping with public interests; and they also fail in a common duty to the profession itself in not advsing practitioners where foci of danger occurs.

EPIDEMIC YEAR, 1905.

During the earlier part of this year especially, *smallpox* was reported to be too prevalent in this age of education and public sanitation. *Cerebro-spinal menigitis* has developed in States north and west of Virginia, including West Virginia, 250 deaths having occurred from this disease during the two months ending September first. Up to September first, about 2,850 cases of *yellow fever* have been reported in the United States, and the end is not yet. *Whooping cough* has been more or less prevalent in this and adjoining States. Cases of *scarlet fever* have also been reported in the same section of country. *Asiatic Cholera* has become more prevalent than usual in its natural home, and cases have been imported into countries beyond.. *Bubonic plague* has shown a disposition to extend beyond its usual geographical boundaries. And throughout Virginia and other States we hear of more than the ordinary number of cases of *diptheria. Typhoid Fever* is having its usual autumnal number of victims.

We mention these facts in order that practioners may be on their guard in watching suspicious cases of such of the infectious diseases as may have prevailed in their respective sections. At this season of the year, the material further extension of yellow fever is not apprehended. Nor, with the thorough arousal of the health authorities in the sections most interested, do we fear any material outbreak of this scourge next year. Of course, smallpox may occur at any time, due to the ignorance and resistance to vaccination by the uneducated and ignorant classes, or else to the carelessness and oversight of others. The cases of the plague about the Panama Canal route are believed to be under control of the U. S. Sanitary Officers. But as to the other diseases referred to, the physician must be well on his guard to prevent their spread. Doctors can do much to educate their patrons with reference to the measures to be adopted in even suspicious cases. Such measures are given in the usual text-books, and it is not necessary to go over them in detail. Our object is accomplished if this note awakens interest. Being forewarned is in great measure to be forearmed for the battle.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 14.
Whole No. 230.

RICHMOND, VA., OCTOBER 27, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

THE COUNTRY DOCTOR.

By WILLIAM S. CHRISTIAN, M. D.,
President of Medical Society of Virginia

In accordance with the time-honored and inviolable custom of your Society, I am required as the president of this splendid organization to make before you an annual address.

Before entering upon the discussion of the subject of that address it behooves me to ask why I am here in this exalted capacity? I am startled, bewildered and embarrassed by the fact that I am here at all to-night as your chosen presiding officer. Circumstances beyond my control prevented me from attendnig the session of oyur body last year in Richmond. I received a letter the second day of your meeting from a warm personal friend, a distinguished member of your society, telling me if I was present I could be elected president for the coming year, but that it was an unwritten law of the Society that no one could be elected to that high position unless he was present, and urging me to come if only on Friday. I could have gone Friday, but did not like to do so with this threat hanging over me. Then to my overwhelming surprise on Friday night, I received several telegrams of congratulation, all telling me I had been unanimously elected President of this great Society. This information, I must confess, literally took my breath away, and I have been wondering from that day to this why this unmerited honor should have been bestowed upon me in this unusual manner. That it was an honor, an a distinguished honor, no one can deny. That it was unexpected, unsought and undeserved no one knows better than myself. That I appreciate it, and greatly appreciate it, no words of mine can adequately express.

In casting about in my mind for some reason for this exalted honor being conferred upon me by the noblest and best body of men ever assembled in Virginia, I am, as I said, embarrassed and bewildered beyond degree. It is not because of any high scientific attainment I may have been thought to have possessed, for nothing of the sort has been claimed for me. I have been the author of no medical books, have been professor in no medical college, have been conductor of no large and popular hospital, have held no important public office, have been no politician or otherwise prominent in the public eye. I have been simply an every-day, old-fashioned country doctor, probably outstripping in years of practice nearly, if not quite, every member of this body in my record of fifty-four years. I am, however, known by many of your society as a lover of my profession and of my professional brethren; and am proud of the fact that while practicing in one community for over fifty years, having been in contact and competition with some two score of doctors, they were all my warm and professional friends, and to a half score or more I was virtually their family physician. For my known love for my profession and my brethren, and because I am a plain old country doctor, I must conclude is the reason you have thus honored me.

Therefore, to-night I shall not discuss before you any new or obscure, or scientific medical subject; shall say but little about society matters. My distinguished predecessor most ably discussed these things. My theme shall be simply "The Country Doctor."

But I must first congratulate you upon the progress of your society. You come to this, 36th annual meeting, under splendid auspices, with an increased membership, with sound financial standing, with a large attendance here of representative physicians of Virginia, many distinguished physicians as your guests from other States, and your program shows an array of papers to be read before you by distinguished authors that beat all former record of your

annual meetings, and are receiving a royal welcome from the profession and people of this beatiful city by the sea—a city that all Virginians are bound to love on account of its history and its traditions and its well-assured future. Greater Norfolk, we are told, will soon be a reality, which will mean in a decade or two the largest city of the South with an industrial and commercial development that will astonish the world. The rivers and the railroads that are tributary to Norfolk are to-day emptying into her lap the richest and most valuable products of our common country. All hail to Greater Norfolk—Virginia's great seaport, the South's and West's great outlet for their wonderful productions, the attractive harbor and exporting centre of the commerce of half the world! She welcomes us to-night and we accept her hospitality with unqualified delight.

But to my subject—The Country Doctor.

I am reminded at the outset of what my distinguished brother in the profession, Dr. Gordon, said in his splendid oration to the public and profession last year in Richmond (which I did not hear but read with great delight), words taken from Holy Writ—"There is no new thing under the sun." Much has been written about the country doctor—much in praise, much in slightly-veiled sarcasm, much in flippant ridicule, much in prose and much in poetry; but I am here to say that the country doctor, if he has borne that title many years, has by training and experience, become so toughened and seasoned that he can bear all this and much more with undisturbed equanimity. He has more serious trials to face, more serious difficulties to overcome, graver duties to perform, heavier responsibilities to meet, than to be swerved from his course long enough to have his ears tickled by too fulsome praise of overzealous, grateful friends, or his anger kindled by the assinine ridicule of flippant, witless wits. His duties and his responsibilities are those that involve the deepest interests of humanity, those that lie closest to the human heart. The city doctor and the country doctor have much in common: they both belong to the noblest of all professions; they both and together dispense more real charity than all other professions combined in all the world; they both include in their ranks many of the manliest and brainest of men. The city physician has many advantages over the country brother. He has access to the new and improved modes of diagnosis and treatment of disease sooner than the country man; his physicial energies and endurance are not taxed so much; he can easily call in a surgeon or specialist if such an one is required, and shift his graver responsibility to other shoulders. I have always honored and often envied the city doctor. The physical hardships that the country doctor has to meet and endure would be simply appalling to the average city man if he were suddenly called to experience it.

The country doctor to be well fitted for his arduous life must be first of all well-grounded in his profession, must be a good all-around man; when he leaves his Alma Mater he must carry with him all he has learned there and supplement all that by close application to the best books and journals; he must be careful of his habits and moral character, must be a student of human nature, must know the moral, mental and physical characteristics of the people of his vicinage, must be gentle, patient and sympathetic, and brave and courageous when such qualities are required; he is bound to be, if he is anything, a leading figure in his neighborhood, consulted on many subjects besides those of his profession; he knows the inner life of the people; he knows them in their homes; he is the repository of their most important secrets; he learns to keep them and is trusted as no other being is trusted; he knows where the closet is that contains the skeleton of the household, and his is often the hand that seizes the skeleton and tosses it out into utter darkness, where its presence will no more be felt or feared.

The country doctor must be so well grounded in his profession that he must do the work generally assigned to the specialists in the city. Every form of disease, every kind of accident or injury comes to him in his everyday career. He has to invade the field that in modern times is given up entirely to the specialist. The people know he is a doctor and believe a doctor ought to know everything and practice surgery as well as medicine, and treat everything from a headache to an in-growing toe-nail. The human body is his field of operation; he must know it all. If in his busy life he forgets, as he usually does, the names of arteries and nerves and muscles, he must know where they

are, how to avoid them and treat them. Accidents and injuries occur in the country as well as in the city. Broken heads and crushed limbs, gunshot wounds, sawmill accidents, and hundreds of other things demand the country doctor's immediate attendance as well as the legion of diseases that afflict humanity. These things occur often when he is found on the road, with but a part of his meagre armamentarium with him. Sometimes the emergency is so great that he hasn't time to get much-wished-for and much-needed help. That certainly used to be the case when doctors were further apart than at the present time.

I have more than once amputated a thigh with a small scalpel from my pocket case and sawed the bone with a carpenter's saw, and had the gratification of seeing the patient have good recovery. As a general rule the country doctor shrinks from invading the cavities of the body, and will if possible hurry such cases to more competent and better equipped surgeons in the city, but he is often compelled to do so against his will on account of the pressing emergency. Such cases as acute appendicitis, intussusceptions, strangulated hernia, etc. These cases cannot always wait. It is incumbent upon the country doctor to prepare himself for these cases. He is required to keep on hand every sort of apparatus for the examination and treatment of of disease that afflicts humanity in this part of the world comes to him, or rather he goes to it. Every stage of human life he has to deal with, from the infant pulling in its mother's arms, to the grandfather of the family, the octogenarian. I claim, with no disparagement to the city doctor, that the country doctor is, in ordinary diseases, more accurate in diagnosis and consequently more efficient in treatment than his city brother, simply because he takes more time to consider; he sits by the berside longer. How many of you now before me haven't often made a different diagnosis and prepared an entirely different prescription than what you intended from your first impressions upon seeing the case? The country doctor often riding eight or ten miles over rough and muddy roads to see mainly plain country people, toilers in the great rural industries in the land, full of kindness and hospitality, will sit long by the bedside, question, examine and reflect, prepare and administer his own prescription and wait to see results. I have often said that if I was seriously sick, with any ordinary disease, I'd prefer an all-around, experienced country doctor to attend me rather than the best city physician I ever saw. I remember well at the meeting of the Society in this city in 1888, I was taken suddenly ill after the meeting adjourned Friday night, but before the banquet. A number of doctors were around me, and my good friend, Dr. Edwards here, prescribed for me a dose of castor oil and spirits of turpentine. He did not know that this dose for myself was the horror of horrors and he did not know that once when a prisoner in a Federal prison this same dose was prescribed for me by a whipper-snapper Federal surgeon, and when I refused to take it he ordered his assistants to funnel me, and I ran a great risk of being shot, rather preferred it at that time. But I do not mean to discredit the city doctor. We country doctors owe much to our city brethren. They, in concert with the elegant pharmacists, have lightened our burdens and pleased our patients by teaching us to dispense our drugs in more palatable and elegant style. No one, however, can really understand the work of the country doctor unless he has been one himself. That work has been considerably lightened and improved from what it was a generation ago.

Progress and improvement in the mode of living have reacted upon our profession as in other departments of industrial life. Horse-back riding is not now, as it used to be, almost the only mode of locomotion for the country doctor. He has made himself more comfortable. Easy-riding vehicles with storm-cover aprons and good lamps for night are now in vogue, when some years ago darkness and rain and snow and sleet had to be encountered in the open and battled against single-handed and alone. Accidents, hair breadth escapes and dangers innumerable, lost in the woods, sitting forlorn on the horse or on a log until daylight would show him the way out, drenched in rain or his clothing frozen with sleet, were not uncommon experiences. The endurance of the country doctor has been marvelous; endurance of extreme of cold and heat and of distances travelled by day and by night are scarcely credible. It would be probably taxing the credulity of many of you if I should say that I owned one horse, some years ogo, that alone during his usefulness, by most conservative estimate, carried me on his back or in the shafts

a distance of more than twice the circumference of the earth. And how many hundreds of miles is thus travelled by the country doctor without any other reward than the gratitude and affection of the people! This is a reward frequently greater than gold, and I say right here that the country doctor, or any other doctor, that pursues his profession solely for gold does not deserve to wear the name of doctor, but should be classed with those who grind the faces of the poor and who are only fit to share the fate of Dives.

I hope you will pardon me for illustrating what I wish to express by my own personal experience. I practiced medicine some eighteen or twenty months in the State of North Carolina immediately after the war. My family consisting of wife and four children were refugees there because all I had on earth had been desaroyed or taken away except a piece of poor land which would have been taken also by the Yankees if they could have moved it. I hadn't heard from them for many months nor they from me. I wended my way there after Appomattox, on my literally starved army horse. I was so impecunious when I arrived there that if steamboats were selling at a dollar a piece I could not have bought a gang-board. I set up my shingle as a doctor and was a candidate for practice. I found an old pair of saddle-bags, pretty well filled with drugs I had been using four years before. One evening a messenger came for me to go to see a sick widow nine miles away. He told me she had the money, good money, and would pay me cash for my visit. Visions of a rich widow with a lucrative future practice then arose in my imagination. I mounted my old army horse, who had recruited some on North Carolina grass, and made the best of my way over that nine miles of road. When I got to my destination, instead of the fine house I was looking for I saw a small cabin and unmistakable signs of poverty. I found my patient very sick and administered to her as best I could, drew heavily from my limited stock of drugs, sat by her bedside several hours, and when I prepared to go, with a look of satisfaction and condescension on her face, she drew from under her pillow a twenty-five cent postal note and handed it to me with an air that plainly showed that she thought she was rewarding me munificently. My impulse, of course, was to decline the fee, but I could not bear to see the mortification and distress I would occasion her if I refused her valuable gift. I continued to attend her until she recovered without further fee. But my visits there resulted in my getting some lucrative practice in that section during my whole stay in that State.

It cannot be disputed, I think, that the country doctor is the poorest paid man in the world, and he who remains a country doctor all his life almost invariably dies poor. His work is of such a character that he often thinks and knows it cannot be compensated with money. He knows the financial condition of the people he visits and often feels embarrassed like old William McClure when a fee is tendered him. Yet there ought to be an improvement along this line, and to my younger brethren present who are country doctors, I will give this advice: make your profession more of a business matter than we older men have done; while not pursuing it altogether for gold, keep in view the assertion of Holy Writ, "The laborer is worthy of his hire." But the doctor oftens finds his richest reward in the love and grateful affection of his patients. He meets so often with scenes so pathetic that his heart is melted within him, and he feels that the part he plays in the mysteries of life and death are of the highest import that can be submitted to a human being. He learns where humanity touches the spirit of the God-head and can exclaim with the poet:

"Oh mystery of mysteries, the least understood,
That the love of God is the love of good."

While it is well known that the busy country practitioner has but little time to devote to anything but the immediate duties of his profession, yet there have been quite a large number of country doctors in Virginia who rave made, not only valuable contributions to the literature of the profession, but who are quoted to-day as recognized authorities on important medical subjects. I might name such men of acknowledged eminence in their profession as Mettauer, of Prince Edward, Tebault, of Princess Anne, Nicolson, of Middlesex, Semple, of Hampton, Cox, of King and Queen, Cooper, of Fauquier, and many others whose reputation extended not only beyond the limits of their special territory but even beyond the borders of their native State. A number of the living ex-presidents of this Society are now or have been

prominent as country doctors. The country doctor of to-day is different in many respects from his predecessor of a generation or two ago. The old country doctor had to work harder; he was his own druggist and apothecary, compounded his own medicine, often from the crudest raw materials; he dealt largely in infusions and decoctions; he believed in heroic remedies, he would have scorned tenth-of-a-grain calomel pellets—ten grains of calomel and ten of jalap suited him better. The lancet, cups and scarificators, leeches, blisters, setons, moxas, etc., were the sturdy clubs with which to whack the hydra-headed monster disease on the head. But the most barbarous part of his practice was to forbid entirely any draught of cold water for at least three days after taking a dose of calomel. I have used setons, and leeches and blisters and cups a good many times, but I never used a moxa but once, then I came very near cremating my patient, and I thank the Lord I never gave a fever patient warm water to drink unless it was to effect emesis.

But these old country doctors were as true as steel to their patients; they did not consult their comfort or ease; they defied storms and rains and went everywhere they were called, while they were a terror to children, they were the law and gospel to the heads of families, and were about, as the crude country poet puts it in describing the family doctor:

"When the whooping cough was ragin'
And the measles were around;
Then he'd mount his rhubarb pony
And go trotting out of town.
With his saddle skirts a-flopping',
And his leggins all in rags,
And roots and herbs a-stuffin
Out his pussy saddle-bags;
And when mam was down with fever
And we thought that she would die,
That old fellow didn't leave her,
And he never shut an eye.
But he set there likt a pilot
For to keep her from the snags,
And he brought her through the riffles
With his musty saddle-bags."

But the future of the country doctor will not be exactly a copy of the past. Better roads, numerous telephones have changed his life. The rise and expansion of specialism, the facilities of getting to the cities by modern improvements in modes of travel will greatly change his status. Then with improved instruments and modern antisseptic usages, he will also do more and better surgery. It has been proposed by some county societies that the members divide up in such a way that some do surgical work, some take diseases of children, some diseases of women, some fevers, etc., thus making themselves specialists. But I think this has not been successful and never will be. The country doctor must continue his rounds as a doctor for all ailments, and with greater and better resources and more improved appliances, with a broader and more accurate knowledge of therapeutics and the nature of his largely increased Materia Medica, keeping abreast of the time, new appliances and new modes of diagnosis, he will continue to be a great factor in that part of the world in which he revolves; will be honored and loved, bringing comfort to hundreds of homes, awakening and keeping the affections of numberless people; and when the last summons comes to him will be such as Will Carlton so graphically describes:

There is a gathering in the village
That never was outdone
Since the soldiers took their muskets
To the war of sixty-one.
And a lot of lumber wagons
Near the church upon the hill,
And a crowd of country people
Sunday dressed and very still.
Now each window is preempted
By a dozen heads or more;
Now the spacious pews are crowded
From the pulpit to the door.
For with coverlet of blackness
On his portly figure spread,
Lies the grim old country doctor
In his massive oaken bed,
Lies the fierce old country doctor,
Lies the kind old country doctor,
Whom the populace considered
With mingled love and dread.
Maybe half the congregation,
Of much or little worth
Found this watcher waiting for them
When they came upon the earth.
This undecorated soldier
Of a hard, unequal strife,
Fought in many stubborn battles

With the foes that sought their life.
In the night time in the day time,
He would rally, brave and well,
Though the summer lark was fifing
Or the frozen lances fell;
Knowing if he won the battle
They would praise their Maker's name,
Knowing if he lost the battle
Then the doctor was to blame.
'Twas the brave old virtuous doctor,
'Twas the good old faulty doctor,
'Twas the faithful country doctor
Fighting stoutly all the same.
When so many pined in sickness,
He had stood so strongly by,
Half the people felt a notion
That the doctor couldn't die.
They must slowly learn the lesson
How to live from day to day,
And have somewhat lost their bearings
Now this landmark is away.
But perhaps it still is better,
That his busy life is done;
He has seen old views and patients
Disappearing one by one.
He has learned that death is master,
Both of science and of art;
He has done his duty fairly
And has acted well his part.
And the strong old country doctor,
And the weak old country doctor,
Is entitled to a furlough
For his brain and for his heart.

CASE OF DEATH FROM PERITONITIS DUE TO GONORRHEA.

By ALVAH STONE, M. D., Worth, W. Va.

I wish to report a very interesting case that came under my care September 11, 1905.

Patient was a healthy robust young white man, age 22, who came to my office suffering from a pain in the perineum. He denied having had gonorrhea and declined a careful examination; only wanted something to relieve the pain. I gave him palliative treatment.

On the 13th he same again complaining of an acute pain just above the symphysis in the region of the bladder. I questioned him again about gonorrhea and he owned up to having had a case for six weeks, which had been treated by himself and a druggist.

On examination I found him suffering from a chronic gonorrhea which extended to the membranous portion of the urethra, and—as I thought then—to the bladder, setting up an acute cystitis. On further careful examination, I could not substantiate the latter opinion; so was at a loss to know the cause of the pain.

My treatment was high injections of a protargal solution for the urethritis. A mild alkaline diuretic with instructions to go to bed and use hot fomentations over the lower abdomen for the pain. He rested comfortably on this treatment until midnight of the 15th of September, when I was sent for in great haste and found him suffering intensely with all the symptoms of a general peritonitis, from which he died on the third day.

A point of interest is that on the 2d day of the peritonitis the pain was referred again to the perineum. Examination of the prostate showed only tenderness with no enlargement.

In this case I believe the gonorrhea infection passed through the vesicula semilunaris into the peritoneal cavity, setting up the general peritonitis. I have never seen nor heard of such a case before and it adds another to the list of grave complications that may follow a seemingly innocent attack of gonorrhea.

In looking up authorities on the subject, I find that Taylor and White and Martin are the only ones I have at hand who mention the possibility of such a complication.

HEADACHES.

By D. L. FIELD, M. D., Jeffersonville, Ind.

There is no complaint, to which the human system is heir, which causes the patient more continued misery, and the physician more annoyance and disgust with the powers of his diagnosis, and the workings of his remedies—than *just headache!*

The distinction between the different forms of headache, is by no means easily made. As a general statement it may be said that *neuralgia headache* is more or less on one side of the head; extends to the face; is usually attended by great sensitiveness of the parts and is of darting, shooting character. *Rheumatism*

about the head is attended with stiffness of the muscles of the scalp and neck. *Congestive, febrile, and toxaemic headaches* are characterized by heat of the head, with throbbing, pulsating pain. *Ovarian, and uterine reflex head-from tumors of the brain* is commonly constant and in one spot, and is attended by functional disturbance of the brain and nervous system.

Although the physician may often be baffled in his search for the cause of headache in a patient, yet many cases will ge perfectly patent.

One, especially in females, is constipation, by which the blood is poisoned, and the nervous centers unbalanced. Irritating food is a frequent cause of headache and as such, should be avoided. Gastric irritability from catarrh, with acidity and flatulence, are all easily combated by abstaining from food for one or two meals when headache is threatened. Acidity is corrected by magnesia or soda. Impure gases, or insufficient ventilation in bed chambers frequently causes headaches. Those troubled with nervous or sick headache, should imbibe hot tea, go to bed, put hot applications to the extremities, and remain as quiet as possible. Frequently headaches are due to nervous exhaustion and irritability, and a stimulant will afford speedy relief. The bromides are especially good in headache from nervous irritability. A suitable solution of acetate of ammonia, is an old and efficient remedy in sick headache.

One quarter of a grain of morphine in a cup of hot coffee has been found to be an excellent remedy in females at about the menstrual period. The acetate and muriate of morphia have a similar effect, and may be tried. Continued employment of such remedies as morphia, however, is not to be commended, as the *habit* is to be dreaded. Hydrate of chloral has a transient effect in headache, in doses of from ten to twenty grains. Sometimes the applications to the head in neuralgia, of equal parts of chloral, camphor, and menthol, which liquefies, applied with a brush, acts like a charm.

Two grains of citrate of caffiene, ever hour, is very effective in sick headache, one dose frequently affording great relief. It is seldom rejected by the stomach. In cases where coffee has been used habitually, it is peculiarly efficacious. A good prescription in nervous headache is:

℞ Ammonia Muriatis, ʒij.
Morphia Acetatis, gr. j.
Caffeine Citrat, ʒss.
Spts. Ammon. Arom., ƒʒj.
Elix Guarana
Aqua Menth Pip. āā ʒiv.
M. Sig. Dessertspoonful every half hour until relieved.

Monobromated camphor has been found to be a very efficient remedy in headache from over brain work through study, or excitement. Dose, two to five grains in tablet or capsule. Tinct. valeriantae of ammonia has been used for headache of a nervous hysterical kind. Dose, a teaspoonful.

Headache, with faintness, or drowsiness, may be relieved sometimes by inhaling the fumes of hot vinegar, and placing flannels wrung out of the same, over the seat of pain. Headache due to acidity of the stomach, is often relieved by the carbonate of ammonia, or bicarbonate of soda, in hot water. Dose of ammonia, three grains, in sugar and water, and of soda, a teaspoonful in a half glass of hot water.

In case of flatulent stomach, with headache, the aromatic spirits of ammonia may be taken in teaspoonful doses well diluted, but usually in thirty drop doses—repeated. It promotes the eructation of gas, and relieves the nervousness accompanying such cases.

Simple camphor water, in tablespoonful doses, is a good remedy, as is also two or three grains of gum camphor. In periodical headaches, cannabis indica, sulphate of berberina, and elixir of guarana, have been much praised. Cannabis can be given in third to one half grain doses in recurrent headache of migraine.

Guarana controls headache much like tea and coffee, and is valuable in recurring headaches of females at the catamanical period, and in the headache following a debauch, with throbbing temple and bloodshot eyes. The elixir may be given in tablespoonful doses, often repeated. Elixir of paraldehyde is used in the same way. Oil of lavender may be used topically, to calm nervous headache, and can be given internally in four or five drops doses. Oil of peppermint is used much by the Chinese, as a local analgesic, and as a balm for nervous headache, frequently by painting over the seat of pain. It often affords great relief in neuralgic headaches.

℈ of origanon may be used for the same purpose, and in the same way. Five grains of black pepper in a capsule, often relieves.

Bathing frequently with equal parts of bay rum, and spirits of lavender will often do great good in headache. Headache associated with constipation, calls for a brisk cathartic, preferably a large dose of epsom salts in warm water. For frontal headache, or "brow pain," if the bowels are not confined, ten drop doses of dilute nitro-muriatic acid in a wineglassful of sweetened water; or twenty grain doses of soda bicarb. in hot water will frequently relieve headache.

Sometimes the use of tinct. of nux vomic. in ten drop doses, repeated in a half hour, will stop headache. Is is especially effective where there is a weak, catarrhal stomach, and the remedy may be given for days, at proper intervals, before meals. An old, but good local remedy, is a quart of hot water, a half pint of salt, an ounce of ammonia, a half ounce of spirits of camphor, mixed, and kept in a tightly corked bottle. Saturate a cloth with it, and apply to seat of pain. For a headache, with a feeling of fullness, and a throbbing sensation, place the feet in hot salt and mustard bath, which by derivative effect, will relieve such a headache.

A tablespoonful of powdered charcoal, stirred in a glass of water, and taken at one draught, is excellent where there is fermentation in the stomach, with eructations of foul gas.

Digitalis, strophanthus, and convalaria, are useful in headache with cerebral hyperemia, and forcible heart action.

When the head throbs violently, and is hot, instinct would suggest cold and pressure to the head, and a common application is a wet bandage bound tightly around the head. The method has been employed from time immemorial. Shakespeare is often quoted to illustrate the morbid state of the body, as well as the passions of the mind, and he also testifies to this practice, where he says: "When your head did ache, I knit my handkerchief about your brows."

Again; Desdemona to Othello: "Why do you speak so faintly? Are you not well?"

Othello: "I have a pain about my forehead here!" She: "Faith, that's with nothing! Let me but bind it hard, it will within this hour be gone."

Finally, we have *malarial* headache; *gouty* headache; *rheumatic* headache; *uremic* headache; *alcoholic* headache; *dyspeptic* headache; *anemic* headache; *congestive* headache; *neuralgic* headache; and headache from diseased cerebral vessels, and tumors of the brain.

For the malarial type—Quinine, iron, arsenic, and bitter tonics,; for gouty headache—colchicum, bromides, lithium, Vichy, and antacids generally; for rheumatic headache, the iodides, salicylates, and faradic current; uremic headache, eliminants, such as acetate potash, infusion digitalis, and saline cathartics; acute headache, from alcoholic excess, aromatic spirits of ammonia, spts. camphor, and tinct hyoscyamus; dyspeptic headache, tinct. nux vomica dilute nitro muriatic acid, and soda bicarb; bilious, or constipation headache, free purgation, followed by rest and quiet; congestive headache, quiet, dark room, derivatives, bromides, cannabis ind., morphia and active saline purge; anæmic headache, strychine, iron, manganese, gentian, brandy, and nutritious diet; headache from cerebral tumors, bromides, iodides, morphia, and chloral.

Among the later remedies employed for all forms of headache, whether nervous, febrile or neuralgic, are the various coal tar derivatives; also such preparations as passiflora incarnata, (Daniel) syr. bromide compound, (Peaccck), tongaline, neurosine, heroin, trional, sulfonal, etc., etc.

For neuralgic headache:

℞ Antipyrine, ℥j.
Monobrom Camphor.
Caffeine Citrate, āā xxiv grains.
M. Ft. Caps, No. 24.
Sig. One or two every four hours.

or—

℞ Monobrom Camphor, grs. xxiv.
Euquinine, ℥j.
Ext Hyoscyam., grs. vj.
M. Ft. Caps, 12.
Sig. One every four hours.

Also:

℞ Strychnia Sulph, gr. ¼.
Nitro Muriatic Acid, Dil. f℥ij.
Spts. Chloroform, f℥vj.
Tinct Zingiberis, f℥iij.
Elix. Simp., q. s. ad f℥iij.
M. Sig. Teaspoonful in sweetened water, three times a day.

or—

℞ Ext. Nucis Vom., grs. viij.

Zinci Phosphid., gr. iij.
Ferri Redact, ʒ ss.
Euquinine, ʒ ss.
M. Sig. Ft. Caps. 30.

or—

℞ Potass Citratis, ʒ ij.
Spts Juniper, f ʒ xij.
Spts Ether Nitrosi, f ʒ iv.
Infusion Scoparius, ʒ xij.
M. Sig. Wineglassful three times a day.

Some others recommend copious intestinal lavage for *peristaltic* headache. The theory is based on the fact that many sedentary patients are sufferers from retained intestinal contents in the large bowels, and though a movement occurs daily, the dejecta are foul. The administration of a large enema, will almost invariably bring away a large amount of contents, which have been retained, notwithstanding daily evacuations.

The retained contents have a great number of microbes, which under favorable conditions, develop poisonous ptomaines, which play an important role in the production of a variety of symptoms hitherto unknown, or little understood. At least a half gallon of warm water should be injected, and the bowels so manipulated as to favor a free distribution of the fluid over the entire intestinal tract. Sometimes two or three enemata will be necessary, before the matter is thoroughly removed.

Such injections should be repeated once or twice per week. The putrefactive state of the intestinal canal is the prime cause of many serious ailments. The Hall treatment, if faithfully carried out, with a diet of fruits and cereals, will work wonders in increasing appetite, assimilation, and strentgh, not to speak of the feeling of physical well being, sure to follow. *Keep clean inside and outside*!

Another remedy for headache and nervousness, especially that condition accompanied by insomnia, is fld. ext. of piscidia erythrina (Jamaica dogwood). The dose usually is from a half to a teaspoonful in sweetened water, or whiskey toddy. It is a remedy for almost any kind of pain; it exhilarates and stimulates the nervous system, and creates a feeling of warmth.

Sulphate of codeine is also given for pain and restlessness, in from one half to two grain doses; acting much the same as an opiate, being an alkaloid of opium, but unlike opium, it does not have an unpleasant effect, such as checked secretions, and constipated bowels.

In rheumatic headache, and pain, aspirin five grain doses, increased if needed to ten or fifteen grains at a dose; salophen, and saloform in same quantities, like salicylates, are especially valuable remedies. Citrophen, in doses of from eight to fifteen grains, is very useful in neuralgic headache. Also colchicum in rheumatic cases. The old time Dover, or better, the improved Dover powder, in doses of from two and a half, to five grains, with suitable doses of quinine, have long been used in neuralgic, and inflammatory rheumatic troubles, when combined with an alkaline treatment. For headache again, there are numberless proprietory medicines, such as lachtophenin, antikamnia, colchi-sal pearls, phenalgin, chalyonia, Ammonol, triphonin, femiline, chloratone, bromoform, saloform and the iodides.

Hemicrania or simple headache confined to one side of the head, and occupying the forehead, is the migraine—surnamed by the French. It is often periodical, and attended with nausea, coming on every day at about the same hour, and gradually wearing away. This is a neuralgic form, and in order to forestall such paroxysms, quinine given between such recurring attackes, will generally effect a cure. The cause of such attacks must be attributed to malarial toxemid. Liquor potassii aromatici, in five drop doses, three times a day, with the addition of some ferruginous preparation, is of inestimable service for headache in pale and anamic patients.

Nearly all diseases, the results of morbid secretions, especially such as isvolve the digestive apparatus, are attended by headache; and the most efficient means of dissipating such headaches, is by a course of active medication, neutralizing acidity, arresting fermentative and putrefactive conditions in the stomach and bowels; at the same time clearing all offending matter from the alimentary canal. After such treatment, if headache persist, appropriate quieting, and anodyne medicines should be employed. The *first* and most im*portant* thing, is to endeavor to ascertain the *cause* of the headache, and a remedy will be found to *cure!*

TREATMENT OF CORNEAL ULCER BY THE GENERAL PRACTITIONER.*

By CLARENCE PORTER JONES, M, D., Newport News, Va. Consulting Oculist and Aurist to Newport News, Dixie, and National Soldier's Home Hospitals, etc.

Having recently treated twenty-two cases of ulcer of the cornea, all successfully, and having had the misfortune to have three cases come from the country districts—each with a blind eye—as a sequel to corneal ulcer, I feel constrained to say a few words about the treatment of these cases by the General Practitioner.

It is not the purpose of this little paper to in any sense discourage the practitioner in sending his cases to a competent oculist, which is his highly important duty. There is no disease of the human body which requires more skill and judgment in treating than this; but there often occur cases of ulcer of the cornea in the practice of a physician, especially in the country, which for financial or other reasons, cannot go to consult an ophthalmist. These cases and only these, should the physician undertake the responsibility of treating.

The cornea is a non-vascular structure, nourished by lymph osmosis from the lymph spaces in the conjunctiva and sclera, which lie in juxtaposition to its own. Thus we see it is feebly resistant to infection.

Upon careful inquiry, we find a vast majority of ulcers are due to an injury or abrasion which has become infected, either at the time of injury or subsequently thereto. It is the method of cure of this ulcer we discuss.

Destruction of the corneal substance is the essential feature of all forms of suppurative keratitis, leaving an opaque cicatrix, at best on healing, or, by perforation, involving the whole eyeball, resulting in phthisis bulbi, and total loss of vision. ,

As before stated, an ulcer begins with a focus of infection, superficially situated with ragged edges of a yellow color, being surrounded by a zone of infiltration. Its sides and bottoms are covered by a detritus of a pultaceous appearance. Conjunctival congestion, photophobia, lachrymation, and pain varying greatly with individual cases are present.

Treatment should be both preventive and therapeutic. While I do not claim anything new in the line of treatment I follow, yet I think I am justified in presenting it, as it has proven itself to be the very best in my hands.

Every injury of the cornea should be assumed to be infected. The eye should be promptly irrigated with a saturated solution of boric acid, or with bichloride of mercury solution—one to four thousand—and kept as nearly aseptic as is possible to so do by use of a bi-chloride and salt ointment containing bichloride of mercury, one-fifth grain, and sodium chloride, one grain, to vaseline, one ounce. If pain is a factor, I add five grains of cocain, allowing the druggist to use a small quantity of liquid albolene to better enable the cocain to dissolve. If the injury is as much as 12 hours old and the proper antiseptic precautions have not been taken, I touch the wound with tincture of iodine applied by a few shreds of absorbent cotton wound around a small probe or smooth wooden tooth pick. All applications to the cornea being painful, a previous instillation of a six per cent solution of cocain should be made.

When the ulcer has declared itself, my first procedure is to curette thoroughly with a small size Meyhoefer's corneal curette, then touch with tincture of iodine. If after twenty-four hours there is no marked improvement, cauterization—either with carbolic acid after the same manner as the application of iodine, or the actual cautery—should be thoroughly. done For the latter, the suitable instrument is Gruening's cautery probe. These two instruments are very inexpensive and should be in the office of every country doctor. Atropine sulphate one per cent. should be instilled every four hours for the first day; then twice a day. Hot applications, boric acid, a teaspoonful to a pint of water as hot as can be borne every hour, bathing the eye for ten minutes at a time—are very beneficial. A shade or smoked glass may be worn to shield the eye from light.

The cauterization may be repeated in two or three days, if necessary, although one application suffices. In bad cases and especially highly nervous patients, rest in bed in a dark room and a nutritious diet is imperative. Pain is usually relieved by the application of the vaseline preparation with cocain above referred to. This can be augmented by codeine by the mouth or hypodermically. The curette is highly important as it removes tissue which would otherwise slough away were it not used;

*Read before 36th Annual Session of the Medical Society of Virginia held at Norfolk, Oct 24-27, 1905.

it causes no more scar than would otherwise reuslt. Then, too, by its removal of the detritus, the iodine and any other antiseptics are enabled to have a clear field of action.

The line of treatment here laid down gave prompt results in the twenty-two cases mentioned at the beginning of this paper. Each case was preceded by an abrasion or injury, scarcely any two from the same source.

I will report three cases seen by me from five to twenty weeks after the initial abrasion which had not had treatment.

Case 1. Mary S., aged 13, hit in the eye by a briar twig while picking berries. Pain and discomfort being so slight, little attention was paid to it for the time being. Four days later, she saw her family physician, who lives six miles from her home. She had a well dfined ulcer a little larger than a pin head on the upper outer margin of the cornea. The doctor told her father this, and also the danger there was of loss of the eye, and insisted that an oculist be seen as quickly as possible. For financial reasons this was impossible (the nearest ophthalmist being fifty miles away). Whereupon the doctor prescribed a boric acid wash and told her to report back in a few days. Eight days later, the cornea had been perforated, the lens presenting, panophthalmitis with destruction of sight. About four weeks later while spending my vacation in her vicinity, I enucleated the eye on account of sympathetic trouble in its fellow, it being permanently damaged.

Case 2. Arthur B., a colored youth, was struck in the eye last Christmas by the seeds of a toy torpedo (not a bum). Pain was slight. Next day a small oval abrasion was seen in the center of the cornea. Two days later he consulted his family physician to obtain relief from pain. At this time an oval superficial ulcer, the size of a grain of wheat covering the site of injury was present. The doctor prescribed a poultice of meal bran to the eye. A virulent suppurative keratitis followed, which destroyed over half the thickness of the cornea, though not perforating it. Four months later, this physician sent the case to me. An enormous staphyloma had developed; the eye was very painful, and was totally blind.

There was photophobia, excessive lachrymation, and some congestion in the fellow eye. I promptly enucleated the destroyed eye.

Case 3. Ephraim W., age 30 years, was struck in the eye by a bundle of wheat while feeding a threshing machine. There was sharp pain for a couple of hours, then comparative relief. About three days later his physician diagnosed a creeping ulcer covering the lower inner quadrant of the cornea. He was promptly told of his danger and advised to go at once to a neighboring oculist; he could not do so on account of sickness in his family. His doctor gave him a bi-chloride of mercury wash and a solution of eserine to instil. The case went from bad to worse, speedily developing hypopyon, plastic iritis, occluded pupil, blindness and later atrophy of the ball. Two months later I removed the eye to relieve excessive pain. A sad picture. Here are three eyes lost from want of proper, though simple treatment. The chances are greatly in favor that each doctor could have saved his case. In each case an oculist was out of the question; then it was the duty of the physician to have done the best in his power. In such cases should he follow the old, though simple, treatment as mentioned here, the chances are that good results can be accomplished. Cocain and atropine solutions should be made up in a bi-chloride of mercury, one to three thousand vehicle, to which may be added one grain of sodium chloride. If some antiseptic vehicle is not used, they will deteriorate and give uncertain results.

My observation of the treatment of corneal ulcers in the great clinics of America and Europe will bear out all assertions here made.

In conclusion, I will state:

1st. All abrasions of the cornea, however slight, should be assumed to be infected and treated antiseptically, using iodine if the injury is twelve hours old.

2nd. That is is the imperative duty of a physician to send corneal ulcers, on account of the danger to destruction to eyesight, to an oculist of merit as quickly as possible.

3rd. That should there by any reason which forbids this, it is his urgent duty to treat the case as vigorously as if it were a case of opthalmia neonatorum.

4th. That in emergency the physician should use the corneal curette freely, and feel that the sin of omission is fourfold to the sin of commission.

SOME PRACTICAL POINTS IN X-RAY THERAPY.*

By A. L GREY, M. D., Richmond, Va.
Professor of Physiology, University College of Medicine.

To enumerate the various ills for the cure of which the Roentgen rays have been applied and have, according to reports, proved either curative or beneficial, would be to mention the entire list of chronic and so-called incurable diseases.

It is this great variety of ailments said to be cured by the X-rays, that will tend strongly to bring into disrepute an agent most valuable when skillfully applied to the treatment of such diseases as experiences have shown from time to time to be within its curative power. It is not, however, my purpose to discourage experiments —quite the contrary. I will, therefore, attempt in this paper, to give briefly, some of the conditions in which we can expect certain results from X-ray treatment, and to give a rationale for the effects produced.

The X-treatment for epitheliomata, though recognized by the profession generally, is often made to yield in favor of the surgeon who promises a cure in a much shorter time than has been usually produced by the former mode of treatment. Time and expenses have often driven away patients who decided in favor of the knife only to return later with a recurrence in the scar.

Case: Mr. B., farmer aet. 60; epithe- brought to his physician in this city; a prominent surgeon examined the growth with me. I being unable to give him a definite prognosis as to the length of time required to effect a cure, and being anxious to return to his business, decided in favor of surgery. Though post-operative X-ray treatments were advised by the surgeon, he declined, and returned to his business immediately after the tumor was removed. One month later, he came back with a hard nodule appearing in the scar. X-ray treatments were begun and the nodule promptly disappeared. He has remained cured for eighteen months.

That the X-ray fails to cure some of these growths cannot be denied. All of us have failed to effect a cure in what appeared to be the simplest medical cases. Shall we lay aside our drugs and stand by with hands folded because of such failure? Let us look into the causes of failure for a moment. In my experience, the most frequent is old age and a consequent lack of reparative power.

The X-ray is now thought to be as definite in its effects upon living tissue as is heat or cold, and its effects may be as well regulated if only it be measured to the same degree of exactness. If this be true, and the theory is not disputed by many, as in the case of those agents above mentioned, entirely opposite effects may be produced by varying the mode as well as the intensity of the application. Heat, when applied in a moderate degree, acts as a stimulant, increasing cell growth; but when applied to the degree present in the thermo-cautery, it acts as a destroying agent and produces death of the cells and sloughing. In many of the cases seen in advanced age, the tissues offer such low resisting power that the invading element, be what it may, finds little difficulty in spreading to the adjacent structures, deeply infiltrating them with the process of disease. In such case, the insufficient administration of the light, which loses to a degree its destructive effects in passing through the superficial tissues, acts only as a stimulant on the disease producing factor, and an increase in the rapidity of the growth will be the result. In such cases, treatment should be begun with energy, and penetrating, prolonged exposures, should be given at frequent intervals in order to speedily produce the desired destructive action on the disease producing element. Another case of failure in these old cases may be the inability of the tissues to repair when a destructive effect has been produced, and the sloughing process proceeds under direful influence of pyogenic bacteria.

I am satisfied that the occasional cases of failure in persons of middle age, are due to lack of an accurate estimation of the conditions present and a failure to properly administer the doses.

Lupus Vulgaris:I was astonished recently at the statement of a prominent specialist that the X-ray had proven a failure in the treatment of *lupus vulgaris*. My personal experience has been limited to three cases only, two of which were treated by myself, and the third—treated by a Roentgen ray operator in a distant city—was seen and examined by me before and after treatment. All of these cases were promptly and easily cured. Two of them have been lost sight of, but the third, seen by me to-day, has

remained free from the slightest trace of a recurrence for three years.

Psoriasis. The cases of this disease reported and exhibited to you on a former occasion, demonstrate fully its efficacy in causing at least a disappearance of the lesions.

Eczema. Chronic eszema responds with more or less readiness to X-ray treatment.

The mode of action in the two last named is that of stimulation of the healthy epithelial cells promoting normal proliferation, and a throwing off of those more superficial irritated and irritating.

Keloids, though somewhat tedious in their response, will respond to vigorous treatment. A recent series of cases reported by Dr. Barnum, of Los Angeles, fully demonstrates the curative effect of the light in this distressing malady.

Lymphatic Leucaemia. A case of lymphatic leucaemia was recently treated by me with the following remarkable results: On beginning the treatment (January 14, 1905) the blood examination, made a few days previously, showed leucocytes 140,000; lymphocytes, 90 per cent.; January 27, number of treatments, 4; leucocytes, 45,000 per cubic millimeter; February 6, number of treatments, 4; leucocytes, 25,000 per c. mm.; February 16, number of treatments, 5; leucocytes, 16,000 per c. mm.; February 23, number of treatments, 4; leucocytes, 15,000 per c. mm.; March 2, number of treatments 4; leucocytes, 10,000; total number of treatment, 21. His spleen was reduced from the size of a breakfast plate to nearly normal. Along with the improvement in the blood count, there was a general improvmeent in his physical condition. In beginning treatment, he could scarcely stand, had no desire for for food and suffered with constant nausea. He had fissures in the margin of each nostril, in the nasal septum and also in the anal margin. These entirely healed, and when he left, on account of business affairs at home, he was able to walk wherever he wished and was eating heartily. This man died about May 1st with what was diagnosed as acute tuberculosis.

I must not fail to briefly discuss the subject of deep seated malignant growths. Until quite recently, I had concluded that there was practically no material improvement to be expected from the administration of X-rays in such cases, having seen little or no benefit to these cases in my personal experience, but from recent reports of others, and having within the past three weeks checked the growth, and in fact, already caused a narrowing of the infiltrated area in a case of very rapidly growing, recurrent scirrhus of the breast, I feel assured that the vigorous and prolonged employment of the X-ray does offer some hope of benefit.

In conclusion, let me say that we have in the X-ray a definite therapeutic agent capable of working good or evil as it is scientifically or unskillfully used, and as we cannot expect to produce the same effect from the local application of luke warm water that we observe after the application in the same manner of boiling water, or similar results to follow the hypodermatic injection of one one-hundredth grain of strychinne and one grain, just so we cannot expect to produce the same results with a small dose of X-rays as will be produced with a large one; but, as illustrated by the short, superficial doses necessary for psoriasis, and the long, deep doses for deep seated cancer, the dose must be regulated according to the nature, extent and location of the disease.

The day is not far distant when the X-ray will be accurately measured, and certain definite doses administered for the production of certain definite effects.

312 E. Franklin Street.

Operation for the Repair of Complete Laceration of the Female Perineum.

By C. E RISTINE, M. D., Knoxville, Tenn.

My object in presenting this paper is to briefly consider one of the most serious injuries which may be sustained as a result of childbirth; viz., complete laceration of the perineum; and to present a surgical pdocedure—entirely original—for its restoration to practically a normal condition.

Of those who have made complimentary reference to my operation, I make mention of Dr. Howard A. Kelly, of Baltimore; the late Dr. Wm. R. Pryor, of New York; and Prof. E. E. Montgomery, of Philadelphia, who in his second edition of "Practical Gynecology," published in 1903, presents two of my illustrations and gives a brief description of my procedure.

On May 11, 1899, I read a paper gefore the Knoxville Medical Society, which described my operation, and some months later, (at the request of Dr. Kelly), I contributed an article for publication in *The Amirican Journal of*

Obstetrics, describing the same procedure as in the first mentioned article. The three illustrations accompanying this publication are fairly good. As is often the case since a better conception of a procedure can be obtained from illustration than from verbose text, I have had some crayon sketches prepared, which will aid me in demonstrating the various steps in the operation.

Of the many surgical devices brought to the notice of the medical public for the relief of this condition, none have fulfilled our expectations; however, the merits or demerits of these I shall consider only in a general way, so as to demonstrate the superiority of the author's method over all others.

No doubt svery surgeon and gynecologist has had his share of failures in his effort to repair this lesion, and to those who fail to secure uniformly good results, it would be well to adopt a plan of operating that could be depended upon in every case, provided always, that its technique is thoroughly understood and adopted.

Needless to tell you that all previous operators who have devised means for the closure of this combined perinee-rectal tear are alike in one particular step, that is, they have the stitch or stiches in the rectum (provided the rent exceeds an inch in length); while the operation which I devised and carried into effect, avoids the rectal stitch and converts a complete into an imcomplete laceration before a stitch is inserted.

There are certain principles essential to success in all operations and with the majority of these you must be fully acquainted; the patient should be prepared as for a major operation. I shall not consume time by giving other details, such as position of the patient; anesthetic to use; proper light; number of assistants; instruments necessary, etc., as all of these will suggest themselves to you. Specially desirable in this connection is it that the bowels should be emptied and carefully irrigated, so that there shall be no evacuation of feces to embarrasss the operator.

While the occasional operator may—and usually does—mark out or outline the area which he wishes to denude, the more frequent operator seldom finds it necessary, but in any case the denudation should be so uniform when complete, that when th lateral raw surfaces are brought into apposition, they will fit with such precision as to transform the mutilation into perfect anatomical and physiological relation.

My mode of procedure is as follows: Outlining with my eye the extent of the lateral denudation requisite to construct a perfect perineum, and noting the extent of the rectal rent, I begin high up in the vagina and dissect off an apron or frill of mucous and cicatricial tissue, corresponding to the extent of the vaginal tear.

Showing rectal rent and outline of area to be denuded.

This is proportioned to the length of the rectal laceration down to the apex of this rent, making sure to have enough of tissue when released from above to fold over the rectal rent and extend somewhat beyond the sphincter-ani when that muscle has been repaired. Extending my dissection laterally to the points I have selected for the lower border of the future vagina and upper of the perineum, I continue down the torn edge of the perineum (at the junction of mucous membrane and skin) to a point well below the pits representing the retracted ends of the sphincter-ani muscle. Just here is where failure overtakes many operators; not ony should the integumento-cicartrisial tissue surrounding this pit be freshened, but most essential, stretch the sphincter ani muscle, draw out the retracted ends with tenacula, and scarify them thoroughly. Dissect the lateral flaps down as close to the rectal tear as it can be carried without interfering with its integrity at this point.

During all this dissection avoid button-holeing the apron or frill. Now, having freed the apron from all attachments save that to the margin of the rectal rent—which must not be

disturbed—I invert the apron into the rectum thereby converting the smooth vaginal tissue into a lining for the anterior rectal wall, and leaving the raw perineo-vaginal surface to be

Denudation completed. Apron turned into the rectum and the two sphincter and stitches in place.

dealt with as we would a simple Hegar perineorrhaphy, except the union or adjusting of the sphincter muscle, which is accomplished by passing a chromacized catgut suture through the drawn out ends of the muscle, gentle traction is made upon this suture causing the ends of the muscle to approximate; now pass a silkwormgut suture through skin and muscle, taking a more secure hold, so as to reinforce and release the strain on the catgut suture, and place the sphincter ends in comfortable apposition when this suture is tightened.

Observe now what we have—only a simple incomplete laceration to deal with, the rectum securely off and no stitch in it to carry infection or require removal. I now place the vaginal and perineal sutures just as we do in any simple perineorrhaphy; vaginal of catgut, and perineal of silk-wormgut; the latter I always shot, either with or without the silver wire coil.

In an extensive denudation, you will do well to whip the whole denuded surface together by a two-tier running catgut suture as advised by Barton Cook Hirst; beginning in the upper angle of the vaginal denudation, runing down the deeper part of the wound, just short of the sphincter, and returning in the vagina to a point opposite the original insertion, so that the two ends are joined by a buried catgut suture, as recommended by Howard Kelly,.

The object of either of these procedures is to avoid dead space.

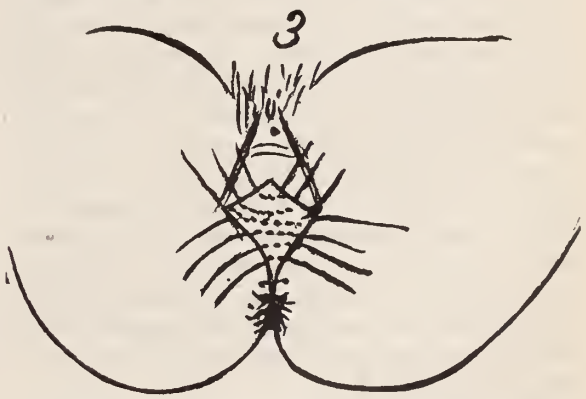
I do not use a pad or other dressing over the sutured area. The nurse is instructed to throw a stream of bichloride solution 1-5000 over the vaginal lip after each urination, whether the act be accomplished with or without the aid of a catheter.

Each day after the third, a vaginal douche of warm water containing a little boric acid is given.

In order that the bowels may be kept fluid and moving, which I desire from the first, I order a tablespoonful of compound licorice powder in half a tumbler of water, to be given as soon after the operation as the stomach will tolerate it, and repeat at intervals sufficiently often to secure two or possibly three liquid or semi-liquid stools in twenty-four hours. While this makes an ugly looking mixture, it is extremely palitable, seldom objected to even by the most fastideous.

The majority of operators shackle the knees The patient is not permitted to assume the erect position 'til ten days later.

The majority of operators shacqle the knees with a bandage—I say please don't; the necessary recumbent position inflicts enough of restraint, without unnecessary immobilization of



Sphincter closed over apron, and sutures introduced.

a part of the body, the movement of which can in on way interfere with the integrity of the recently adjusted tissues.

I anticipate that some one will ask, what becomes of all the apron we have turned into the rectum? You will be surprised how quickly

and effectually this tissue disappears by absorption and atrophy; by the time the patient is permitted to be upon her feet, an examination of the rectum will reveal the presence of no excess of tissue.

By this operation; we avoid the possibility of a recto-vaginal or recto-perineal fistula.

We avoid the undesirable stitches in the rectum, which permits, yea, invites infection, while its removal is often a source of annoyance.

We avoid the enforced constipation with all its attendant discomforts.

Preventive Medicine and Its Relation to Municipal Government and Society.*

By BITTLE C. KEISTER, M D., Roanoke, Va.

A distinguished writer has well remarked: "Ignorance, disease and civilization march hand in hand as a monster trio, defying science, the laws of nature and self government." This being partially true, it becomes readily apparent that the physician's chief duty consists more in the prevention than in the cure of disease. To be able to successfully accomplish this great mission in behalf of mankind and our great country, we must not only continue our usual daily task as physicians and healers er, stateman and humanitarian.
of the sick, the maimed and halt, but we must do more. We must assume the role of reform-

We under stand by preventive medicine, the ability to keep off disease, keeping the organs of the body in a normal condition by avoiding those things that have a tendency to derange the natural functions of these organs. This definition may apply with equal force to the prevention of disease from a municipal standpoint. The shores of our sea-coast should be guarded with as much care and scrutiny in preventing and warding off foreign disease, and thus protecting our country from this common foe of our race, as we would our people in time of war from a foreign foe.

The science of the preservation of health or the prevention of disease, is based upon our knowledge of the causation of disease. This basis includes not merely the consideration of morbific agents, the manner of their diffusion, and the way in which they invade the body and modify the living organism, but also a study of those modes of life that are prejudicial to the integrity of the body. If we have a precise knowledge of the way in which a disease originates, measures of prevention may be readily formulated. We now know how to destroy mosquitos and prevent their bites, yet our sanitary measures against yellow fever for past ages were insufficient and we have been wasting our energies in an unsuccessful attempt to check its headway. With the knowledge that this disease is mosquito borne, preventive measures were focalized against this deadly insect, and soon Havana and many other afflicted cities, perhaps for the first time in their history, were free from this fell disease. The municipal government of Havana, with a medical man at its helm, accomplished greater things in the short space of two years, in that once benighted little city, than had been accomplished in the previous century. Is this not an example of what can be accomplished by a mixture of sanitary science and municipal government, and worthy the imitation of the great cities of the world?

The further we delve into the science of the causation and prevention of disease, the greater are our convictions of the intimate relation that should exist between medical science and municipal government. When we scan the statistics, as reported in our official journals, of the ravages annually made upon our race by the various preventable infectious diseases of the country, our mind's eye is made to drop a tear of sadness and our heart to send up a wail of regret for our long silence on, and indifference to, this important subject.

In our consideration of preventive medicine, we wish to pay some attention to the more recent developments as to the nature of disease. Before going to war, we should study well the character and traits of our enemy, giving due consideration to the various lines of procedure, the modes of invasion, the habits, characteristics and even the topography and climate of the country. Until this is done, we cannot expect as good results from our crusade against so formidable an enemy.

Disease may be considered as a departure or deviation from a state of health, and may be of a structural or functional nature, while health may be said to express the harmonious reaction of the living organism to its environment. It is a relative rather than an absolute condition, and implies the adaptability of the organ-

*Read by title before the 36th Annual Session of the Medical Society of Virginia, at Norfolk, Oct. 24-27 1905.

ism, in both structure and function, to its surroundings.

Man seems to show the greatest ability to adjust himself to diverse environments, even more than any other organized being. The torrid atmosphere of the tropics, the extreme cold of the artic regions, the altitude of the highest mountains, the low level of the plains, are all compatible with perfect health.

We may for convenience say a disease has a remote or predisposing cause, and an exciting or immediate cause; the former lowering the vital resistance of the system and at the same time favoring the latter cause. They may act interchangeably, so that what at one time is a predisposing cause may become a determining or immediate cause at another time. Trauma is usually classed as an exciting cause, while at the same time it may be a powerful predisposing cause to many serious infections. Depressing and bad hygienic surroundings may on the one hand favor the invasion of the tubercle bacillus, and on the other may excite or determine the renewed activity of an old and latent tuberculous focus in the lung. The exciting factor of one disease may predispose to the development of another disease, as is often seen by the tendency to septic infections in persons addicted to alcoholism; the susceptibility to tuberculosis of persons suffering from diabetes or measles. Predisposing agents all act by diminishing resistance, or increasing susceptibility. The normal immunity against disease may be increased by strictly observing the well recognized rules of hygiene, and obeying the laws of sanitary science which I shall endeavor to show at the closing of this paper.

One of the great exciting causes of disease is parasites, of which we have two distinct classes, the animal and the vegetable, both of which are capable of producing diseases of the most loathsome and deadly character. Much, of course, depends upon the susceptibility and immunity of the subject attacked by these micro-organisms. The modes and methods by which we may become victims to these deadly enemies of the human race, are too numerous to even attempt any but a mere passing mention of, in this paper. The atmosphere that we breathe is under certain conditions, heavily laden with these micro-organisms. This is one of the prime sources by which we become infected with tuberculosis, influenza, pneumonia, etc. The street dust of cities may be heavily charged with excrementitious particles from man and the lower animals, and may be carried by the gusts of wind into the eyes and upper respiratory passages of persons thus exposed, and thereby set up a nidus for these loathsome and fatal diseases that are so prevalent at certain seasons of the year. "At least thirty species of these micro-organisms flourish in the oral cavity." Some of them are pathogenic, such as staphylococci, streptococci pneumococcit and often diphtheria bacilli. They are constantly being removed, however, by the saliva, and other secretions from the mucous membranes of the oral and nasal cavities.

When we consider the fact of the oral cavity containing such a large variety of micro-organisms, should we not, as conservators of the public health and benefactors of mankind, devise some means of preventing the *unsanitary habit of promiscuous kissing* that is so commonly practiced by our American women?

This is one of the prime mediums by which tuberculosis, influenza, pneumonia, diphtheria, cancer and syphilis may be contracted. Innocent children are often made the victims of deadly diseases through this obnoxious medium, by allowing nurses, and even strangers on the streets, who by a little artificial flattery, are permited to kiss them. Toy stores, where tin horns and other mouth instruments are sold, after being handled and tried by the mouths of a dozen or more prospective buyers, is another source from which infectious diseases are spread. What has been said of the above sources of infection may be emphasized in reference to dentists' offices, where a dozen or more instruments are promiscuously used in many mouths, thus transplanting the germs from one patient's mouth to another. These are common occurrences even among our best class of dentists, and should require the most careful attention from a sanitary standpoint by the family physician of those that require dental work. It is usually supposed that a first class dentist always sterilizes his instruments, as first-class surgeons do, after treating each case, but after some inquiry and observation I regret to say that these antiseptic precautions are sadly neglected by the majority of the dental profession. Infections of the most deadly character may be contracted from the berths, seats and toilets of our present system of rail-

road passenger cars and steamships, through ignorance and lack of sanitary management on the part of the companies. It is no uncommon occurrence for a person to occupy a berth or state-room which has just been vacated by a tubercular patient who per chance has been sent to some distant climate or winter resort for recuperation, or it may be that he is returning to his home to die among his friends and kinsmen. The attendants are usually ignorant persons who know nothing about infectious diseases, and still less about their prevention. The heavy, bad smelling woolen blankets and the much used pillows and mattresses are simply hot-beds for the spread of microbes. A microscopic examination of the dust on the sill or latch-hole of a single window of one of our Pullman sleepers will reveal the fact that this is the home and common dwelling place of half a dozen or more varieties of deadly parasites.

Could not suitable laws be enacted to compel these large corporations to constantly keep in their employ sanitary inspectors whose duty should be to supervise the careful fumigation of each coach, berth and seat every twenty-four hours? And when the inspector finds a person on board who has a dangerous infection he should be isolated to a special apartment on the train or steamer, where his comforts will be made greater and his social pleasures not curtailed in the least, while at the same time, giving proper and timely consideration to fellow travelers.

Printed rules and restrictions should be carefully posted in a conspicuous place in each berth and seat of every railroad passenger coach and steamship. This same rule should be enforced by all street car companies and barber shops, and should apply with equal force to all public waiting rooms, hotels, boarding houses, assembly halls, theaters, public schools, colleges and churches. The old custom of allowing corpses to be placed in churches for exhibition during public funerals is another common source of spreading infectious diseases and should be discouraged by our churches. Public funerals over persons who have died of infectious diseases is a common source of spreading disease in a community. The common house fly is a well known carrier of disease and has been known to produce epidemics of typhoid fever. It was through this medium that nearly five hundred of our soldier boys died of typhoid fever at Tampa, Florida, during the Spanish-American war. The fly is capable of carrying on his legs and wings a sufficient amount of fecal matter from a typhoid fever patient to infect an army of over one hundred thousand soldiers. At Tampa the dejections were carried over one mile from the camps and deposited in deep trenches, and afterwards covered with slacked lime. Only 24 hours after this rule had been inaugurated the flies, whose legs and wings had never before shown any unnatural appearance, were now whitened with lime, and became quite noticeable to the soldiers at the dinner table when his "flyship" was seen displaying his new dress on the various dishes and sharing the soup as the uninvited guest of "Uncle Sam" and the soldier boys, and at the same time depositing the deadly microorganism that had been borne on the wings and legs of his "flyship" from the trenches over a mile away.

What has been said of the relation of the fly to typhoid fever may also apply to tuberculosis and other infectious diseases. It has been shown by a number of reputable experimenters that the fly can carry tubercle bacilli on its feet and wings, and that it feasts upon tuberculous sputum with the greatest avidity. It has also been shown that smears from the stomach of flies that have fed upon tuberculous sputum contain virulent bacilli that were unaltered by passage through the intestinal tract of the fly. The fly can carry large quantities of sputum to considerable distances upon its feet, wings and body to food, fruits, etc. Our fruit stands, grocery stores, meat markets, cheap restaurants, and the homes of the poor in the low and dirty sections of our cities are the places to visit in order to be convinced of the prevalence of this wide spread evil and disseminator of infectious diseases. In the Philippines the army medical officers found that cholera was continually spread by street venders and small shop-keepers, whose articles of food for sale were constantly exposed to contamination by flies. These are undisputable facts.

All contaminated articles and vessels which may contain the sputum or saliva of tubercular or syphilitic patients, such as spittoons and drinking cups, when exposed to the ever present pestiferous fly, prove to be sources from which these diseases can be contracted and spread. Could not municipal and State gov-

ernment lend a helping hand in stamping out this great nuisance?

I may also add, long this same line, that a very common medium of infection is the ordinary mode our churches adopt of administering the Holy Sacrament, by allowing as many as from twenty-five to several hundred persons drink consecutively from the same communion cup. Any one of the above mentioned deadly, infectious diseases may be unconsciously contracted in this way. This simple precaution, while very important from a scientific and sanitary point of view, may not be very well taken, by some of our over zealous churches, more especially those that hold extreme views on the *sinless perfection of the soul,* regardless of the *sinful imperfection of the flesh.* "It is not that which goeth in, but that which cometh out of the mouth that defileth."

It was at one time believed and preached by certain philosophers, that man's body was "immortal" on account of the micro-organisms with which it was *alive* after death. We might add, that we have many instances of this kind of immortality among the *living* to-day.

If a disease be continuously present in a locality it is said to be *endemic.* Until 1901 yellow fever was endemic in Havana. But thanks to sanitary science, our lamented Dr. Walter Reed, who discovered the cause, and municipal government administered by Governor-General, Doctor Wood, yellow fever has at last received its death blow, and Havana and other cities are reclaimed from this deadly foe. If these conditions, a mixture of municipal management and sanitary science, could be instituted in the city of New Orleans, yellow fever would soon be a dream of the past. May we not hope for these happy results in the near future when the proud old metropolis of the South will shake off the foul stain of Yellow Jack and reclaim her former prestige as an up-to-date, wide-awake city.

A *pandemic* is an epidemic of certain diseases covering a vast area of country, perhaps the whole globe, affecting millions of people at the same time. Our well known and ever present Franco-Russian la grippe is a very conspicuous example of this class of disease. This disease is no respector of persons or nationalities; its victims are found in every known hamlet on the globe. Its visit to America was made in 1889-90, as many of my hearers can testify. Its ravages are too well known to make even mention of them here. It has stalked abroad in our land like a monster demon slaying its victims, unmolested, in every cross-road village, town and city, leaving its blood marks in every grave-yard and cemetery throughout this country. Is this not a reproach to our boasted civilization, and somewhat of a reflection on our sanitary science? Can we not use our energies toward legislative prevention, and in the no distant future be able to call a halt on this hoary headed monster of the East? Bubonic plague is another pandemic disease which has recently made itself known to some of our sea coast towns, and is of foreign birth.

As previously intimated, these foreign diseases could have been prevented and our country protected from their ravages, had proper preventive measures been institnted by our Government. What has been said of la grippe as an infectious and dangerous world famed disease, may also be said of pneumonia, typhoid fever and tuberculosis. These three diseases are to-day destroying more lives and costing this country more than all other diseases and the U. S. Army combined.

According to a recent distinguished writer, one-third of all mankind die of tuberculosis, while two-thirds have this disease. Many, however, recover from the disease without knowing that they have had it, or die of some disease coincident to a small tubercular focus in the lungs, which is brought about by the lowered vitality caused by the tubercular process. The tubercular bacilli are inhaled as dust, and may lodge in different tracts in the system. If conditions are favorable to their growth, they multiply there, but the tubercular bacilli do not multiply outside of the system. As many as five varieties of bacilli have been found on the train of one lady's long skirt after a single shopping expedition on a damp afternoon in one of our modern cities. This is not an infrequent occurrence, and is worthy the careful consideration of our city sanitary inspectors. This should appeal to the common sense of our American women as well as that of our municipal governments. The susceptibility to tuberculosis is much greater with some persons than with others, and is much greater at certain times with the vast majority of the human race —when for instance, resistance is decreased through la grippe, overwork, or run down conditions of one nervous system. Susceptibility is much greater when the air, as in the larger

cities, contain enormous numbers of other micro-organisms. Tuberculosis is absolutely preventable, and its preventability is simply putting into effect simple rules of conduct. It is a question solely of scrupulous cleanliness in regard to expectoration and disinfection of surroundings which have once housed the disease. It is not only preventable but curable. It is a question of how early the diagnosis is made. "If made at the very beginning," says a distinguished writer, "80 per cent at least of the cases are curable." But as it is so well known to every experienced physician, tuberculosis is *the most insidious of all diseases.* A specialist may declare no indication of it whatever, and in a few short weeks it may manifest itself. When there is any doubt in the diagnosis a second examination should be insisted upon. When a cough exists for more than six or eight weeks, in a large majority of the cases there is back of that cough a tuberculosis focus, and it should be carefully looked for without delay. When any one talks to you about chronic bronchitis and continued coulds, make up your mind that there is good ground for suspicion that there is a tubercular process starting up in the lung. Then is the time to establish a diagnosis when it is easily curable, while on the other hand, in a few short weeks or months the case may become hopeless. People so dread to be told that they have tuberculosis and physicians are so fearful of alarming them, that many thousands die annually because of a lack of moral courage on the part of physicians to say frankly, but kindly—"You have tuberculosis, and now is the time to take precautions and get well." According to the best statistics up to 1902, about one third of all the deaths that occurred in our large hospitals were due to tuberculosis, while in some of the older cities and hospitals the proportion was much greater. Statistics show that of all autopsies made, nearly 70 per cent. had lesions of tuberculosis. The records of one hospital in Germany showed that 87 per cent of all autopsies had lesions of tuberculosis. Are these facts not worthy of our most careful consideration? Should they not be made known to our government officials and law makers, both State and Federal,

The moist condition of the mucous membranes has been found to favor the multiplication of certain micro-organisms. A large number of the pathogenic bacteria inhabit the intestinal tract, such as the coli communis, streptococci, etc., while those that do not normally exist in the intestines, readily cause disease, such as typhoid fever, tuberculosis, etc. This class of micro-organisms is often taken into the system through the medium of drinking water that has become infected by the careless or ignorant management of the excretions from patients suffering from such diseases. The water from wells that are in close proximity to dwellings, or that are near the outhouses, hogpens, water-closets, stables, etc., or water in which sewage from towns or cities is conveyed, is one of the direct and most unpardonable sources by which thousands of victims of typhoid fever are made every year. It is a fact worthy of note that by close inspection of the water in large streams, rivers, bays and lakes into which the sewage of towns and cities is permitted to flow, is highly contaminated with many kinds of micro-organisms, especially that of typhoid fever, and as has been repeatedly shown the fish and oysters of some of these bodies of water have given rise to epidemics of typhiod fever.

Municipal government could do wonders toward preventing this, if proper legislation were instituted.

Along these lines we might insist upon the enactment of such laws as will require each public school board to employ a sanitary inspector whose duty it shall be to carefully examine each pupil, both physically and mentally, every youth, to ascertain whether his system is free from any infectious diseases, and also whether his nervous system is in a normal condition, and whether the mental forces are being overstrained with too many studies or too close applications with insufficient exercises in the open air. Many cases of incipient tuberculosis, when there is an hereditary tendency, dates its origin back to the badly ventilated and unhygienic conditions of the public school room.

Among the many indirect causes of disease, I consider our laws of civilization and education contributory, to a very great extent. "Health is maintained without effort only when there is a proper regulation of food supply and an absence of an abnormal stimulation or sedation of function." Excesses in eating or drinking, or the abuses of narcotics, sexual erethism, over anxiety and straining of the brain forces to become famous or wealthy, without regard to a proper regulation of sleep and

rest, are also among the contributory causes of disease. Not only do such causes lead to functional and structural abnormalities, but they also tend to increase susceptibility to various pathologic processes. Dissipation in the use of alcohol in its varied forms under the caption of social intercourse, club-house, carousals, etc., according to scientific and experienced evidence, increases the susceptibility to infectious diseases. Of 2,192 persons suffering from pulmonary tuberculosis, studied by Lancereaux, over one-half were known to be frequenters of the club-house, and regular drinkers.

According to clinical observation, the use of alcohol predisposes to phthisis. It is also a known fact that pneumonia, tuberculosis, cancer and typhoid fever run a more severe course in alcoholics. Not only is this a condition of depraved tissue nutrition in those who use alcohol, but that power of assimilation of food is much reduced. Moreover, alcohol is directly toxic and may cause death in an overdose just as any other toxic agent. (Spiritous beverages may contain, beside ethylic alcohol, many other toxic substances such as propylic, butylic and amylic alcohol, acetone and various aldehydes, ethers and essen tial oils.) Bitters, patent nostrums, cocktails and other so called mixed soft drinks may contain a number of these toxic substances. Absinthe, a French beverage, is said to contain nine toxic essences. Malt liquor is also subject to adulteration with poisonous substances. Thus we see that man's system is subject to the action of many toxic agents causing many obscure ailments that often puzzle the physician, not only in making his diagnosis, but in prescribing suitable remedies toward effecting a cure. A substance known as "*Cocculus indicus*" has been extensively used to fortify beer and give it a certain flavor and effect.

A wide-spread epidemic of arsenic poisoning occurred in Birmingham during 1900-01, which was traced to beer containing glucose, manufactured with sulphuric acid and contaminated by this metal. Lead poisoning has also been ascribed to the use of beer contaminated by vessels and lead pipes in its manufacture.

Over indulgence in malt liquors is particularly apt to be followed by parenchymatous and fatty degenerations in the viscera and also a necrotic condition of the blood vessels of the brain, while distilled liquors most frequently cause gastro-intestinal disorders, forms of sclerosis affecting especially the liver, kidneys and central nervous system; neuritis and palsies, obscure neuroses, epilepsy, mania and dementia. Alcohol seems to increase the tendency to rheumatism and gout. There is a noteworthy relationship between alcoholism, the psychoses, insanity, venery and crime. Alcohol increases sexual desires, obtunds the moral sense, and favors a careless disregard of precaution against infection. Dr. Forel found that veneral infection was far more frequent among alcoholics than any other class. In over three fourths of the cases studied, the patients were under the influence of alcohol when infection occurred. Dr. Danna places the average duration of life of the alcoholic drinker at fifteen years. As a rule the hard drinker becomes a wreck and either dies of alcoholic poisoning or takes his own life at about the age of forty. When we consider that 180,000 deaths (Taylor) occur annually in the United States from the effects of alcohol, is it not high time for us to call upon municipal, State and Federal government, to aid us in the warfare of preventive medicine? In the prevention of dissipation, especial stress should be placed upon the moral education and self control of the youth of our land. This is all the more necessary in the case of those inheriting morbid tendencies to depraving indulgencies. Such persons should be made to realize that the expression of hereditary tendencies is by no means inevitable and that self-restraint may be cultivated. These important facts should be taught in our schools and colleges with many other important things that would help to prevent physical and moral decrepitude and decay. Sexual hygiene should also find a place in the public school curriculum, as preventive medicine when viewed in its broad general sense indicates not only the prevention of disease and its consequences to the individual, but of still greater import to the mass of people.

Venereal diseases to-day are causing more domestic unhappiness and demands more attention from the family physician and the gynecological surgeon than any other class of diseases. Dr. Osler, in a recent article on preventive medicine, in describing the various infectious diseases which are the greatest scourge to the human race, such as cholera, yellow fever, small-pox, pneumonia, tuberculosis, leprosy, etc., says of veneral diseases: "These are in one respect the worst of all diseases we have to mention, for they are the only ones transmitted

in full virulence to innocent children to fill their lives with suffering, and which involve equally innocent wives in the misery and shame." The social danger from this source is plainly shown by the frequency and gravity of martial infections. Fournier's statistics, embracing women from every walk of life, show that no fewer than twenty per cent., or one in every five, of all women having syphilis, were infected by their husbands soon after marriage. The frequency of gonorrheal affections in married life cannot be computed, but we can form some idea of its gravity from the number of women whom it makes subjects for the operating table. Dr. Grandin, of New York City, has recently stated that gonococcic infection is responsible for 60 per cent of all gynecologic operations performed by surgeons. Another distinguished gynecological surgeon remarked to Dr. Morrow, of New York that he had just completed his four hundredth hysterectomy, and that fully 75 per cent of his cases were operated upon for suppurative pelvic inflamation as the result of *gonorrheal infection.*

As Professor Morrow in *American Medicine,* has well remarked: "Physicians are habituated to these horrors, and accept them as the deplorable, but inevitable, experience incident to their professional work. The public never hears of them. It is evident that these diseases will continue their ravages, poisoning legitimate marital unions, and wrecking the health and lives of innocent women and children unless municipal government takes a hand in the preventation of their spread."

The medical profession should become aroused to a full sense of its duty in effecting organizations of a sanitary and moral character for the prevention of this class of loathsome and degrading diseases. Public sentiment should be aroused by securing good, substantial citizenship to work in conjunction with the profession along certain specific lines that may eventually influence our National government to join with us in this great fight.

In this class of diseases the cause is within the control of the individual. Prevention is, therefore, a question of personal hygiene, in dividual prophylaxis and moral restraint.

This important principle should be taught by the family physician at an early age of the young men and indelibly impressed upon him.

It is surprising that there exists among many members of the medical profession, who are fully alive to the significance of this peril, a feeling of pronounced pessimism as to the utility of preventive measures—they express a feeling of indifference and say: "*These diseases have always existed and will continue to exist;* it is vain to attempt to exterminate them."

It should be remembered that only a few years ago the same spirit of skepticism was manifested in regard to the prevention of tuberculosis. It was thought impossible to control a disease, the contagion of which was propagated by the ordinary relations of family and social life; and its obligatory feature of notification was opposed by the medical profession. Notwithstanding these discouragements an aggressive campaign was instituted, the people were enlightened as to its dangers to the public health, and the special medium by which the micro-organisms of this fell disease were spread. Sanatoria with modern facilities for treatment were provided, with the result that already its spread has been almost entirely arrested, and its morality at least ten per cent.

All honor to sanitary science for this effort toward ousting from his long abiding place, the "Great White Plague!"

It is precisely along these lines that the prophylaxis of venereal diseases should be undertaken. It should be a campaign of education, and a crusade against ignorance. The key to the proper solution of this great problem is not to encourage prostitution by license as is done by many municipalities, but on the other hand, to prevent the making of prostitutes. This requires a most careful study of the underlying causes—the bad social condition of which prostitution is largely the product, the auxiliary agencies, the cadet system, the white-slave trade, the Rain's law of hotels, the purveyors of prostitution under whatever guises they may do their dark and damnable work. The making of prostitutes can be prevented by throwing additional safeguards around female minors, especially unprotected girls who go to the cities for employment, by establishing reformatories and homes for the reclamation of any who wish to reform. Every woman reclaimed from this kind of life, in addition to her social salvation, represents the suppression of a source of numberless contamination of others.

It is no less important to safeguard the male minors. The evils of prostitution can never be corrected so long as the morals of young men are considered a negligible quantity and the

"sowing of wild oats" a pardonable past-time.

It will be seen from the above facts that the prophylaxis of venereal diseases is pre-eminently a socio-sanitary problem complicated with all the complex interests of our social life which is a common factor in our civilization.

Any sanitary movement which is so complicated, the united efforts of all the best social forces for good morals and sanitary science, should be invoked. We should enlist the co-operation of the heads of schools and colleges who are entrusted with the education of the young, and who can institute needed reforms in the present system of instruction; of the clergy who can render invaluable aid in the moral training of young men and young women; of jurists who can intelligently frame legal measures of protection; of sociologists who can render material service in remedying social conditions which favor the spread of these diseases; of philanthropists and public spirited men generally.

This important subject is now engaging the thoughtful attention of high dignitaries of both Church and State of nearly all the nations. They are viewing with lively interest, the dangers which come from the rupture of the marriage relation, the creation of a family, the raising of children with all the horrible effects of venereal disease upon conception and its blighting effect upon the product of conception. Syphilis so vitiates the creative principle that the children who escape with their lives are dwarfted, degenerate, stamped with physical and mental inferiority, and capable of transmitting the same class of organic defects to the third generation.

In the future evolution of hygiene or sanitary science, its function will not be restricted to the care of the present population, but will embrace in its objects the health of the descendants of this population.

The final service of preventive medicine to humanity will be the prevention of hereditary spread of disease by the sanitation of marriage. It is only by enlightening and hygienically advising the people, and by excluding from marriage those who have disease that unfit men and women for marriage and parentage that we can prevent the mass of disease and misery that are thus engendered in the descendants. If these means prove inefficient, an enlightened public sentiment will doubtless sustain and sanction *coercive* legislation by imposing a penal responsibility for this crime.

Municipal government could not do a more humane act than to lend her aid to the humanitarians of our profession who may feel disposed to put forth an organized effort for the purification and sanitation of our marriage laws. Our State and Federal governments could not contribute to a more worthy object for suffering humanity and the upbuilding of our country and nation than joining hands with the medical profession of this country in stamping out and preventing infectious diseases. Such, for instance, as tuberculosis that is destroying millions of our young men and women annually; pneumonia, the rival of tuberculosis, of late years, plucking its thousands of our robust, sturdy manhood every winter and spring. In 1900, as many as 105,971 people died in the United States of this disease. In New Iork City alone 12,366 died of pneumonia last year, (1904).

Close in the wake of the above two deadly human family, cancer, destroying, according to enemies of the race, comes that terror of the the latest statistics, 64,000 people annually in the United States. Of all the diseases that have puzzled science since the world began, none have been so deadly, so insidious as tuberculosis, pneumonia and cancer. Crafty beyond the measure of man, they have slyly crept upon every civilized nation on the globe, and once a hold is gained, they never cease to grow. All other diseases, it is realized, are in their infancy as compared with these. Grim and terrifying pneumonia heads the list at the present day, it having passed its rival and old leader, tuberculosis, during the past few years. This is due to the stunning blows that tuberculosis has received on his *solar plexus* by the mighty hand of sanitary science, and the unaccountable increase in mortality of pneumonia over previous decades. Typhoid fever follows close on to the above diseases, slaying its thousands of every age from early youth to middle manhood every summer and fall. Then we have small-pox, yellow fever, cholera, bubonic plague, leprosy, syphilis and many others that demand the most careful scientific management to prevent their deadly scourges upon our race.

It is said that, of the 2500 soldier boys who lost their lives during the Spanish-American War, 86 per cent died from infectious diseases. Are not all these sad facts sufficient argument

in themselves to convince any sane mind that there is an aching void somewhere?—That there is a *vacancy in the cabinet* at Washington that should be filled by a competent representative of the medical profession whose timely advice on scientific medicine and sanitary science can be utilized for the common weal and eternal welfare our beloved country and nation?

It is a sad reflection on our modern civilization that while we regard so essential the separate departments of War, of State, and of Agriculture in the Cabinet at Washington, we deliberately ignore the safeguarding of our people from the terrors and sufferings of infectious diseases.

In my humble judgment, for a practical and scientific solution of this great problem that confronts the nation so boldly to-day, there should not only be a competent representative of the medical profession at Washington, but each State in the Union should have a representative as sanitary commissioner, whose duty should be to supervise the management and prevention of all contagious or infectious diseases of this country along the same line of action as our State Commissioner of Agriculture.

One of the important duties of a State Sanitary Commissioner should be the selection of competent sanitary inspectors for each country and municipality of the State, ranging in number according to population, say one inspector for every 500 inhabitants. Each inspector should be required to visit and inspect all the schools, both public and private, that may be within his jurisdiction and make a detailed report each month and all such reports published in a quarterly bulletin or sanitary journal with other important sanitary information. A copy of this bulletin should be sent to each county newspaper with the request to publish same at the expense of the county or municipality and a copy of the paper mailed to each voter in the county. These county and municipal sanitary inspectors should organize into a State Sanitary Association and be required to hold a convention at some important section of the State at least once each year, for the purpose of discussing important topics on Hygiene and Sanitary Science.

In conclusion, I recommend to this society immediate action on this important subject by the appointment of a committee to take up the matter with the Legislative Committee of the American Medical Association and urge prompt action before the next session of the U. S. Congress. This committee could also act in the same capacity in advocating these measures in behalf of the State of Virginia before the next meeting of our State Legislature. Let Virginia doctors have the honor of starting this great movement in behalf of suffering humanity and our great nation.

For valuable information contained in this paper, my thanks are due Prof. P. A. Marrow, of Bellevue Medical College, New York, and Prof. W. A. Babcock, of Medico-Chirurgical College, Philadelphia.

Obituary Record.

Dr. Vernon G. Culpepper.

Died at his home at Portsmuoth, Va., October 15, 1905, as the result of an apoplectic stroke. He was born at Portsmouth, Va., September 25, 1856, which city was his home all of his life except of course, while a student at the University of Virginia, in the Academic, and afterwards in the Medical Department. He graduated as Doctor of Medicine from the Medical Department of the University of the city of New York, 1877, and served as House Physician in Charity Hospital, New York City, 1879. On his return to Virginia he began practice and rose to a high position in the profession of his State. He joined the Medical Society of Virginia, 1890, and was ever afterwards an active, useful member. About 1899, he was nominated for appointment as a member of the Virginia State Board of Health, and his faithful work as one of that Board will long be remembered. He filled many positions of distinction in his communtiy, where his memory will long be cherished. The Virginia State Board of Health will greatly miss his valuable services. Suitable action will be taken by this Board during its meeting at Norfolk, September 25 and 25.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 15.
Whole No. 231.

RICHMOND, VA., NOVEMBER 10, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

An Unusually Large Foreign Body in the Larynx for Five Days.—Removal.

By JOHN DUNN, M. A., M. D Richmond, Va.,
Professor of Diseases of the Far, Throat and Nose and Associate Professor of Diseases of the Eye, University College of Medicine, Richmond, Va.

Mr. L., on February 9, while eating turkey-hash, felt a bone stick in his throat. Efforts to dislodge it by coughing and clearing

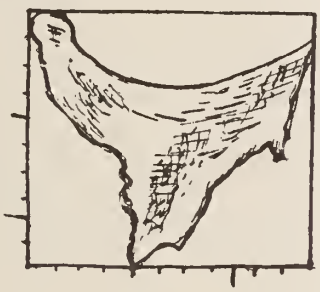


Fig. 1.

his throat proved unavailing. On February 14th, examination of the throat revealed the following picture:—Dividing the laryngeal

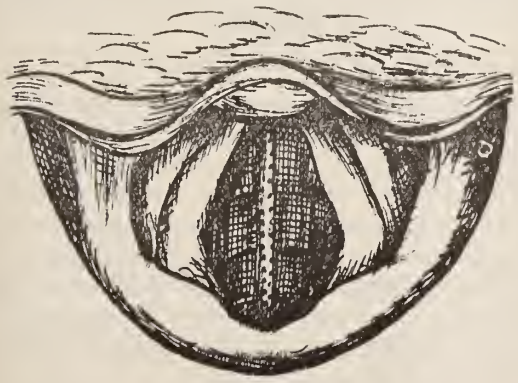


Fig. 2.

cavity in the middle line was a thin bone, the upper anterior angle of which was buried in the mucous membrane between the anterior insertion of the true vocal cords. The posterior upper angle was buried in the mucous membrane over the inter-arytenoid muscle, nearly half an inch below the tips of the arytenoid. The vertical extent of the plate of bone which was visibly a large one could not be made out.

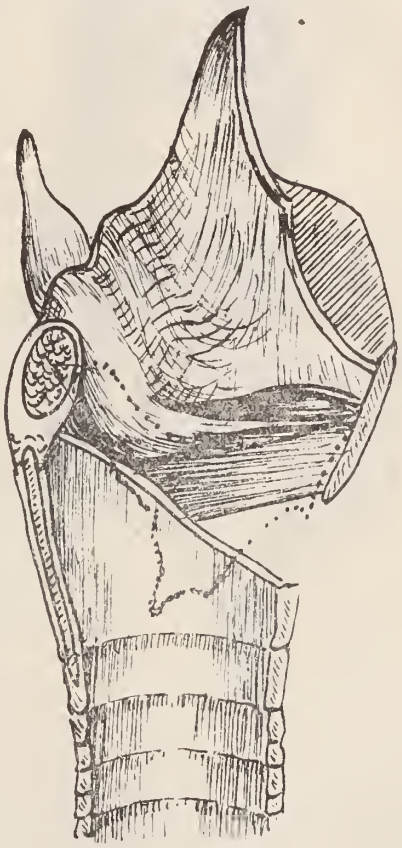


Fig. 3.

Surrounding the points of the bone where they had been forced into the mucous membrane were a considerable number of small swellings, apparently granulations. There was no difficulty in breathing and save for a slight hoarseness, no noticeable change in the voice. The patient had taken no food since the 9th, except

a small amount of egg-nogg on two occasions, for the act of swallowing was very painful. The larynx was extremely sensitive to the touch over the lower angle of the thyroid. *Both ears were painful,* the discomfort resembling that caused by overfilling the middle ear with air. There was no oedema of the larynx. After applying cocaine to the mucous membrane of the laryngeal cavity the piece of bone was caught with a pair of tracheal forceps and

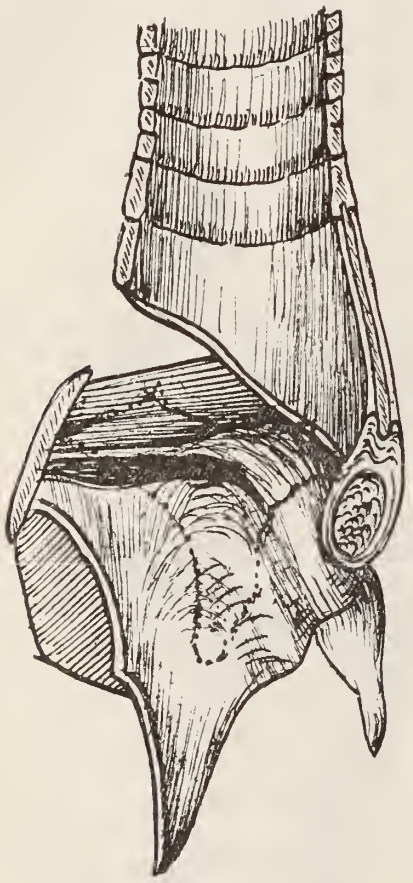


Fig. 4.

an attempt was made to extract it. The first three or four efforts failed, although considerable force was used. Finally the bone was felt to move—the forceps lost their grip and the bone could not be coughed out. Examination revealed the fact that one end of the bone was at least half an inch above the inter-arytenoid commissure, and easily in reach. When seized with the forceps, however, it was found to be even more firmly wedged than before—the reason for this at the moment not being plain. After several attempts, during which much force was used in traction, and several failures, the piece of bone was seized and made to cut its way through the mucous membrane. The bleeding was insignificant. Examination of the specimen revealed the cause of the difficulty in removing the bone even after one end had been withdrawn from the laryngeal cavity. Illustration No. 1 shows the shape and size of the plate of bone. It resembles a shoe. The top and toe of the shoe had been forced into the laryngeal mucous membrane, the heel protruding into the trachea below the cords. The top of the shoe-shaped piece of bone had been seized with the forceps and after much traction had been pulled upward thus elevating the heel —the toe remaining fixed. The heel had accordingly become wedged into the inter-arytenoid region as the top had originally been. Illustration No. 2 shows the picture as seen in the laryngoscopic mirror at the first examination. No. 3 is a side view of the bone in its original position. No. 4 shows its position after partial withdrawal—lateral view.

The aural reflex is interesting. It is further to be noted that the changes in the patient's voice were far slighter than one might have imagined at first thought, and consisted in a hoarseness only moderate in degree. No after treatment was advised. The larynx healed rapidly. The great difficulty in swallowing is readily explained.

THE TREATMENT OF SUMMER DIARRAHOEA OF INFANCY.*

By THOMSON M. BAIRD, M. D., Crewe, Va.

The treatment of summer diarrhoea of infancy, should be placed under three heads, viz.; prophylaxis, hygienic and medicinal.

Prophylaxis.—Realizing as we do that the heat of the summer months exhausts the vitality of infants, causes artificial food to become unsuitable for digestion and favors the increase of bacteria, we are forewarned and should do every thing in our power to prevent diarrhoea making its appearance.

We should endeavor to keep the babies in a healthy condition, especially their digestive or-

*Read before the 36th Annual Session of the Medical Society of Virginia, at Norfolk, Oct. 24-27, 1905.

gans, that their powers of resistance may not be lowered to such an extent that they will succumb to an attack of diarrhoea without a fight for life.

Instruct mothers and nurses in the care of infants and impress upon them the importance of following all directions explicitly.

In nine cities only in the United States, pamphlets are distributed by the boards of health instructing mothers and nurses how to care for and feed the baby during the summer.

It would be well for our State Board of Health to take up this matter and distribute such literature broadcast before the advent of the heated term. Many lives would thus be saved; the death rate from this disease is appalling. Ignorance or carelessness on the part of mothers or nursese causes a large number of cases.

Divest their minds of the idea that it is perfectly proper for a teething baby to have a mild diarrhoea. Many mothers and especially grandmothers, think it a rather favorable sign for the baby to have a simple diarrhoea while teething; consequently do call in medical aid until the child is in a dangerous condition.

A nursing baby should not be allowed any solid food until nature intended that it should. Small pieces of apple, cake, candy, etc., act as irritant foreign bodies and predispose to diarrhoea; a baby should not be taken to the dining-room, for the temptation is great to give it some dainty that may prove the cause of its death. Babies do not require so much food during the summer months as at other times, but do require more water, which should be sterilized and given at regular intervals. Have the baby nurse or take its artificial food at regular intervals, every two hours from six A. M., until ten P. M., and one night feeding for the first four to six weeks; every two hours and a half until the sixteenth week and every three hours thereafter.

[1] "A good rule is at the age of one week to give one ounce each time; at four weeks, two and a half ounces; at three months, four ounces; at six months six ounces; and gradually to increase to eight ounces, which is as much food as a child should ever take at a time until weaned."[1] After the sixteenth week a baby should not nurse from ten or eleven P. M., until six A. M. Overfeeding and irregularity cause digestive disturbances and predispose to diarrhoea.

It is not easy to get mothers into regular habits, they are prone to feed the child every time it cries, but if we persevere, repeat our instructions, particularly pointing out the danger, we will gain a convert in the end and the baby will profit thereby.

If it is impossible for the mother to nurse the baby and a wet nurse is not attainable, we should resort to cow's milk which rank, next to mothers' milk as an ideal food. We may expect diarrhoeal troubles in nearly all artificially fed children, consequently they should be watched with unusual care.

Modified milk as recommended by Holt[2] is one of the best and easiest prepared artificial foods. Physicians should familiarize themselves with this method or that of Rotch[3] or Winters,[4] and never fail to give written directions for its proper preparation.

Pure, fresh milk is necessary to secure success with any method; unless it can be gotten, condensed milk is the next best substitute.

No strict rule can be followed regarding artificial food, for one baby will thrive on a food that will prove poisonous to another, but we may safely say that modified milk is far superior to all other methods and should be given a trial in all cases, when possible.

One of the principal troubles with the artificial feeding of infants is, that the food is improperly prepared. Sterilized milk, condensed milk, peptonized milk and several of the prepared artificial foods on the market have their uses. In artificially fed infants the physician should study the individual case and do the best he can under the circumstances, endeavoring to have the proportion of fats, sugar, salts and proteids correspond to the proportion found in mothers' milk. Too much stress cannot be laid upon the importance of thoroughly cleanliness in the preparation of artificial food.

A good supply of nipples and bottles should be on hand that there may be no hurry in cleaning them. Both bottles and nipples should first be washed in cold water to get rid of all curds, after which they should be scalded, then kept

[1] Practice of Obsterics Edgar, 2nd Edition.

[3] Pediatrics, Hygiene and Undical Treatment of Chil dren, T. M. Rotch.

[4] Feeding of Infants, J. E. Winters, M. D.

in a solution of soda until used, to prevent acid fermentation.

Hygienic. The sleeping room of the baby should if possible be large and well ventilated, plenty of pure fresh air is necessary to the well being of a growing child.

Only light clothing and very little covering, should be used during the hot term, too much cover and clothing do much harm to an already hot and irritable baby. Frequent baths should be given and the napkin changed and disinfected as soon as soiled.

City children should if possible, be sent to the country to spend the summer; if that is not practicable allow them to live in the open air as much as possible, only avoiding the direct rays of the sun and the dews of night. Keep them in the yard under the shade of trees, or on the porch; night air will not harm them if they are kept under cover. Allow them to sleep on the porch if the house is hot and close; a hammock makes an ideal, cool summer crib. Keep them as cool as possible that they may rest comfortably and digest their food. Heat and lack of fresh air depress and debiliate the child and favor the appearance of diarrhoea.

Medicinal.—Infantile diarrhoea, whether from depression occasioned by heat and lack of fresh air, from irritation and nervousnes caused by dentition, or from bacteria is purely a food disorder and should be treated as such.

Winter,[5] says, "Diarrhoea is a food disorder. Therefore preventable at inception. Prompt, appropriate treatment unfailingly arrests it at once. Therefore it should never be fatal.

Dunn[6] holds, "That heat and its consequent indigestion, explain the great increase or diarrhoea during the summer."

Holt[7] says, "Over-feeding, too frequent feeding, and the habitual use of improper food all combine to produce a chronic indigestion which is probably the most important predisposing cause of diarrhoeal disease."

To treat this disease properly, the alimentary canal should be thoroughly emptied; the diet regulated, combat special symptoms and secure proper hygeinic surroundings. The treatment by drugs is of no little importance. Harsh and improper medication should be guarded against, lest we do more harm than good; over medication should be avoided as carefully as over-feeding.

First of all empty the alimentary canal of all of its contents. The importance of this cannot be over estimated, for a cure cannot be effected until the intestinal tract is entirely free of all irritating substances or infected matter.

A full dose of castor oil is the best extruding agent; the oil is better borne if it is ice cold. If on account of an irritable stomach oil will not be tolerated, one fourth to one half grain doses of calomel should be given every hour until the characteristic green stools make their appearance. Frequently it is necessary to give both of these drugs to accomplish the desired result.

Colonic irrigation will greatly assist in emptying the intestines of its contents. Attach a number 14 or 16 Amer. catheter to a fountain syringe and allow three to four quarts of warm sterile water or saline solution to flow gently until clear water returns by the side of the catheter; this procedure may be repeated in twelve hours if necessary. As a routine measure in the treatment of this disease, colonic irrigation is not recommended, at the onset it is of great benefit and under certain circumstances may be repeated daily for some days; to relieve the lower bowel of accumulated feces, mucus, or it may be that an irritating mass is incarcerated in a valvular pocket that might not be released other-wise for several days.

The attending physician should always supervise colonic irrigation in person. If vomiting is a prominent symptom lavage will be necessary; attach any ordinary soft catheter to a funnel and with normal salt solution, rid the stomach of all undigested matter; it will not be necessary to repeat the stomach washing unless fresh infection takes place later on.

No food of any sort should be allowed for at least twenty-four hours; some authorities say even for seventy hours.

Nothing but sterile water should be allowed; have the water measured and allow as much or more, by actual measurement, as if it were the usual amount of milk. If after twenty-four hours we are satisfied that the alimentary tract is clean, we may allow a nursing child to take the breast for three minutes every hour or two, watching carefully the effects; if no bad effects

[5]Undical News July 15, 1900.
[6]Archivis of Pediatrics, June, 1905.
[7]Disease of Infancy and Child head, by L. Emmett. Holt, M. D., L. L. D., 2nd Edition.

are noticed, the regular nursings may be gradually resumed.

In an artificially fed baby it is best to allow it to live on barley water for several days before resuming milk; the milk should be given in a very dilute state for a few days after recommencing it.

First put one teaspoonful in the barley water, gradually increasing the amount, until the usual amount can be well borne by the child.

In all cases lime water in the proportion of about one to twelve, should be given with mik, to overcome the acidity of cows milk. Albumen water is very nutritious and may be alternated with barley water; expressed beef extract is well borne by some children.

If there is evidence of acid fermentation, barley or cereals of any sort are contra-indicatel, while in albuminoid decomposition, beef extracts, broths and albumen water should be avoided.

As stated in the first instance; at the onset we should secure free purgation, irrigate the colon and stop all food for a time. It is necessary also to use remedies to allay inflammation and relieve pain. Bismuth sub-nitrate and opium in the form of the deodorized tincture, paregoric or Dovers powders are practically the only drugs we will need in uncomplicated cases. Bismuth has been replaced by many drugs new and old, but to-day there is no drug that is used so universally and with such satisfactory results as bismuth in the treatment of diarrhoeal conditions. Large doses must be used to have any effect, one to two drams of this drug should be given every two, three or four hours according to the severity of the case.

It may be given suspended in mucilige, or in a mixture containing essence of pepsin and pepermint water. Bismuth is well borne by the stomach; it acts locally as an antiseptic; prevents fermentation in the intestinal canal and is practically non-toxic. Bismuth is indicated in any form of infantile diarrhoea, and should be used from the onset until the patient is entirely well. Opium should only be used to relieve pain and tenesmus. The dose and frequency of administration should be regulated by the severity of the symptoms and should be stopped as soon as the desired result has been obtained. If there is high fever or any brain symptoms we should be guarded in the use of opium. Iftenesmus and straining are severe with frequent small actions, five to twenty drops of laudnum with two ounces of starch water may be injected per rectum as often as indicated; it is sometimes necessary to give a suppository containing one-half grain of cocaine to relieve this condition. Stimulants are needed in all of these cases, to maintain the general resistance of the patient. Aromatic spirits of ammonia, brandy or whiskey should be given regularly from the onset.

If much nervousness is present and the child tosses its head from side to side, bromides are indicated, also cold to the head, a hot water bottle half filled with ice water acts admirably as a pillow, is convenient and agreeable to the patient. If there is much fever, cool baths, cold to the head and ice water injections.

In collapse, 1-100 grain of morphine hypodermically repeated in a half hour, with a full dose of aromatic spirits of ammonia and whiskey, and the child wrapped in warm blankets until reaction takes place. If the patient does not respond properly to this treatment we should immediately give a subcutaneous injection of from two to four ounces of saline solution.

Throughout the disease the patient should be kept perfectly quiet, no noise of any kind should disturb the patient's rest.

If after a few days the patient does not seem to respond to treatment properly, a change of climate should be recommended.

Sometimes such a change acts magically, and the patient is transformed from a pitiful whining skeleton to a healthy child in a few weeks time. The mountains or the seashore are the ideal places, but if that is not possible, a change of a few miles will sometimes work wonders.

Throughout convalescence the child should be watched carefully, for so long as hot weather remains the patient is likely to have a recurrence of diarrhoea. After the acute symptoms have subsided and the patient remains feverish and languid with a coated tongue,, hydrochloric acid is indicated in conjunction with pepsin and bismuth.

I have only endeavored in this article to mention the treatment of summer diarrhoea in a general way, not attempting the treatment of the different types separately, for the treatment of each different type is practically the same, viz.: dietetic, hygeinie, treatment by drugs as enumerated above and the treatment of special symptoms.

AUTO-INTOXICATION.*

By D. L. FIELD, M. D., Jeffersonville, Ind.

The condition known as auto-intoxication is not so thoroughly studied perhaps, and not so well understood as it should; but it may be very profitably considered from both a physiological and pathological point of view.

Bouchard says: "It is self poisoning of the individual." To my mind, that is not sufficiently definite, as it implies a condition man may bring upon himself wilfully or ignorantly, when in reality it is an unavoidable physiological process; in other words, putrefactive processes in the alimentary canal, and the development of physiological and pathlogical alkaloids, which play an important part in the production of disease, independent of any knowledge or control of the individual.

An author says: "Considering the multiform changes that take place in the intestines during the process of digestion—changes of a chemical, fermentative and putrefactive nature—there must be produced substances of a highly complex nature—alkaloids or ptomaines—which, when absorbed, may seriously affect the vitality of the individual.

We are all more or less protected against the injurious effects of micro-organisms, by the fact that products secreted as the result of microbic activity, react upon the organisms themselves, and thus limit their longevity. It is the function of the gastro-intestinal juices, aided by the movements of the stomach and intestines, to convert foods into such soluble forms, that they can be utilized by the economy. Babes has isolated from the normal intestinal mucus, five species of bacteria, while an enormous number of micro-organisms exist in the large intestines and feces. All the organisms resist the action of the digestive fluids, save a few which are dissolved in the gastric juice.

Bouchard claims that "man is constantly on the edge of a precipice; he is continually on the threshold of disease; any moment of his life, he runs the risk of being overpowered by poisons generated within himself."

Self-poisoning is only prevented by the activity of the excretory organs, chiefly the kidneys, and the watchfulness of the liver, which acts as a sentinel to the materials brought to it by the portal vein from the alimentary canal. "Disease is something not altogether apart from the individual, but the two are often founed living in identical conditions."

Chemical investigation has shown how disease depends upon the products of fermentation and putrefaction, rather than by the *direct action* of *microbes* upon the system. It is this fact which renders the life history so valuable to us, for long after the microbes have been destroyed, the enzymes or ferments which they formed, continue to act, and are not destroyed by a temperature which is destructive to the organisms themselves. It is this fact which throws a searchlight upon fermentative and putrefactive conditions in the alimentary canal, and must be of incalculable value as confirmatory of the antiseptic treatment of enteric fever.

To repeat: The poisons which rank first are mineral substances introduced with our food; then come the products of physiological secretion—saliva and bile—the products of digestion; digestion too, while it transforms albuminoid substances into peptones, also gives birth to alkaloidal poisons and lastly, toxic substances derived from intestinal putrefaction.

Now, if the body is the receptacle and laboratory of poisons which are so constantly endangering health and life, the question would naturally suggest itself:—How is the system protected from early destruction? One author says, "He is astonished to find so many poisons in the intestinal canal, any yet so few toxic accidents!"

Bouchard asserts that the biliary salts are toxic in infinitesimal quantities. They do not kill by direct intoxication, but we can see by the microscope the harm they do. They dissolve and break up the blood globules, and also others cells—striated muscular fibres, and the cells of the liver. They therefore cause anatomical lesions and intoxication from setting free substances that are toxic, which enter into the composition of the cellular elements. This intoxication developes but slowly. So long as there is functional activity of the kidneys, all goes well, but if not, they die by the intoxication of biliary salts, and other products of cellular destruction. If bile is toxic, directly or indirectly, the intestines already are, so far as the bile is concerned, and there is a source of intoxication however feeble, yet really so.

*Original abstract from a paper read before the Mississippi Valley Medical Association, Indianapolis, Ind, October, 10 12, 1905.

We are intoxicated from intestinal putrefaction —not only that which arises from imperfect metamorphosis of digested matter, but that which the presence of micro-organisms in the intestinal tube incessantly maintains. In the intestinal canal, the most favorable conditions for the elaboration of poisons are realized. There are found nitrogenous substances, already peptonized, and peptones are, as is well known, excellent culture media for microbes. It has been supposed that the gastric juice would arrest fermentation and destroy infectious agents, but they are only neutralized, or passed into a state of latent vitality. The action of organized ferments commences when the food has passed the pylorus. The bile has been regarded as arresting fermentation, but the bile is capable of undergoing fermentation, if not putrefaction. It can, therefore, but feebly oppose fermentation in the intestines, and particularly, the large intestines, capable of passing products of putrefaction into the blood.

To sum up—the toxic substance found in the intestinal canal, are the salts of potassium and ammonium, the bile, and the residues of putrefaction.

Therapeutically, then, what shall be done? The first thing would be to limit their penetration into the blood. If they have been observed, we should endeavor to destroy them. We should stimulate the liver by proper therapeutic agents; if they have escaped the liver, they should be eliminated by the skin, lungs, and kidneys. If all these attempts fail, we should have recourse to certain antidotes which tend to counteract the physiological effects of the poisnos which menace the system. We have a striking example of the antagonistic properties of poisons in atropine and pilocarpine.

An author says: "We must never neglect to keep up the strength of the patient, so that he may have time to eliminate the poisons; sometimes we only have to keep him alive a few minutes more, in order to save him; we cannot supply him with radical force; what he requires is active force; thus we are led to administer stimulants which may awaken the forces remaining latent.

Therapeutics is effected to a certain extent by nature; in uraemia, one of the poisons is already lessened—disassimilation being checked itself in ureamic and other patients attacked with self-poisoning. Poisoning of alimentary origin, may be diminished. The conclusion of Bouchard is, that the effects of self-poisoning can be largely controlled by an antiseptic treatment, as he contends that such a course destroys the alkaloids in the fecal matter, and the urine, and diminishes the toxicity of all poisons generated in the body.

Before concluding this paper, and as illustrating the violent nature of toxins formed from fecal putrefaction and bilious fermentation, I shall mention the case of my grandson, aged seven years, who was attacked by high pyrexia, hot dry skin, and nervous jactitation. On seeing him, I prescribed hydrotherapy, anti-pyretics, and anti-spasmodics. Shortly after leaving him, I was hurriedly summoned back, to find him in a violent epileptiform convulsion. A copious enema of warm soap suds, and a large dose of oil were ordered, and in the course of a few hours his bowels moved freely, and the dejection was greenish-yellow, and exceedingly offensive. His fever began to decline, and the next morning he was up and about as though he had never been ill. The case clearly exemplifies what frightful mischief indigestible material, which has undergone fermentation and putrefaction, may cause, rapidly endangering life.

Another case of typhoid fever, fourth week, high fever, low delirium, and in which I had given an enema every morning of a drachm of turpentine mixed in yolk of an egg, well beaten up, and stirred in a quart of warm water. One morning I was 'phoned that his temperature was 107° and pulse running away. Gave him a half gallon of warm normal salt solution, and he passed a large quantity of putrescent coagula and sloughs, and he never afterwards had a bad symptom. Certainly this was a case where death was imminent from the presence of putrescent matter in the intestines. Had such poisonous matter been allowed to remain, fatal poisoning would have been inevitable.

OSTEOMYELITIS.*

By A. R. SHANDS, M. D., Washington, D. C.,

Clinical Professor of Orthopedic Surgery, Department of Medicine, Columbian Univerity.

In presenting the subject of osteomyelitis in this paper it is not my purpose to deal with the subject in an exhaustive manner, but to briefly call you attention to a few of the most prominent features of this disease, which is most serious and destructiveg to childhood, as they have appeared to me in my experience with the affection, hoping that I may be able to say something that may be of aid to you in dealing with a disease that is so well recognized and described by the standard authorities at this time. It is impossible for me to add anything that is new, for I feel that the thoroughness with which this disease has been studied and recorded in the standard works of late years has put it beyond the field of experiment and established facts concerning it that will stand for all time. The numerous neglected cases that have come under my care in the past few years fully justify me in bringing the subject to your attention. and convince me that many physicians are either uninformed concerning the disease, or have failed to appreciate the disastrous results that follow the neglect of these cases in the early stages when so much can be done to save both life and limb. It is inexcusable not to recognize the disease early, for the signs and symptoms are characteristic of no other disease of childhood.

Roswell Park and Nicholas Senn have written very exhaustive articles on this disease, and it is from these writings that I have drawn for this fragmentary paper on the subject.

Acute osteomyelitis is essentially a germ disease, but it is not characterized by any one germ peculiar to the disease. It can be produced by the migration of any pus producing germ, such as streptococcus, staphyloccus, pneumococcus, colon bacilius, typhoid bacillus or other germs. It is an acute inflammation of the marrow of the bone terminating in suppuration. It may almost be said to be peculiar to childhood for it is extremely rare as a primary disease after the skeleton is fully developed. The traumatic variety was recognized by surgeons as a most serious wound complication long before we knew anything about it being caused by germs; but the spontaneous variety, occurring without an injury to the bone through an open wound, was not understood until quite recently. The term "osteomyelitis" was first given to the spontaneous variety by Chassaignac in 1855. The infectious origin of traumatic osteomyelitis has been recognized for a long time. The spontaneous variety was believed to be purely inflammatory until Leucke first described its infectious character. Pasteur spoke of "furuncle of bone," because he found in osteomyelitis a pus microbe which he claimed was identical with the microbe he found in furuncles. Osteomyelitis is by far the most frequent of all inflammatory diseases of bone. The medullary tissue of bone in children is exceedingly susceptible to infection with pyogenic microbes.

Senn says that infection usually takes place by pus microbes which have found their way into the circulation from a suppurating wound, or through the respiratory, or intestinal mucous membrane, and which localize in the medullary tissue prepared for their reception and pathogenic action by anatomical peculiarities of the capillary vessels. A number of well authenticated cases have been reported when a subcutaneous fracture became the starting point of an attack of osteomyelitis in patients who suffered at the same time from a suppurating wound in a part distant, and anatomically disconnected from the fracture. In such cases, Senn says, it is reasonable and logical to assume that pus microbes enter the circulation and are conveyed by the blood current to the seat of the fracture, where they are arrested and find a suitable soil for their reproduction and the exercise of their pathogenic properties.

,Experience has shown that the pus-microbes localize preferably near the epiphyseal junction of lung bones in growing children. At this stage of development the bone is supplied with imperfectly developed capillary vessels. Neuman has called attention to a peculiarity of the capillary vessels in the medullary tissue. He says that such capillaries are four times as large as the arterial vessels supplying them. This causes a very sluggish circulation in these capillaries, which predisposes to the localization of microbes there.

Any constitutional disease that impairs the general circulation predisposes to this disease. Keen has contributed very valuable literature to this subject. His explanation is to the effect that the cases following early after infectious

*Read before the 36th Annual Session of the Medieal society of Virginia, held at Norfolk October 24-27, 1905.

diseases are due to thrombosis, and the later ones from enfeebled nutrition. Numerous authorities have spoken of the great frequency with which osteomyelitis follows typhoid fever.

Osteomyelitis most frequently attacks the long bones of the lower extremities. This assertion has been borne out by my experience with a few exceptions; the exceptions have been cases of multiple seats of infection. I have had cases with as many as four different bones in the same patient affected almost simultaneously. Senn calls especial attention to the fact that children and young adults, who have recently passed through an attack of any of the acute infectious diseases, are strongly predisposed to acute osteomyelitis. My observation has been that I have been able to trace the source of infection in almost every case that I have encountered to the existence of a suppurating ulcer from which the microbes have entered the circulation, and migrated to the seat of the osteomyelitis. Case No. 4, herein reported, gives a clear history of an infected wound existing at the time of the development of the osteomyelitis. In connection with the migration of pus germs causing the disease, it is interesting to note the relapsing cases in which the micro-organisms have remained quiescent for many years and then wake up to new activity. Rosenbach has reported cases in which the germs have remained quiescent for twenty years and then reproduced the disease from some existing cause. I wish especially to call attention to the clinical history of case No. 6, in whom the micro-organisms had remained latent for *forty-two years* and then caused the most malignant form of the disease to develop at the seat of the old disease as a result of a slight injury. We are told that the recurrence generally takes place at the original seat of the disease. This must be due to the fact that the germs become encysted in a cheesy mass, which becomes walled off from the surrounding tissue in the new bone formation. This is a well recognized condition in old tubercular joint diseases, and is always to be well considered in operative interference to correct distorted joints that have long since ceased to have any active conditions of the disease present.

Many years ago I had a most unfortunte experience that taught me a most valuable lesson along these lines. It was a case of a child ten years old, who had a very distorted hip as a result of hip disease, that had had no active symptoms of hip disease for two years, and as a result of this fact it was thought to be an opportune time to do a femoral osteotomy to correct the hip deformity. The usual method of partly dividing the femur just below the trochanter with an osteotome and then completing the fracture by manual force was used, but instead of the bone breaking at the intended place the manual force had the effect of causing the union of the head of the femur to the acetabulum to give way, which permitted the limb to be easily brought into a correct position. Within a few weeks the child developed acute hip disease which went on to abscess formation, but finally made a good recovery after going through all of the stages of a severe case of hip disease. Here the tubercular germs had evidently been walled off by the reparative processes of nature, but took on new activity when there was produced a suitable field for their development.

The clinical picture of a case of acute osteomyelitis is usually so characteristic that a mistake in diagnosis in the early stages should rarely be made. One should study closely the symptoms and use every means of diagnosing early these cases, for so much depends upon an early diagnosis and prompt surgical treatment. The disease is usually ushered in with a chill followed by a fever of varying degrees according to the amount of infection present. The fever in these cases is usually of a remittent type and it is not uncommon for it to be treated for malaria or typhoid until the local symptoms are manifest. Case No. 1 illustrates this point. Senn says that he has observed a number of cases of multiple osteomyelitis where the patient passed into a typhoid condition, and died within a week before the local disease had time to develop marked symptoms of its existence. In such cases, he says, the prominent general symptoms are those of a malignant form of osteomyelitis.

The local symptoms of pain, tenderness, swelling, etc., are usually well marked. A positive diagnosis is hardly possible until such is the case. Loss of function of the limb is an early symptom and often exists before the local symptoms are manifest. The patient will not even permit of passive motion. If the entire shaft of the bone is destroyed by the inflammation and the sequestrum becomes separated before the involucrum is strong enough to support the

weight of the limb, there is danger of a spontaneous fracture.

Separation of an epiphysis, epiphyseolysis, from the diaphysis at the epiphyseal line is not of uncommon occurrence, when the disease is near that line, and as a result marked distortion of joints occurs—note case No. 4. When this occurs the joint is apt to be infected with the same micro-organism that caused the osteomyelitis and to cause a suppurative synovitis. This complication will aggravate all of the general and local symptoms.

It is regretted that only a mere outline of the pathology and symptoms of the disease can be given in this paper. The points that have been touched on have been suggested by cases herein reported.

Treatment. The treatment of osteomyelitis should be surgical from the beginning to the end. Internal medication and palliative remdies are utterly unavailing, while prompt and properly executed surgical measures will cut short the progress of the disease in a large per cent of the cases. Delay means disaster. I am firmly convinced that an early and thorough operation is just as strongly indicated in this affection as it is in appendicitis. Here, as in appendicitis, if the diagnosis is made before pus has formed and the medullary canal is opened and good drainage is established, the patient will make a rapid recovery. I have never heard of a case of appendicitis being made any worse by an early operation, and I mean by an early operation one before pus has formed. The same holds good in osteomyelitis. I cannot believe it good surgery to wait for sequestrum formation before operating, for the simple reason that there is great danger of multiple infection in delaying, to say nothing of increasing sepsis in your patient by such procedure. Note case No. 4. Just as soon as pus has formed in the medullary cavity it will spread in all directions with great rapidity, producing general sepsis in a degree corresponding to the virulence of the original germ that caused the disease. It stands to reason then that the early removal of the infected marrow will both diminish the mortality of the disease, and at the same time limit the extent of the necrosis. Therefore it is the surest means against pyaemias and reinfection from the primary focus. Unfortunately it is seldom that the diagnosis is made before suppuration has occurred and worked its way through and involved the periosteum. I have never seen a case until such is the case; my experience has led me to believe that the surgeon is usually consulted after the patient has failed to get well from the use of drugs and local applications.

It is not within the province of this short paper to describe the various features of operating in these cases, but to urge the earliest possible operation, and that it should be done in a manner to remove all diseased bone possible, except in such cases when such procedure would so weaken the shaft of the bone as to produce a pathological fracture. In such cases good drainage should be established and sufficient bone should be left, even if it should be diseased, to support the periosteum while the involucrum is forming and then later a second or even a third operation should be done to remove the sequestrum. In these cases a suitable splint should be used to support the shaft of the bone so as to prevent any danger of fracture.

The late operation is done to remove the necrosed bone, or sequestra, and is the one that I have been called in to do most often. These are the cases that have made spontaneous recoveries; that is to say, nature's recoveries, which have recovered in spite of what has been done for them. If the case is one that has gone on to sequestrum formation, it is important to select the proper time for operation; fortunately when this has occurred all acute symptoms of sepsis have subsided, and the patient is generally on the road to recovery. The operation of sequestrotomy consists in the removal of all dead bone, at the same time all diseased and granulation tissue should be curetted away and the wound kept packed, which encourages new bone formation from the involucrum to fill up the cavity. My results in all operations of sequestrotomy have been most satisfactory; in fact it is one of the most satisfactory operations that I am called upon to perform. I have removed dead bone that has been a constant source of suppuration for twenty years, and had the sinuses to close permanently within a few weeks.

Case No. 1.—J. H., age 5 years, white, male. Family history good. Child had always been healthy. October 1, 1903, child was taken suddenly ill with a severe chill, which was followed by high fever which continued high and of a remittent type for about a week, when it was noticed one foot was much swollen. The case was diagnosed as malarial fever of a

remittent type, and was so treated until the foot began to swell and to cause much pain. The child had had numerous little superficial ulcers on his legs during the summer. An abscess formed on the outer aspect of the foot and was incised by the attending physician.

I first saw the case on November 12, 1903, and diagnosed it as being one of osteomyelitis, basing my diagnosis on the history of the case as above stated, giving especial weight to the sudden onset, chill, fever, and rapidity with which the diseased condition of the foot had developed. November 13th, I operated by doing a complete astragalotomy. The disease was confined absolutely to the astragalus. This bone was so thoroughly diseased and broken down that I removed it in fragments with my finger. The wound was kept packed with gauze until it was entirely healed. The foot was kept in a plaster-of-Paris case with a fenestrum through which the wound was dressed. The wound healed entirely within four weeks; final result is all that could be desired.

The chief points of interest in this case are: first, the very clear history obtained, and second, that the disease was confined to one of the small bones, which is extremely rare, and third, the rapid and perfect recovery.

Case No. 2.—Mary H., age 6 years, white. History negative. She was brought to Sibley Hospital from the country. She had had no especial attention from any physician. This case illustrates how wonderful nature is in bringing about cures unaided.

No. 1.—Sequestrum of femur. Case II.

On admission to the hospital, March 1, 1901, her general condition was extremely bad, being very anemic and emaciated; abdomen was very prominent, and urine contained a large per cent of albumen. All of these unfavorable conditions were evidently the result of sepsis, which had existed for a year, or more. The right thigh was very much swollen from the knee to the hip joint with numerous discharging sinuses extending along the entire course of the femur.

The treatment consisted of a general tonic course, relying chiefly on Basham's mixture; there was rapid improvement in her general condition as a result of this treatment. April 15th, I did a sequestrotomy through an incision extending almost the entire length of the femur. The femur was diseased from the lesser trochanter to the lower epiphysis. The sequestrum removed is shown in photograph No. 1. The greater part of the diseased bone was removed in small pieces. The wound closed in about two months, giving a perfectly satisfactory result.

Case No. 3.—J. K., age 10 years, white, male. History unsatisfactory. He was brought to Sibley Hospital from the country. He had had no regular attention by a physician. It was truly one of nature's cures.

On admission to the hospital, October 18, 1900, he was in a condition of chronic sepsis which had evidently existed for many months judging from his extremely emaciated and anemic appearance. He was perfectly helpless and had to be handled with great care as he was in great pain.

Diagnosis was multiple osteomylitis affecting both tibiae and head of left femur. There were numerous discharging sinues along the crest of both tibiae, but no evidence of suppuration about the hip, which was adducted 45 degrees; passive motion was free in all directions except that of abduction. The right knee was anchylosed and flexed to about 30 degrees. His general condition was so bad that it was thought unwise to attempt any operative procedure, hence he was put on a general tonic treatment and special diet. He responded rapidly to this and was operated on December 1st, when quite a large sequestrum was removed from the upper third of the right tibia, and numerous small ones from the left tibia. See photograph No. 2.

The wound healed rapidly. March 1st, I opened the hip joint through an incision over the external aspect of the hip. Much to my surprise, I found within a much thickened capsule that the head of the femur was a mass of broken down necrotic tissue, with the exception

of the articular cartilage, which was perfectly loose in the mass of debris. The wound healed rapidly and the patient was able to get about on crutches in a few weeks.

Case No. 4.—J. M., aged 14 years, white, male. Family history negative; no history of any special disease during childhood and has always had good helath until the present illness. Admitted to George Washington University

No. 2.—Sequestrum of tibia. Case III.

Hospital, February 11, 1904. He was brought from the country on a stretcher, being utterly helpless. His general condition was one of marked chronic sepsis; he was very much emaciated and æenemic. His temperature ranged from 99 to 102 degrees daily and pulse quite weak, ranging from 110 to 125. Both lower limbs from knee to the toes were enormously swollen. There were numerous discharging sinuses along the course of both tibiae. Both feet were in the position of extreme equinus and marked varus, due to the separation of the lower tibial epiphysis (see photograph No. 3). There was but little passive motion in the ankle joints due to adhesions following the septic synovitis that existed early in the disease. Note in the photograph that the feet are in the position that would be the result of one having no vountary control over the legs while lying on the back. The lower third of the left arm was much swollen; about two inches above the external condyle of the humerus there was a sinus discharging freely. This sinus led to necrosed bone.

His illness dated from about the middle of September, 1903, at which time he received a wound on his left shin with a corn knife while working in a field. This injury resulted in an infected ulcer which was slow in healing. About three weeks after the injury the left leg began to be very painful and to swell along its entire length. Abscesses soon developed which were incised. About three weeks later the left arm began to be painful and to swell, soon resulting in abscesses. About one month later the right leg began to be painful and to swell, resulting also in abscess formation.

The general condition of the patient was so poor that it was thought best not to operate at ence, but to wait until his condition could be improved; hence he was put on a strychnia and iron tonic, and a special diet. He responded well to this, for within ten days his pulse was good and not over 90 at any time, and his temperature was not over 99 degrees. On February 20th, under ether, I opened the left tibia almost its entire length, cutting a furrow about a half an inch wide with a bone gouge, into the narrow cavity. As the whole shaft of the bone was apparently diseased, I could not remove all diseased bone. The wound was packed with steriled gauze the entire length. The right leg was treated in the same way except that only the lower third of the tibia was opened. The after treatment consisted in daily

No. 3.—Case IV.

irrigations. The free local use of an emulsion consisting of one part of Balsam Peru and three parts of castor oil. It was interesting to watch the rapidty with which the wound filled in with new bone, as bits of dead bone came away, and to observe how rapidly the patient's general condition improved.

On April 9th, seven weeks after the first ope-

ration, a second operation was done to remove dead bone, the presence of which was still causing a profuse discharge. Quite a good sized sequestrum was removed from the left tibia, and many small pieces of dead bone were curretted away. A sequestrum was forming in the lower end of the old wound; this was not taken out as it was feared its complete removal would produce a fracture, but was left to be removed later. A drainage tube was inserted

No. 4.—Final result in case No. IV.

through a counter opening made through the tibia at the end of the inner side. Much dead bone was curretted out of the right tibia, but no sequestra of any size were found.

June 16th, the third operation was done which consisted in currettage of the wound and the removal of bits of dead bone.

July 11th, the fourth operation was done to correct the distortion of the feet. This consisted of a supra-malleolar osteotomy of the left tibula and fibula, a cuneiform osteotomy through the astragalus and cubiod bones of the left foot, and a subcutaneous tenotomy of the tendo-Achilles. The operation on the right foot consisted of the removal of astragalus and the external malleolus, and subcutaneous tenotomy of the tendo-Achilles. The result of the fourth operation is seen by comparing the photographs, number 3 and 4.

A point of special interest in this case is that it was one of multiple osteomyelitis, with a period of about three weeks between the development of the various seats of infection. Another is the separation of the epiphysis from the diaphysis of each tibia producing a marked degree of talipis equino-varus. It is reasonable to presume that had this case been thoroughly operated on when there was but one focus of infection, the others would have been prevented. Surely no stronger argument can be offered in favor of an early operation than the history of this case.

Case No. 4.—C. C. F., white, age 43, occupation that of a printer. He was admitted to Sibley Hospital, April 21, 1904. He was a very intelligent man, and gave a very good history of his case, the chief points of which are briefly as follows:

At the age of fifteen years, he had a small ulcer to develop on his left shin resulting from a slight bruise. Within a few weeks his leg became extremely painful accompanied with fever. It very soon began to swell and resulted in numerous abscesses which were incised, but no radical operation was performed. Through discharging sinuses, about twenty pieces of bone came out in about six months when the sinuses closed permanently. At intervals of two or three years, he would have great pain in the leg lasting several weeks, but each time would disappear after the continuous application of hot poultices. At the time above referred to, he was admitted to the hospital on account of an acute cellulitis over the crest of the tibia. This resulted from a brüise and abrasion of the skin. He had a slight rise of temperature, but the pain was so great that it required large doses of morphine, together with hot formentations to give him any relief.

April 25th, under ether, I made an incision about four inches long along the crest of the tibia down to the bone which showed that there existed an extension periostitis. I split the periosteum for several inches, but failed to find any diseased bone. The wound was left open but never showed any tendency to heal, nor was the pain materially relieved by the operation. Within a few weeks a rapidly developing acute osteomyelites was diagnosed. I then operated the second time by opening the medullary cavity freely for four inches and curretted away a large amount of dead bone. From this time the osteomyelitis developed more rapidly than ever, until June 2nd, when I amputated at the knee joint. The patient made an excellent recovery. This is another case of a spontaneous

cure in which the disease had apparently been cured for a long period of time—*twenty-eight years*—and then developed a most malignant osteomyelitis resulting in amputation.

One point of especial interest to me is that at the time of the first operation, when I simply split the periosteum, is that I did not recognize that I had a secondary periostitis to deal with, and not a primary infection. The clinical features of the case at the time were not such as to convince me that there was any disease in the medullary cavity, or even in the bone itself. In the light of subsequent events, I am satisfied that it was a case of secondary periostitis from continuity. As the case was one of such malignant infection, developing so rapidly and extensively, am satified my somewhat belated diagnosis made no difference in the result.

Case No. 6.—J. F. H., white, age 52, a farmer by occupation. The patient has always lived on a farm and has always led a very active life. Family history good. No history of tuberculosis in the family. Was admitted to the George Washington University Hospital April 2, 1904.

At the age of ten years, he was taken suddenly ill and soon developed what he was told was "white swelling" of his right leg. He was treated in the country with liniments, hot poultices, etc. Numerous abscesses developed about the ankle and along the leg. These abscesses were lanced and discharged pus freely for about one year, during which time numerous pieces of bone came away spontaneously, when all wounds closed and have remained so, giving no trouble, until about February 1, 1904. At this time an abcess developed on the outer side of the ankle as a result of a slight traumatism. This soon opened spontaneously and was rapidly followed by the development of five or six others about the ankle and along the anterior aspect of the tibia.

At the time of admission to the Hospital, the leg and foot were enormously swollen, and had six or eight sinuses discharging freely a foul smelling pus. The general condition of the patient was poor from sepsis.

April 23rd, under ether, I made an incision on both sides of the ankle joint over the malleoli, and one over the crest of the tibia, about the junction of the middle and lower third. With a bone gouge I made an opening into the medullary cavity which revealed the fact that the bone was thoroughly diseased in both directions. Through the lower incision I discovered that the astragalus, oscalis, and other small bones of the foot were honey-combed with the diseased process. I at once decided that no operation short of amputation at the knee joint would relieve him. Hence he was returned to his bed, as I did not have his consent for an amputation.

On April 26th, I amputated at the knee joint, adopting the antero-posterior flap method. The operation was done very rapidly with very little loss of blood and with absolutely no shock following. His recovery was perfect and he left the hospital in two weeks, the wound having healed by primary pnion.

It was a question with me where to amputate for I hesitated to amputate at the knee as the disease did not seem to extend above the middle third. The question of primary unoin ecided me to amputate at the knee joint, for it seemed that if the amputation was done below that point, there was danger of having to go through infected tissue, and it was very desirable to get primary union in a patient of his age, and whose vital force was already much reduced by the general sepsis that had existed for about three months. The examination of the bones of the leg and foot, which I show you, proves the wisdom of my decision, for it will be seen that the tibia is diseased in its entire length. This case is extremely interesting from the fact that the patient gives a clear history of having had acute osteomyelitis in his childhood, and made a spontaneous recovery, that is ia recovery without having had any radical treatment and went for *forty years* without any symptoms of disease in the leg, and then developed acute osteomyelitis at the seat of the old disease following rapidly on the development of a traumatic abscess in the immediate vicinity.

Case No. 7.—James H., age 2 years, colored. I report this case because of the unucual age for a case of osteomyelitis. The baby was just two years old when it had a blow on the ulnar side of the left arm which caused an ulcer to develop. It is possible that the periostium was injured as the osteomyelitis developed within a few weeks after the injury. The clinical history wts typical.

This child came under my observation at my clinic at the Central Dispensary and Emer-

gency Hospital, August 1, 1905. There were numerous discharging sinuses along the whole course of the ulnar. The distal end of the bone was visible, in fact, it was projecting through the skin.

August 10th, I did a sequestrotomy removing the entire shaft of the bone (See photo. No. 5), which was lying loose in a bed of pus and granulations. There had been a separation of both epiphyses leaving both ends of the bone well nourished by their attachment to their surrounding structures.

The wound healed very rapidly and as neither the wrist nor the elbow joint was involved, the child has almost perfect use of the arm.

1319 New York Avenue, N. W.

PLASTIC OPERATIONS FOR ACQUIRED DEFECTS OF THE LIPS.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.,
Professor of Principles of Surgery in the Medical College of Virginia; Surgeon to Memorial Hospital.

Operations for congenital defects, as hare-lip, are usually accompanied by conditions that are very different from those found in acquired defects of the mouth. The abundant amount of mucous membrane and the vermilion border along the edge of the hare-lip, as well as the frequent association of bony malformations and and the age of the patient, present problems peculiar to the congenital deformities. Acquired defects occur from trauma. The most frequent cause is removal of cancer of the lip. Accidental mechanical injury, burns, and the action of chemicals are the other causes. The result to be accomplished—the formation of a comely and useful mouth—is the same whatever may be the cause of defect, but the principles involved differ to some extent. More scar tissue forms after burns or injury from chemicals than after mechanical violence, and so more allowance must be made here for subsequent contraction than after operations for removal of cancer. With this exception the classical operations for restoration of the lips may apply to any acquired defect.

It is not the purpose of this paper to mention all of the numerous procedures that have been devised to correct defects of the month, but to give briefly those methods that from experience or observation appear to me to be most satisfactory. In repairing the upper lip the operation of Sedillot is most useful.

In a case of cancer referred to me by Dr. E. G. Williams, the right half of the upper lip was excised in a quadrangular mass, and the flap to correct the defect outlined by three incisions. The first starting at the corner of the mouth was carried downward and forward to the right side of the chin; the second incision parallel to the first, and about one and a quarter inches posterior to it,

Just before operation, more than half of the lip being removed, M. D., case of Dr. Horsley.

About 3 months after operation.

*Read before the 36th Annual Session of the Medical Society of Virginia, held at Norfolk, October 24-27 1905.

began about the level of the mouth and ended about half inch below the level of the termination of the first incision. The third incision connected the lower ends of the other two. The flap so outlined was dissected up, taking in the

Just before second operation, showing result of first operation. R. E., case of Dr. Horsley.

whole thickness of the cheek. It was then sutured into the defect made by the original excision. The result was very satisfactory. Other operations for restoration of the upper lip may be used, but this method appeals to me for several reasons; first, the flap is well covered with hair, secondly the area from which it is taken is readly closed as a straight incision by extending the short incision about two inches down on the neck. This forms a triangular flap, which, when loosened, will be found to fit accurately into the area from which the first flap was taken. Where complete absence of the upper lip exists, the same procedure can be carried out on each side.

Operations for remedying defects of the lower lip are very numerous. Those that depend upon taking flaps from the arm or "jumping" them from the chest, appear to me to be unnecessary. The result is never so satisfactory from a cosmetic standpoint as when flaps can be obtained from the cheek or neck in proximity to the region of the lower lip.

The first and simplest operation in this region is the simple V shaped excision. A great deal can be accomplished by this method if properly used, especially in elderly people. The base should be sufficiently broad, to extend one quarter of an inch beyond any sign of cancerous infiltration; the wedge-shaped piece should be narrow, the apex always extending to the lower level of the chin. If the wound is not readily coapted the lip should be freed at the points of tension. I usually dissect out the glands and fat beneath the chin by a transverse incision, if there is any reason to suspect infection of these glands. By extending two lateral incisions from the corner of the mouth outward, this V shaped piece can be readily made to include two thirds of the lip without too great tension. The incisions from the corners of the mouth are then sutured in the same manner as after the method of Dieffenbach. When, however, so much of the lip is involved as to preclude such an operation, or when the defect, as sometimes happens from accident, has been extensive, a quadrangular flap can be taken from the upper portion of the cheek after the method of Bruns.

I can best illustrate this by relating a case of this kind that I operated upon last year. The patient was a little girl who had necrosis of the left half of the lower lip, and the adjacent portion of the jaw bone as a sequel of typhoid fever. She was kindly referred to me by Dr. Johnston. When I first

Ten days after second operation.

saw her the soft parts had sloughed off, but a sequestrum of bone presented in the defect caused by loss of the lip. This was easily re-

moved, and in about two months the patient again reported for operation. The deformity was a most distressing one, as the saliva constantly dribbled away and, as the alveolar process of the lower jaw was destroyed, the under surface of the tongue could be seen through the defect. As much as possible of the scar tissue was removed, and a flap taken from the left cheek, according to the method of Bruns, by making a straight incision upward and inward from the angle of the mouth, going through the whole thickness of the cheek, and extending along the naso-labial groove, the second incision being made about one and one quarter inches posterior to the first and parallel to it, but extending to a higher level. The ends of these were joined by a third cut and the flap was turned in the defect. The result of this operation is shown in one of the photographs taken just before the second operation. Two months later the patient again returned, as it was thought unwise to attempt to make a vermillion border at the time of the operation just described. Some mucous membrane extended from the right side into the V shaped defect, which still existed at the center of the lower lip after the flap had united. This was dissected up, then a sharp knife transfixed the lower lip exactly at the muco-cutaneous border near the right corner of the mouth. The skin being pulled down so that the coronary artery would not be injured, the knife was carried along the muco-cutaneous border to the center of the lip, so that the mucous membrane, which had been dissected from the right side of the V shaped defect formed the tip of this flap. After denuding the V shaped piece on the left side and the upper border of the lip formed from the previous operation, this flap made by transfixion easily reached almost to the left corner of the mouth so making a very satisfactory vermillion border. The result was quite good, as is shown in the accompanying photograph.

The success of all plastic operations depends upon the mechanical ability and anatomical knowledge brought to bear, as well as upon the other details involved in the operation. The nutrition of the flaps is the most desirable object to be attained and with the kind of sutures and the form of dressing employed goes to make up success or failure to a greater extent in plastic operations than in other surgical procedures.

330 *West Grace Street.*

Present Status of Water Analysis in Connection with the Investigation of Typhoid Epidemics.*

By ERNEST C. LEVY, M. D. Richmond, Va.,
Director of Labratory of City Water Department.

The frequency with which the writer receives inquiries from physicians in regard to examining water for typhoid bacilli is sufficient ground for believing that a brief paper dealing with the subject here chosen will have a certain amount of usefulness.

Knowing that where a given water is responsible for an outbreak of typhoid fever the bacilli of this disease must have been present in the water, and having only rather general ideas of the methods of bacteriological examination of water, what more natural than that the average physician should consider the actual finding of typhoid bacilli as the natural and crucial test in these cases? It is the object of this paper to show why this direct method of solving the question is not applicable, and, furthermore, to point out briefly just what the water expert of to-day does in these cases, provided he can get his client to understand something of the matter—which end, in the writer's own experience, can always be accomplished by a plain statement of the facts in the case.

The first difficulty connected with placing the responsibility for an outbreak of typhoid fever by means of direct bacteriological examination for the detection of B. typhi lies in the fact that assuming the water to have been the actual cause it is impossible to get a sample of the right water for examination. The minimum period of incubation of typhoid fever is eight days with an average period of two weeks. Hence, assuming a water supply to become infected, it is not until two weeks later that a sufficient number of cases of the disease have developed to attract considerable attention, and allowing (a liberal estimate) a week more for the physician or health officer to reflect on the subject and get into communication with the bacteriologist, it is three weeks altogether before the investigation is started. It is self-evident that, unless the pollution is a continuous one (which is not usually the case) the failure to find typhoid bacilli at this late date cannot be taken as indicating that the water was not

*Read by title before the 36th Annual Session of the Medical Society of Virginia at Norfolk, Oct. 24-27 1905.

originally infected and gave rise to the outbreak.

Coming now to the question of the actual examination of water for B. typhi, it is not at all difficult to explain why our methods are so imperfect. In almost every instance where a stream becomes infected by typhoid bacilli this stream receives at all times the fecal dejecta of a number of persons, and it is only when one of these individuals develops typhoid fever that the bacilli of this disease are added to the water, along with the continued discharge of a number of unaffected persons. Now, even the dejecta of the typhoid patient himself contain B. coli (the normal inhabitant of the intestinal canal) in probably greater numbers than B. typhi, while still larger numbers of the former organism continue to enter the stream in the stools of the healthy inhabitants of the watershed. We must, therefore, realize that almost invariably a water which has become infected with B. typhi has, along with these organisms, an immensely larger number of B. coli, the only exception to this being where a water has become infected by the urine of a typhoid patient but is otherwise unpolluted—obviously a most unusual condition. Besides this, a water so polluted as the one we are considering in our typical case is certain to contain large numbers of bacteria of other kinds, so that for every typhoid bacillus present there are probably an immense number of bacteria of other varieties.

Let us assume a concrete illustration for the sake of making clearer the problem which confronts the bacteriologist in these cases. A water would surely be seriously infected if each glassful contained 20 typhoid bacilli, yet, since an ordinary drinking glass holds about 200 cubic centimeters, in this case there would be only a single typhoid bacillus in each 10 c. c. of the water. Such a water would almost certainly contain at least 200 bacteria of other kinds per c. c., or 2000 in the 10 c. c. In our hypothetical case, therefore, for each typhoid bacillus there would be 2000 other bacteria.

Under such conditions let us see what would be the chance of finding typhoid bacilli. In the routine method of plating on gelatine, it would be necessary to make ten plates of one c. c., each in order to get a single colony of B. typhi (assuming the typhoid bacilli to be evenly distributed through the water), and after all the colonies have developed there are no characteristics by which a typhoid colony can be picked out on sight, while it is obviously impossible to make the necessary detailed study of so large a number of colonies as would be necessary to identify the typhoid colony from others resembling it. If instead of gelatine we use agar and incubate at 37° Cent., a smaller number of total colonies will develop, but even here it would be impossible to tell if one of these was B. typhi, except by a most tedious and practically impossible detailed study of hundreds of colonies.

Evidently, then, simple plating is not to be considered as a means of detecting typhoid bacilli in water, and we are brought to look into whether there can be found some differential method which will allow the typhoid bacilli, if present, to develop, while restraining the numerous other forms which must always be conceived as being present. Many methods of this sort have been suggested from time to time, but not one of them is to be relied on, the chief difficulty being that the colon bacillus, always present, is much hardier than the typhoid bacillus, and no means are yet known of inhibiting the growth of the former and still permitting the latter to proliferate. It must be made clear that there is no difficulty in differentiating B. coli from B. typhi when cultures of each are at hand, but the problem is to obtain the latter at all in the presence of large numbers of the former and large numbers of bacteria of still other kinds.

Recognizing that one of our difficulties is the fact that so large an amount of water must be examined to find even a single typhoid bacillus, it has been recommended to pass a considerable amount of water through a porcelain filter and then take for examination some of the scrapings from the filter, which will then contain, in small bulk, all the bacteria originally present in the water. As a matter of fact this in no wise lessens our troubles, for we now have an enormously increased number of B. coli and other bacteria to deal with, and this, as pointed out above, is our greatest difficulty after all.

If, following any of the very doubtful methods which have been proposed, the bacteriologist at last secures what he suspects may be a culture of B. typhi, the further task of making certain of this point is by no means an easy one. B. typhi are distinguished largely by negative characteristics, both morphological

and cultural, nor it is pathogenic in a true sense for any of our laboratory animals. Even the serum reaction, lauded as specific when first brought, has come to be recognized as a test demanding the utmost care in technique and in interpretation.

Owing, then, to the difficulties above hastily outlined, an experienced man in this branch of sanitary science will not undertake to examine a water at all for B. typhi, or at any rate he will stake nothing on the result. But, while the problem cannot be solved in this direct manner, still it is possible in nearly every instance to arrive at results in a different way, and this true method of approach is, after all, of far greater value than a mere finding or not finding of typhoid bacilli in the water could possibly be.

The correct way of solving the problem, as matters stand, is to make a thorough study of each specific case which arises, along well recognized lines. Briefly, this includes a sanitary survey of the watershed, a study of the epidemic itself, and a bacteriological and chemical examination of the water. The sanitary survey is to be regarded as an indispensable factor in every case of importance, and as such it cannot be entrusted to anyone who has not had special training in just this kind of work. Each case presents its own peculiarities, and some point which it is impossible to foresee may give the clue to the whole situation.

Along with this sanitary survey, inquiry should be made into the special features of the epidemic itself. To do this thoroughly is the work of weeks, or even months in the case of large communities and extensive epidemics, but sufficient information for practical purposes may frequently be gained in a few hours of intelligent study in smaller communities, especially if the local physicians' records are fairly complete.

This visit to the seat of the trouble, moreover, enables us to judge of just what samples we wish to have for analysis and to collect these under the best conditions and with proper precautions. It also enables us to start certain parts of the bacteriolgical work on the spot, which is a matter of no little moment if at some distance from the laboratory. The tests which will be applied are, in a broad sense, for the determination of fecal pollution in general. Both chemistry and bacteriology are called upon, but the chief thing is the detection of intestinal bacteria.

After getting together all the facts both of the analysis and of the sanitary survey and special study, a careful consideration of all the data thus available will, in almost every instance, lead to a thoroughly trustworthy opinion. It is just at this part of the work that judgment and experience come most into play. The data at hand are to an expert in this line what the previous history, sympotms and physical signs are to the physician in arriving at a diagnosis, and each reaches his final opinion by a careful weighing of all the evidence and not by blind reliance upon any isolated fact.

This simile may be carried further. Certain cases of disease may be diagnosticated by a laboratory test of material secured from the patient, as, for instance, is possible by a sputum examination in cases of pulmonary tuberculosis, but no physician would care to take the responsibility of treating a case of consumption merely on the evidence thus afforded, without examining the patient and learning a great deal about his general condition and his environment. Just so, the water expert may often be able to decide by analytical methods whether or not the water is polluted, but knowledge so gained is always of a general character, and personal study of the case on the ground is necessary for the correction of existing conditions.

We may apply our simile, furthermore, to negative cases. Where a sputum examination does not show tubercle bacilli but where the patient is nevertheless seriously ill, the examination will show little of what the real condition is. So with water, finding that, so far as a mere laboratory examination can ever show, the water is all right, but if, in spite of this, typhoid fever has been very prevalent, our examination is of value merely by the probable elimination of the water as a cause, but is has thrown no light whatever on what is responsible for the trouble. And, again, our work would be incomplete and misleading where the water was only one of several causes. By means of a personal survey, if the water was found not responsible, or responsible only in part, the search would be continued to arrive at every factor in the case.

A recent case of the writer's illustrates several of the points above made:

Typhoid fever had been prevalent in the

town of Virgilina, Va., for several years, no true epidemic, but nearly always on hand a large number of cases in proportion to the population. Towards the end of last March, Dr. F. D. Drewry, one of the two physicians of the place, requested Dr. Ennion G. Williams, of this city, to examine the water of a number of local wells for the presence of typhoid bacilli. Dr. Williams referred the case to the writer, who promptly explained the futility of trying to arrive at a solution of the problem in this manner and suggested a personal survey of the conditions. This was consented to, and a day was spent there, about April 1st, looking over the situation and going over the history of the cases with Dr. Drewry. Five samples of well waters were brought back for examination. As a result of this study it was apparent that one of the wells was utterly unfit for use and it was unqualifiedly condemned. A second one was found very bad. The others, while not all that could be desired, were, owing to the peculiar geological features of the section, the best that could probably be gotten under the circumstances and were considered reasonably safe after making some changes. But it was also evident that factors other than the water had been responsible for many of the cases. Hence the writer recommended the adoption of certain other sanitary measures. In a letter received from Dr. Drewry, on the 16th of the present month (that is, over six months after the investigation) the statement is made that there has not been a case of typhoid fever in Virgilina since these recommendations were made.

Naturally, a complete cessation of typhoid fever, such as has been secured in this instance up to the present time, is too much to expect in most cases, even after the most thorough protective measures have been adopted, but the more complete the study, the more intelligent the advice which can be given and the more perfect the results. Eternal vigilance being the price of safety, before long these people will doubtless gradually begin to lose that cauton which has so far been protecting them and will pay the natural penalty for so doing.

The main points in the foregoing paper may be briefly summed up as follows:

(1) No satisfactory method is known for the detection of B. typhi in water.

(2) Were such a method known, it would be of limited application on account of the fact that when an outbreak of typhoid fever leads to an investigation, the water supposed to have been infected is no longer available for examination.

(3) Although the direct detection of B. typhi in water is impossible, yet the importance of bacteriological and chemical examination of the suspected water must not be underestimated, but it should be combined with a thorough sanitary survey of the field, and a competent study of the phases of the epidemic. This will almost invariably solve the question whether the outbreak was caused by drinking-water.

(4) This method of attacking the problem has the further advantage of throwing light on the sanitary quality of the water in question apart from the special outbreak of typhoid fever, and. moreover, if it is found that the water is not responsible, or responsible only in part, full information will be gained along many lines, thereby suggesting the steps to be taken for future protection.

615 East Franklin Street.

Analyses, Selections, Etc.

Irritation of the Bladder.

Dr. A. Ravogli, of Cincinnati, Ohio, read a paper during the recent session of the Mississippi Valley Medical Association, of which the following abstract is made:

In many abnormal conditions of the genito-urinary organs and also of the urine itself, this affection comes as a symptom in the form of the necessity of frequent micturition. This increased tendency to urinate has been called in German *reizhare Blase*. We prefer to call it irritation of the bladder.

It is a *symptom* which can be produced by a number of intravesical and extravesical affections. In this condition the urination is so increased that it seems that the bladder cannot tolerate the presence of the urine. In some cases it occurs in the daytime only, in other cases at night, and in severe cases often in the day as well as in the night. The intervals between urination may be two hours, but in some cases we find the patient urinates every quarter of an hour, or even every

five minutes. The patients lose sleep, waste away, and are scarcely able to attend to their occupations.

The frequent necessity of urinating, which is known as pollikiuria, is gradually accompanied with vesical tenesmus, which makes the act imperative and somewhat painful. The urine expelled varies in quantity from three ounces to only a few drops. The impulsion to urinate cannot be controlled by the will and if one tries to refrain, the urine passes by itself.

In some cases the sphincter may be affected with cramp, and when the patient tries to urinate the urine does not come and the patient is compelled to wait until it does come; in some cases the catheter is needed. In other cases the voiding of the urine is done slowly and at intervals, on account of the spastic condition of the sphincter. In rare cases there is pain which begins in the region of the bladder and irradiates to the glans penis, testicle, rectum, and in woman to the clitoris and ovaries. Usually if there is some pain it is limited to a kind of pressure in the region of the bladder.

Neurasthenia has been described as a result of the irritation of the bladder. The reason of this affection is a hyperaesthesia of the mucous membrane of the bladder, oftener of the fundus, and of the neck, which produces intolerance to the presence of the urine. This condition of hyperaesthesia can be detected indirectely by pressing the bladder through the rectum, in man, of through the vagina in the woman, or directly, by introducing a catheter into the bladder.

In reference to the *causes*:—The urine may be the cause of irritation on account of its quantity, or of its qualities; it may be too concentrated, or contain urates, phosphates, sugar, etc., which maintain an irritation of the bladder.

The bladder itself may be the cause on account of an hyperæmic condition. This hyperæmia may be the result of vesical and of extravesical troubles, phymosis, urethritis, prostatitis, neoplasms, pericystitis, vulvitis, nephrolithiasis, etc.

In other cases it is a pure neurosis, the consequence of epilepsy, hysteria, eclampsia.

Since the urethroscope and the cystoscope have been used, the cases of irritation of the bladder without pathological condition have greatly diminished, and in most of the cases have been found either granulations of hyperæmia of the mucous membrane.

In conclusion, there are two kinds of irritation of the bladder, one which is a local neurosis, and another which results from pathological alterations of the bladder or of the urethra. The affection is a stubborn one, but the detection of the causes will help greatly in the selection of a suitable treatment.

Editorial.

The Session of the Medical Society of Virginia

Held at Norfolk, October 24-27, was a brilliant success in many particulars. The attendance was very large—about 350 registering from all parts of the State. In addition, the attendance and active participation in scientific proceedings of a number of the leading men of other States was highly appreciated. An addition of nearly 150 to the membership leaves not materially over 300 worthy regular doctors of Virginia outside of the Society. In short, the membership of the Medical Society of Virginia is the largest of any State of the Union, in proportion to the eligible medical population of the State.

The 36th annual session convened in the Y. M. C. A. Hall, Tuesday night, October 24, 1905. The president, Dr. Wm. S. Christian, of Urbanna, Va., delivered an able address, which was followed by the address to the public and profession, by Dr. P. B. Barringer, of the University of Virginia. On recommendation by the Executive Committee, because of the great number of papers, the Society decided on a division for scientific work into two sections—One surgical, and the other for medicine, specialties, etc. Each section was presided over by one of the vice-presidents—Dr. Lewis C. Bosher, Richmond, over the surgical section, and Dr. Harry L. Myers, Norfolk, over the other section. Such division into sections enabled a number more of papers to be presented and discussed than would have been possible had there been no such division. Due to some misunderstanding of progress on the program, the two sections met together on

Thursday; but on Friday morning they went again to their separate halls.

The *Transactions* of the 1905 session will be by far the largest of the volumes issued since the organization of the society, and will contain a number of papers that will long serve as a credit to the Virginia Society.

Among matters of business transacted was the adoption of a recommendation by the Executive Committee to do away hereafter with the annual address to the public and profession so that more time may be allowed to business and scientific matters.

A resolution was adopted referring the matter of fees for medical examinations for regular life insurance companies to a committee to report at the Charlottesville session, during the fall of 1906. The proposition is that no examination for regular life insurance companies be done for less than five dollars, as the minimum fee. Dr. J. R. Gildersleeve, Tazewell, Va., is chairman of this committee.

Dr. J. B. DeShazo, of Ridgeway, Va., as chairman, presented the report of the committee seeking the repeal of license taxes on practitioners of medicine, etc., in Virginia, at a late hour of the session. The report was enthusiastically received, and with good, earnest work on the part of members of the society and their friends, there can scarcely be reasonable doubt as to the repeal of the iniquitous license taxes on doctors during the approaching session of the Virginia Legislature.

Dr. Wm. E. Anderson, Farmville, Va., was elected for two years as the delegate to the House of Representatives of the American Medical Association, to fill the vacancy due to the expiration of term of Dr. George Ben Johnston. Drs. Hugh M. Taylor and Stuart McGuire, of Richmond, hold over for another year.

Dr. Lomax Gwathmey, of Norfolk, was elected president of the Society for the new year. With his push and activity, and his wide influences in the State, we may look forward to a year of great success under his administration.

A new Board of Medical Examiners for the State of Virginia was nominated to the Governor of the State for Commission. While most of the members of the former Board remain, there were one or two left off who have been faithful, earnest, good workers. . We can only hope that the new members will be as efficient.

Besides the retiring president, Dr. Christian, Dr. George Tully Vaughan, of the U. S. Marine Hospital Service, at Washington, D. C., was elected a non-resident honorary fellow of the Society. Dr. Vaughan is a Virginian by birth, has been a zealous member of the Society for some years, and has won his way to priminence in the U. S. Service. Dr. Robt. G. Holloway, Port Royal, Va., was also elected a Resident Honorary Fellow.

The selection of a subject for general discussion during the session at Charlottesville next fall, as also the leaders of discussion were matters left to the decision of the executive committee, to be announced at as early day as practicable.

Such were the social entertainments by the Norfolk profession of the doctors in attendance upon the session, and of the ladies accompanying them that the hospitalities of this session will long live in memory, and create a general desire that the time may soon come when another session is to be held in that great city by the sea.

Proprietary Medicines.

A good deal of pharisaical remark is being published in certain journals against the advertisements in reputable medical journals of proprietary remedies in common use by the profession. We doubt if the tirades being made against them will materially influence the mass of the profession against the use of those preparations of well established reputation that have often been tried, their virtues not denied and ready to be tried again. The outbursts of some journals against such preparations has the appearance of "much ado about nothing." Nor are we prepared to appreciate the saint-like attitude of journals of the present day that atempt to uphold for professional criticism and rebuke some other leading journals because they admit into their advertising pages certain proprietary advertisements. There is a sort of "the temple of the Lord are we" censorship attempted that does not speak well for the record of some of the censuring journals. Until a year or so ago, even the *Journal of the American Medical Association,* as the representative one of the American profession, contained a number of such advertise-

ments. But now that the membership subscription income alone is sufficient to run it, that Journal turns upon its former patrons with a vim that is surprising, and reflects upon either reputable medical journals that do as it did.

Most of the proprietary remedies that have met with the approval of the profession at large have been analyzed—both qualitatively and quantitatively—and their compositions have been published in various prints. But rather than write prescriptions in detail for certain of these proprietary tablets or fluid preparations, and wait for the pharmacist to put them up, doctors generally, for the sake of readiness and general convenience, have preferred to prescribe the proprietary preparations direct—just as they might write for paregoric, or aromatic sulphuric acid, or vegetable cathartic pills—already prepared and on the shelf of the druggist. Yet, as to composition of these latter, which are official in the U. S. Pharmacopœia, we venture little in assertion that relatively few practitioners who may be frequent prescribers of these articles can give their formulæ off hand. Squibb's diarrhoea mixture, and many like preparations in constant use, are considered ethical, yet how many doctors can off hand write the formalæ for their preparation?

Of course there is an extreme view to be taken of this line of remark which we should not be considered as endorsing. The brazen quackishness of some advertisements of articles in public prints—their "king cure all" claims —exupose them to very just censure. It is not always because of the real composition of these well known quack preparations, as revealed by the analytical chemists, that such preparations should be censured, as because of the false or fraudulent claims made regarding their remedial qualities, as published in newspapers, etc., simply to entrap the ignorant layman purchaser.

There is a middle ground between the extremes upon which it is safe for the profession to stand. Do not dispise all proprietary or ready made preparations when their use seems indicated simply because their formulæ are not recalled at the moment they may be needed, provided sufficient is known of their active ingredients and of their average doses in given prescriptions; nor yet resort to those preparations which are typical of flagrant quackery.

In this connection, we should add our conviction that it would be better for the proprietary manufacturers themselves were they all to publish the active principals and proportions of their preparations in their professional advertisements; since it requires only a little analytical work on the part of chemists in almost every community to discover them. Such publications would not materialy interfere with the prescription of their trade marked preparations by doctors; and it would remove their preparations from that border line, one step beyond which they must be classed as absolutely unethical. While certain local druggists here and there might adopt like formulæ for their own trade, the established trade mark, as in the case of "lapactic pills," would well protect the original manufacturers. It would be hard for another manufacturer to "get the run" on these pils—so well established in use have they become—even should he adopt the exact proportions of the same drugs and attempt sale under another name.

Remove Special License Taxes on Virginia Doctors.

We regretted the deference of the "Reports of the Special License Tax Committee" of the Medical Society of Virginia till just before adjournament of the Norfolk session; for we were aware of the general interest of the profession in the matter, and hoped to have time for a more general expression of approval, with the natural development of proper enthusiasm arising therefrom. There is none the less a pressing responsibility upon every Virginia practitioner to at once see the Legislators elected to represent his county or district in the approaching session of the General Assembly of Virginia, and urge upon him or them the rightful claim of the profession to repeal the existing laws imposing specific license taxes on doctors for the practice of their vocation.

As Dr. R. L. Payne, of Norfolk, Va., says: "Each local society should immeliately pass resolutions, asking the Legislature to repeal this law, and send a certified copy to our committee (on the subject—Dr. J. B. DeShazo, Ridgeway, Va., chairman), to be used before

the Finance Committee of the Legislature." Dr. L. Lankford, also of Norfolk, remarks that the influence of each member of this Legislative Committee is worth ten votes of those not on that committee. Dr. Joseph A. Gale, Roanoke, Va., urges the profession to inject no other measure in the present effort, so as not no other measure in the present effort, so as not to jeopardize the bill that will be presented the Legislature. Dr. Wm. S. Gordon, Richmond, urges prompt concert of action on the part of the Virginia profession. There is no way to get the repeal law passed except for doctors to obey the rulings of the State Society Committee on the subject. Every member of the Medical Society of Virginia is morally bound not to speak a word publicly against the proposed bill, since the Society, for five years, has been committed to it.

Thus we might go on giving opinion after opinion as to the proper mode of procedure, and we sincerely trust that now the profession of Virginia will rise up as one man in its strong influences, and secure the repeal of the oppressive specific license taxes on doctors in this State.

The report of the committe of the Medical Society of Virginia having this matter in charge, after speaking of the causes and work of the *Medical Legislator,* well editor by the chairman, Dr. J. B. DeShazo, repeats some points heretofore made. " One is the value of petitions in districts whose representatives in the Legislature require them, before they come out in our behalf;" another is " the double importance of securing the aid of members of the Finance Committee of both House and Senate, in so far as it is within our ability to do so.'

Acknowledgement is made to the *News-Leader,* of Richmond, and other newspapers, and to George Bryan, Esq., a distinguished attorney of Richmond, for valuable contributions in behalf of the measure—more especially since such contributions have come from a disinterested profession, and entirely voluntarily.

The Report of the Committee adds that, " with united effort, we have every prospect of success before the General Assembly of Virginia;" and concludes with the following recommendations, which were unanimously endorsed by the Medical Society of Virginia in session at Norfolk.

1. That each county and city carry out the plan of local organization recommended by the State Committee; and that, if not already done, personal interviews be had with Legislators as soon as practicable, and a report of it be made immediately to this committee.

2. That the names of the family physicians of each number of the Legislature, as well as relatives practising medicine be reported to the chairman of this committee.

3. That, while every member of the next Legislature must be posted on the justice of our course, yet all the influence possible at our command must be brought to bear on the Finance Committees of both houses of the next General Assembly.

4. That, since we have waited our turn, every other question be relegated to the rear, and a clear track be given us in the legislative field. The injection of any other question, resolution or request, will create division and jeopardize our movement.

5. That each local society within the bounds of this Commonwealth immediately pass resolutions, and furnish us a certified copy, urgently requesting the Legislature to repeal this unjust tax now imposed upon practising physicians.

6. That, when our bill is pending, every doctor respond to any call within their power in the way of letters and personal interviews with members of the Legislature that the State Committee sees best to suggest.

Hospital Interne for Panama Canal Service.

The U. S. Civil Service Commission announces an examination on November 29-30, 1905, to secure eligibles from which to make certificates to fiill vacancies in the position of male hospital internes under the Isthmian Canal Commission on the Isthmus of Panama. Each applicant will be required to submit to the examiner a photograph of himself. Age limit 20 to 30 years. Only graduates of reputable medical schools having a three years' course will be admitted to examination. Salary $100 per month, with quarters, but without board or washing. Applicants should at once apply to the U. S. Civil Service Commission, Washington, D. C.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 16.
Whole No. 232.

RICHMOND, VA., NOVEMBER 24, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

UTERINE FIBROMATA COMPLICATING PREGNANCY AND LABOR.*

By EDWARD P. DAVIS, M. D , Philadelphia, Pa.
Professor of Obstetrics, Jefferson Medical College; Honarary low Medical Society of Virginia. etc

Uterine fibromata may complicate pregnancy and labor in several ways. During pregnancy, should the tumor be situated near the internals, hemorrhage may be severe and infection may develop. If fibromata be interstitial, the development of the uterus will be slower than normal, the decidua less perfectly formed, and the nutrition of the embryo and fetus will be impaired. Where tumors are situated beneath the peritoneum, if they project into the pelvis they may become strangulated, while if they extend into the abdominal cavity they may give rise to irritation of the abdominal peritoneum.

At labor subperitoneal tumors will interfere with parturition only in so far as they may have weakened the uterine muscle and interfered with the nutrition of the womb. Interstitial fibroids on the contrary may be a serious detriment in labor by producing inefficient uterine contractions and rendering delivery by operation necessary. Their presence exposes the patient to the danger of hemorrhage after labor through failure of uterine contraction and increases the danger of septic infection. Submucous fibromata may be present before the child and be expelled before or with it, or if they remain in the uterus after the child and its appendages have been expelled they expose the patient to the danger of hemorrhage, uterine inversion and septic infection.

It is true that in some cases no appreciable effect upon pregnancy or labor can be assigned to uterine fibromata. Some may even undergo involution with the uterus and disappear. In any case, however, complicated by their presence it is impossible to consider them in any light except as complications, and one cannot neglect to consider the dangers to which they may give rise.

The following cases have been selected as illustrating the points already stated:

Case 1.—Multiple subperitoneal and interstitial fibroids interfering with the nutrition of the ovum and with the expulsive power of the uterus.

Primipara, aged 32, had suffered severely from appendicitis for which operation had been performed. Many adhesions were found, the wound healing slowly and sinus persisting which closed after the expulsion of a silk ligature. During pregnancy, suffered from several attacks of pain and uterine contractions caused by adhesions between the uterus and surrounding peritoneum. A subperitoneal fibroid as large as an egg could be plainly felt upon the anterior surface of the uterus. Pregnancy was prolonged to nearly 300 days, and labor was prolonged, the fetus presenting in breech presentation. As descent ceased, the patient was anæsthetized with ether, traction made on the fetal groin and a female child weighing 6 lbs. 10 ozs. was delivered. During these manipulations the uterus was found to be the site of multiple fibromata, subperitoneal and interstial. Special precautions were taken to guard against hemorrhage and the patient reacted well. As convalescence progressed the fibromata underwent involution with the uterus, and after labor could not be detected. The patient's recovery was complete.

In this case the presence of the fibromata interfered decidedly with uterine contractions and also with the nutrition of the fetus. The

*Read by title beofre Medical Society of Virginia at Norfolk, Va., October 24-27, 1905.

child was small, not very well nourished and was delicate.

Case 2.—A negro primipara, aged 27, was sent to the Jefferson Maternity by Dr. Collin Foulkrod, one of the hospital staff. Her family history was negative, menstruation had been irregular before pregnancy occurred. The pelvic measurements were normal and the patient's general condition during pregnancy had been good. The patient had been in labor for three days and had made very little progress. Dr. Foulkrod had watched the case closely but recognized the presence of multiple fibromata which had so altered the structure of the uterus as to render normal uterine action impossible. In addition to numerous subperitoneal tumors one was pressing upon the anterior surface of the uterus at the pelvic brim so large as to render the descent of the head practically impossible. The patient was with difficulty persuaded to enter the hospital. On admission the consent of the patient and her husband was obtained to perform whatever operation might be thought necessary. The fetus was in excellent condition, the heart sounds strong and regular, dilatation was but partly complete, uterine contractions were regular but inefficient and the head of the child which presented was movable above the pelvic brim. The abdomen was opened, the uterus was impossible. The situation of the fibroid upon the anterior wall had rendered the decent of the child and its delivery through the vagina impossible. Accordingly the child was delivered by incising the uterus after which hysterectomy was performed, leaving the cervix which was normal in structure. Upon one side the fibroid growth had invaded the broad ligament and especial care was necessary to control hemorrhage. Peritoneal tissues were brought together completely, the stump was sutured by silk sutures which were turned into the cervix and the cervix covered with peritoneum. There was no hemorrhage. The abdominal cavity was then partially filled with hot salt solution and the abdomen closed without drainage, the peritoneum and fascia being separately sutured. The patient's recovery was uninterrupted and she nursed her child which developed vigorously. One month after the operation the abdominal wound was firmly healed, the stump of cervix atrophied and small and freely movable without pain. There was no tumor or exudate in the pelvis. This patient was seen by Dr. Foulkrod a few weeks ago who found her in vigorous health and still nursing her child.

This case had a test of labor and the impossibility of vaginal delivery or even of securing engagement was clearly demonstrated. So abundant were the fibromata that it was impossible to preserve the uterus, and hysterectomy was the only procedure indicated. As the cervix was normal there was no advantage in removing it as its presence served a useful purpose. It is interresting to observe that this patient from whom the tubes and ovaries were removed continued to nurse her child successfully. This we have seen in a number of other cases. The tubes, ovaries and body of the uterus were removed in this case—it being thought best to empty the pelvis as thoroughly as possible. The uninterrupted recovery of this patient was due in considerable part to the good judgment displayed by Dr. Foulkrod who made no attempt to deliver the patient by the vaginal operation. Had this been attempted in the tenement house in which the patient lived it would have been difficult to have avoided infection.

Case III.—Primipara, aged 36½, the wife of a physician, was brought by her husband to Philadelphia for attendance during delivery. The patient was thin and badly nourished, and gave a family history of paralysis and nephritis. She gave no history of severe previous illness but had always been delicate and badly nourished. During the early months of pregnancy she suffered considerably from pain in the back and left side of the abdomen. The patient was chronically constipated and had headaches which seemed to be caused by anæmia. On examination the pelvis was normal, the child occupying the first position, vertex presentation, head freely movable at the pelvic brim. The mother's pulse was 100 and weak and she possessed little muscular vigor. The urine was normal. Owing to her lack of vigor and her age the patient and her husband were very anxious regarding the possible result of her approaching labor. They readily consented to have her enter a private hospital where she could have every care and where all facilities for operating were at hand. The patient failed to come into labor at the usual time and the uterus showed no signs of contraction. Various methods of operative deliv-

ery were discussed with the husband, and as the pregnancy showed no signs of spontaneous termination and the patient's general health began to decline somewhat, operation was proposed and accepted. Induced labor and craniotomy were declined by the operator with the assent of the patient and her husband. The parents were especialy desirous to preserve the life of the child and the mother was willing to undergo abdominal section. The cervix gradual-lysoftened and admitted one finger, and the patient was prepared for delivery by abdominal section. On opening the abdomen and delivering the uterus, the veins of the broad ligaments were found enormously distended. The uterus contained in its lateral and posterior walls numerous small fibroid nodules, some of them calcareous and showing fatty degeneration. The abdominal viscera were engorged, dark in color, and fat was abundant throughout the abdominal tissues. The fetal membranes were unruptured and were accordingly broken and a male child weighing 8 lbs. 2 ozs. was delivered. The umbilical cord was coiled several times about the child's neck, the child was asphyxiated but readily revived.

On examining the uterus closely, it was found that the anterior uterine wall in the center was free from fibroid tissue, and that it would be possible to suture the uterus without involving abnormal tissue. In view of the patient's desire for children, the uterus was retained, and the uterine wall closed with buried silk sutures, and the peritoneal covering with continuous catgut. To guard against relaxation and hemorrhage, the uterus was packed with iodoform guaze and the end carried through the cervix just within the vagina. Salt solution was introduced into the abdomen and the wound closed without drainage. The patient was given strychnia and ergot hypodermically and recovered promptly from anæsthesia without shock or hemorrhage. The patient recovered from the operation immediately.

On the second day after the operation the guaze was removed through the vagina without difficulty and the vagina thoroughly cleansed with bichloride solution and cotton sponges. The patient's recovery was uninterrupted. Immediately after operation her temperature rose to 102 for a short time and fell to 100. It then descended to normal, where it remained. Her convalescence was uninterupted. She nursed her child a few days and then the supply was insufficient and the milk poor and thin. A month after operation examination showed the uterus somewhat adherent to the anterior abdominal wall, the incision was firmly closed and involution had gone on fairly well, the uterus being but very little larger than normal. The child was artificjally fed. Some difficulty was experienced in selecting food which he could digest. The child ultimately, however did well. Mother and child were in excellent condition when both left the hospital. The husband subsequently wrote that both were doing well.

In this case it was impossible to diagnosticate the presence of fibromata before the abdomen was opened. There was evidently some condition present which prevented normal uterine contractions and delayed the development of normal labor. The patient had uterine contractions on several occasions but they were too feeble to cause engagement or to produce labor. The selection and the choice of operation were made by consultation with the parents with the view of giving mother and child the best possible chance. The operator was at liberty to remove the uterus if he considered such a course justifiable. The fact that the fibromata were small, that they were so situated that incision could be made through healthy tissue and that they occupied such locations as not to press upon the bladder or rectum the age of the patient and her desire for children led the operator to preserve the uterus. Her undisturbed convalescence seemed to justify this decision.

The induction of labor in this case would doubtless have been possible. It would, however, have exposed the child to greater risks and in view of the fact that the cord was coiled several times about the neck, it is more than probable that the delivery of the child through the vagina would have caused its death by asphyxia. Induced labor would have also further exposed the mother in her feeble condition to danger from exhaustion and possible infection. With the patient in a good surgical hispital and with abundant and skilled assistants abdominal delivery seemed the wiser procedure.

Case IV.—Multipara, had expelled a child spontaneously before the patient was brought to my attention. After delivery the patient ap-

parently recovered, although the uterus remained large and bloody discharge persisted and the patient suffered from intermittent pain. She visited several clinics where various diagnoses were made and different forms of treatment proposed. She was taken at night with severe pain and considerable hemorrhage. Her attending physician found a mass protruding from the vulva, which he could not recognize. There was considerable shock and hemorrhage. At my suggestion the patient was sent to the Polyclinic Hospital and I saw her as soon as she arrived. From the vulva protruded a submucous fibroid as large as the head of a six-months' fetus. This was attached to the fundus of the uterus by a pedicle as large as the finger. The expulsion of the tumor had inverted the uterus which lay in the vagina jsut above it. The patient was suffering from severe shock. The pedicle was ligated and severed without difficulty, the fundus was carried up to its normal position and the uterus replaced in the pelvis. In spite of vigorous stimulation the patient did not react and died within a few hours.

In this case a diagnosis of the condition was not made until the tumor had been expelled. Had the attending physician recognized its nature immediately after its expulsion he might easily have removed it and replaced the uterus. In such a case the labor would proceed, as in fact it did, without especial complications and the attending physician's attention would be directed to the tumor only by the fact that the uterus remained unduly large. After removal of the placenta and in the absence of a retained clot such uterine enlargement could only result from the presence of a tumor and the submucous fibroid was the variety most probably present. As soon as possible after labor the tumor should have been removed by severing its pedicle with a long curved scissors or with a snare and dilating the uterus as much as required. Hemorrhage would have been inconsiderable and under antiseptic precautions the patient should have done well. It is probable that the physician in attendance assisted in the inversion of the uterus for when the tumor appeared he made traction upon it supposing it to be a piece of retained placenta and not recognizing its character.

Had the patient survived the inversion of the uterus for several days and septic infection occurred vaginal hysterectomy would have been indicated. The replacement of the septic uterus would have exposed the patient to grave danger while vaginal hysterectomy in a patient recently delivered has not proven a formidable operation.

The limits of time and space forbid a complete review of the literature of this subject. The frequency of myomatous tumors complicating pregnancy may be inferred from Hofmeier (Zeit. f. Geburtshülfe u. Gyn., Bd. XLII, Heft 3, 1900); in 11,173 patients 550 or 4.3% had fibroid tumors of the womb. Of these 20.5 per cent. were unmarried; 13.5 per cent. were married. Among those who were married 26 per cent. were sterile, their average age being 40.5 years. Pregnancy occurred in 74 per cent. of those married and having fibroids and of these 25 per cent. were pregnant once only, while the average number of pregnancies was 3.6 per cent.

It has been said that pregnancy and parturition are the natural antidote and cure for uterine fibroids. While this may be true the coincidence of myomatous tumors of the uterus and pregnancy exposes the patient to considerable dangers.

Abel (Berlin. Klin. Woch., No. 7, 1903) records 2 cases of pregnancy complicated by myomatous tumors in which it became necessary to remove the uterus by abdominal section. Doran (Edinburgh Medical Journal, Sept., 1903), reports a similar case which came to operation in which the tumor was so large in comparison with the uterus as to suggest a uterus bicornus. Eckstein (Monats. für Geburtshülfe u. Gyn., Bd. XVIII, p. 701, 1903) describes the case of a woman whose labor was complicated by the presence of a myomatous tumor. Labor was protracted for 10 days with prolapse of the cord and death of the child. The uterus was emptied by craniotomy and the placenta delivered when it was found that in addition to the presence of a tumor rupture of the uterus had occurred. The tear was treated by tampon and the patient recovered. Lennander (Zentralblatt für Gyn., p. 1153, 1903) delivered a child in such a case by Cæsarean operation and followed this by the total extirpation of the myomatous uterus. The tumor in this patient entirely filled the small pelvis. Lewers (Lancet, January 17, 1903) was obliged to perform Cæserean section in 2 cases because birth was impossible through the pres-

ence of myomatous tumors. Both patients recovered although operation was somewhat difficult. In each case no attempt was made to remove the tumors or the uterus, but in the first the patient was made sterile by ligating the Fallopian tubes . Pauchet (Gaz. des Hopitaux, 1430, 1903) was obliged to perform abdominal extirpation of the uterus because a myomatous tumor rendered the development of pregnancy impossible. The patient was in the third month. Wagner (American Journal of Obstetries, No. 2, 1903) removed the pregnant uterus with the child in a patient aged 36, who had had six abortions. The patient and child recovered. Westphal (Zent. f. Gyn., p. 1300, 1903), performed supravaginal hysterectomy at six months pregnancy because a retrocervical myoma made the development of the uterus and spontaneous labor impossible.

Caemron (British Medical Journal, Oct. 3, 1903) Haultain (Ibid) Helme, Haywood, Smith, Horn, Lackey, Mac Lean, Nelson, Rawlings and Routh discuss the management of pregnancy complicated by fibromatous tumors, reporting typical cases, many of whom came to operation. Murray (American Journal of Obstetrics, April, 1904) reports the case of a primipara who had a fibroid tumor in front and to the left of the uterus, the bladder being drawn up and spread out over the anterior aspect of the tumor. The continuation of pregnancy was impossible and the patient suffered greatly from pressure upon the bladder. Supravaginal hysterectomy was successfully performed. M'Donald (Journ. American Med. Assoc., May 21, 1904), in a paper upon the degeneration of uterine myomata reviews the literature of the subject and gives the results of a study of 280 cases of fibromata. Among these was one of decidnoma malignum and one of ectopic gestation. The occurrence of deciduoma malignum in a uterine fibroid calls attention to a dangerous complication in these cases which has rarely been recognized. In the Transactions of the Obstetrical Society of London, Vol. XLVI, p. 238, 1904) Bland Sutton reports the ease of a patient pregnant who had a fibroid in the anterior wall of the uterus. Pregnancy went on to 7 months when the patient came to the hospital in great distress in labor and the arm of the fetus prolapsed. The child was dead and the location of the tumor was such that delivery through the vagina was impossible. The uterus and tumors, fetus, placenta and ovaries and tubes were removed intact. The patient made a good recovery.

Our attention has recently been called to the claims of myomectomy in cases of fibroid complicating pregnancy. At first sight this operation is an attractive one, as it preserves the greater portion of the uterus and need not interrupt the pregnaney. It is, however, open to grave objections. Myomatous tumors during pregnancy are exceedingly bloody and free hemorrhage is inevitable. The contractile power of such a uterus is less than normal and complications may be expeeted when the uterus tries to perform its function of parturition. Tumors so situated that they allow pregnancy to go on to a natural termination frequently disappear during involution and this is a safer eure than myomectomy during pregnancy.

With our present knowledge we may conelude that so soon as a diagnosis is made of pregnancy complicated by myomatous tumor a careful examination must be made to determine the location and size of the tumor. If the tumor be subperitoneal and above the pelvic brim the probabilities are that pregnancy will be uninterrupted and that spontaneous parturition will oecur. If, however, the tumor is in a position to undergo pressure during pregnancy, to interfere with the bladder or rectum and to render spontaneous parturition impossible the choice of two methods of procedure will be before the patient. In the first, operation is to be done as soon as possible without regard to the continuation of pregnancy. The reasons in favor of this choice are the comparatively small size of the uterus and tumor which renders the operation less formidable than if performed later in pregnancy. If, however, the patient elects to let pregnancy continue in the hope of securing a viable child the physician may aeeede, keeping the patient under close observation. Should symptoms of severe pressure or strangulation of the tumor develop operation must be done as soon as possible. When pregnancy has gone at least 7 months and if possible 8 if the patient begins to suffer the child should be delivered by abdominal section followed by hysterectomy, or total extirpation of the uterus.

In interstitial fibroids complicating pregnancy the diagnosis of the condition may be exceedingly diffienlt. The tumors may not

be accessible to touch, pregnancy may go on to term and the uterus will fail to expel the child. In these cases the child can often be extracted through the vagina when the physician must be on his guard against hemorrhage especially apt to occur in these cases. If uterine inertia becomes marked as in one of the cases which I have reported, then the child must be delivered by abdominal section and the uterus dealt with in accordance with the conditions found. In general we must endeavor to take the middle ground in these cases between conservatism and too early resort to operation. All such cases require close watching and thorough study. The majority of them will sooner or later demand operation and if treatment of any kind be instituted, operation is the only treatment indicated. The induction of labor and therapeutic abortion are very uncertain and unsafe and should not be performed in these cases.

THE LINE OF LEAST RESISTANCE.*

By PAUL B. BARRINGER, M. D., Charlottesville, Va.,
Professor of Physiology and Materia Medica, University of Virginia, etc.

Medicine is an art in itself so technical, and its points of contact with humanity are so personal and delicate in their nature, that "an address to the public on its relation to the profession" presents necessarily some perplexing problems.

The medical man chosen for this task is tempted—sorely tempted by his perplexities. To do any good, he must touch upon delicate ground, for these relations are indeed delicate. The situation tempts one to dodge.

I was tempted to try the old dodge of speaking to you in the strict vernacular of the profession—strictly in technical terms—with the hope that I would be at least as interesting, if not as instructive, as the returned missionary who reads before his friends the Sermon on the Mount in the Chinese tongue. But the missionary must have a mission.

I concluded, therefore, that the best thing that I could do for you was to deliver my message straight, making it short, and if possible plain, using "suggestion" to avoid "hypnotism," and hypnotism to avoid suggestion. This I will endeavor to do.

My message is this: I wish to point out to the public the fact that they often fail to get the best results out of their medical attendants because they do not seem to know what a physician needs to do his best.

If this difference in professional results was measurable in dollars, profits and percentages, the rich would be able to stand it, and some others might be able better to understand it,—but it is not always so measurable. The difference between the physician's best and his next best, is sometimes as wide as the difference between this world and the next.

Now, amongst the homes which make up the clientele of every physician here are to be found some which, notwithstanding the social position, education and wealth of their owners, no physician of self-respect cares to enter as a practitioner of his art. Every call to these houses is answered with hesitation and reluctance for in them there dwells a spirit which disturbs professional thought and hampers professional action.

Such families change their physician often. Not long since at a small medical gathering the fact was reported that six different medical men had been called for six different patients in one family in one year. Physicians frequently compare notes on such families, at their little informal gatherings, and their experience as reported to each other is of interest, as bearing on this question. In the family in question one said he began to cut loose as soon as he saw they had an "electropoise." He wanted a faith "without a string to it." Don't you remember that dusty old fetich at home—now almost a memory—and haven't you, at some time in the past, flaunted that impotent thing in your doctor's face?

Another said he did not mind consulting with a ghost, the ghost of their family physician, if he could only be sure that the old doctor was really a live man when he died, but he drew the line at receiving counsel from a man ten years dead and fifty years behind the times when he died. How many of you have tried to influence and shape the practice of your medical attendant by that of some other physician you have been under, now dead or five hundred miles away? A therapeutic compro-

*Address to the Public and Profession, delivered before the Medical Society of Virginia, night of October 24, 1905.

mise, either with a ghost or an absentee, has never yet helped any man—Never.

Another physician present (one of the six) said of this home, that it had taken him nearly an hour of hard work to write a simple prescription in that atmosphere.

Did it ever occur to you, that it would have improved the chances of some departed loved one if you had thought to set aside some quiet place in your home where the doctor could think and write and balance his facts undisturbed? How much would you, Mr. Attorney, give for a brief prepared in the wrangle of open court?

Now, strange as it may seem physicians manage to get a good deal of fun out of their craft, and while these recitals of experience spoke only of the ludicrous they implied much more. They implied for this home distrust of the practitioner, therapeutic meddling and a thoughtless but vicious obtrussion upon the physician when he most needed peace to ensure his patient's safety. Physicians feel these things and are influenced by them. If you see in your doctor quick, hit-or-miss methods, is it wholly his fault? The art cannot be preserved, much less applied, in an atmosphere of this kind.

Yes, the practice of medicine including surgery, is an art—an art, it is true, founded upon the sciences but still in its application *an art*. In the exercise of an art the personal equation is a large and a variable factor. A man physically or mentally exhausted will not give the same resultant as the same man fresh and clear; a mind perturbed and disturbed cannot do its best.

But while we claim for medicine that it is only an art, its successful practice requires a longer preparation and a more complex course of study than that prescribed for any other calling known to man.

A good general education, in many cases a Bachelor's degree, plus always four full years of special technical study—one, two or even more years of hospital service, a year in Europe. then to successfully pass a critical examination on the whole—and a young man is said to be well equipped, no more, for the practice of his calling. The large cities are full of men who have done more. Compare this with any other calling—compare it with law—two, or at most, three years of technical study; engineering usually three and a narrower field. Compare it with the training which a rich and lavish government bestows upon those whom it selects for training in the art of war. The military cadet enters, often at seventeen, with a scant high school education, and receives four years of technical training, rigid, it is true, but not too rigid to prevent the vast majority of them from graduating and entering at the fourth year full-fledged upon the practice of their art. At the Naval Academy it is perhaps of wider range, but essentially the same.

And this is all as it should be. The standard of preparation is properly made higher in medicine, than in any other calling, because at the very first professional visit the young physician may be placed in a position where human life depends upon his good or bad judgment.

And yet with all this the medical man is not safe-guarded in the practice of his art as are his fellows. The captain on his quarter deck is placed both by law and custom beyond approach; a sentry stands between the officer in his tent and those who would disturb his judgment; the protecting pall of silent darkness that stands guard over midnight study enables the mind of the lawyer, the minister or the engineer, in the quiet of these hours, to follow the line of least resistance in reaching a conclusion as to a course of action; but it is not so with the physician.

With the physician, in the vast majority of cases, he must go to the home of the sick where the result of his efforts is largely measured by the conditions obtaining in the home to which he is called.

Once in a while, just often enough to make you appreciate it, one finds ideal conditions—an ideal spirit, in a home at such a time. We all remember these homes,—they are enough alike to constitute a type never to be forgotten, —and every physician here let us hope, has seen one.

Do you remember the place where the head of the family met you at the gate and said: "Doctor, I sent for you because I have watched you and I believe you to be the man I need. I wish to say before you go in, that I fear we have a serious case here. I wish you to understand that while I am not a wealthy man, within my limits, I am behind you in this case for all I am worth. *You are the doctor.* Come as often as you feel it necessary and let me know if you need a nurse or any other doctor to help

you, and I will provide. I put this case absolutely in your hands and I believe you will do what is best. When you come down, if you have any writing to do, you will find the little room on the right prepared for you. I will be out in the front hall to see you when you are ready, to get any orders."

When at last, after an unusual stay, you did come down, do you remember the cosy warmth and grateful solitude of that plain little parlor? You wanted to think, and here was just the place. Did you know that it was three-quarters of an anxious hour for that waiting head of the family before you came out of that room—to leave?—oh, no! to tiptoe upstairs again and be certain that you were right in your "recent history"? There were others in that house, for you felt their presence, but they did not disturb. It seemed a household united as for a struggle, and you felt yourself as a trusted pilot on the bridge and you were stimulated. Your whole heart went into that struggle, and when this rare man neglected to put the standard inquiries of "What's the matter with her? Do you think she will get well?" you felt ashamed that you had given time to the preparation of the usual "evasives."

Next day when you returned, tired and weary from your rounds, and your wife told you that the well known Mrs. Histeria Goodpay and the stranger had both sent for you, do you remember how you shocked Mollie by saying "Damn Mrs. Goodpay," as you started the old mare down a side street to avoid interruption by Mrs. Goodpay's pickets? Do you remember all this? If you don't you are a callous ingrate, forgetful of a rare confidence, a timely courtesy and a thoughtful consideration. If you have forgotten this man, the recording angel has long since charged to the black side of his book that oath, first entered as a prayer.

To get the best out of his art is for the physician himself a difficult thing. No one knows better than he how difficult it is and how, if his mind is to follow the line of least resistance, he must be safe-guarded on every side. As old as the profession itself is the axiom that "no physician is capable of properly treating a member of his family in a serious illness." We are disturbed in judgment, however, not only by our sympathy, but by anything that places upon the physician an undue sense of responsibility Weeping grief-stricken children or members of the family, incapable of self control, should be kept out of sight and away from the physician if you are to depend for safety on his judgment and poise. But these disturbing influences are not limited to the home.

On that bright September evening four years ago, when we heard that William McKinley the much beloved President of the United States, had been shot and was lying dangerously wounded in Buffalo, the heart of every medical man in America went out in sympathy, not only to the distinguished sufferer, but to the men of our profession called to attend him. They knew, each in his own degree, the great difficulty experienced in applying one's best judgment where the patient is one called from the "seats of the mighty."

I may shock the public, but I know that I voice the sentiment of the profession when I say that a pauper from the streets taken to any fairly manned and fairly equipped hospital in the land, stands a better chance of good treatment and recovery from a serious injury than any president, prince or king, anywhere, treated by the best living talent in the limelight of public anxiety and national calamity.

With the charity patient the approved routine is applied without sentiment, and, if you will, without sympathy as a disturbing factor. If the logic of the situation declares that the patient is doomed unless the wound is opened, cleaned and its various tissues accurately apposed, this will be done if it takes all night Even though he appears to be dying upon the table, under artificial respiration and stimulants the efforts at repair go steadily on till it is done and properly done, when you can put him to bed with the knowledge that if he has the stamina to re-act from the shock of the wound and prolonged operation, recovery is not only possible but probable. This is the way that surgery saves—that brands are plucked from the burning.

As the bystanders sometimes remarks, "This takes nerve." It does, and the kind of nerve that cannot be developed under unusual conditions. There are many things that we can do with skill and certainty on the ground of our own choosing, which we could never do before the foot lights of public gaze. Working as he does day after day in the shadows of privacy and sorrow, this light seems to blind the physician, and the psychic analogue of stage-fright

results. It is due to an unbearable sense of responsibility. A single family in distress weighs heavily upon him; the thought of a nation in mourning staggers him. The sense of responsibility to the practitioner in medicine is so great that it drives at least one graduate in ten from the ranks before his first year is out. Do you understand now why the ethics of the profession taboos the newspaper exploitation of cases? But by timely expressions of confidence and hope you can at least minimize this overweaning burden and help your physician. Try it.

The surgeon most to be feared is he who loses his nerve and backs out, leaving unfinished a necessary operation. If it were not necessary, it should not have been begun; if necessary and begun, it should not be ended till the last fragment is removed and the last stitch taken. It is a great temptation to back out. It is easy to explain—a wise shake of the head, a groan, a look. But what makes them wary in nerve—even the best of them? I have known the cry of heart-broken ignorance: "They are killing him, oh they are killing him," coming from an adjoining room, to steady a surgeon's nerve among his friends, and yet the same man might "go up in the air," as we say, from a glance of impatience on the part of an unwelcome colleague.

We look to our friends to sustain us—not to our enemies. The friendly glance of a pupil assistant has kept many a surgeon up to his work when the critical eye of an enemy would have paralyzed him. You may well ask, "What, in God's name, can an enemy be doing there at such a time?" His presence is due to the fact that in theory it is the inalienable right of the family to have there whomsoever they choose, and to the fact that "some members of the family wouldn't be satisfied if he were not there." Nevertheless, though he be a good fellow and a good surgeon—if he is *persona non grata* to the operator, he should not be there. His simple presence is detrimental to the patient's chances.

In other words, if you want the best results, see to it that "your doctor" is safeguarded, for try the best he can, the mind and hand will not work where there is lack of harmony; a forced consultation is just as bad as a forced reconciliation—often worse—it sometimes kills.

But it may be said that this is all very well in cases of surgery or serious illness, but in the ordinary visits of the physicians, in the cases of simple indisposition there is no use in casting around the medical attendant any undue formality. Perhaps not, and yet I am sure it would be safer to begin to "get the habit," for serious illness usually begins as a simple indisposition, and if you improve the chances of its being recognized in this stage much is gained.

Did you ever stop to consider the fact that the physician entering your house, even on a professional visit, is more or less hampered by his obligations as a guest? He is not as free to obtain what he needs as he is in a hospital, a sanitarium or even a hotel. Try to think of what he needs to be at his best.

Quite often the complemental relation of host is recognized almost too fully. It is a charming custom and one that does high honor to the family's appreciation of its duties to have the best looking girl in the family detailed "to entertain the doctor while papa's room is being fixed up."

I believe, however, you will agree with me that "papa's" chances of having an accurate diagnosis made are not much increased. If, now, this delightful social "cocktail" is followed by the usual post-visital "stirrup cud" of prolonged persistent adherent interrogation, you will see that "papa's" chances of slipping through with a double pneumonia undetected are unusually good,—too good.

Now, you can't blame this charming young creature for wanting to know, but this thing of being required to answer as to what is wrong after half a visit, is not a good thing either for the doctor or for the patient. If the doctor is forced to answer before he knows, he is none the less forced to abide by his answer, and it never helps a cause to have its agents talking one way and acting another. The right thing to do, as hard as it is, is to refrain from asking the doctor till he voluntarily announces his opinion. If old habits overcome you and you find him dodging or taking refuge in the "double exits" like "rheumatic gout," "typho-malarial fever," etc., just say "excuse me" and he will understand.

It would be a good thing for the sick at large if the simple lines of procedure followed in the physician's family when his own people are sick could be generally adopted. There, free

from the conventions and perversions of dark age usage, the medical mind follows for once the line of least resistance—straight. Here nothing is likely to be done till the diagnosis is sure, for the physician's faith in the *vis medicatrix naturae* is real. Relatively little medicine is here used, because the pill, potion and philtre are not called for by the family. When Dr. Oliver Wendell Holmes, Professor of Anatomy at Harvard, but best known to the world as a lay writer, said: "If all the drugs in the world could be thrown into the sea, it would be a good thing for the sick folks but hard on the fishes," he spoke for the guild.

In the atmosphere of scientific freedom found in the research laboratory, in the hospital and the sanitarium, the profession is steadily conquering disease and human suffering. Typhoid fever is now preventable, diptheria now curable, yellow fever limitable—and the art moves on apace—for we now *know*.

But it is not enough to know; to be of service this knowledge must be applied—applied wholesale by the proper administrative machinery, by boards of health, public services, etc. In this capacity, as the guardian of public health, the physician needs the strength of loyal support more than anywhere else.

When the first case of any epidemic malady is seen, it is the duty of the attending physician to report this case at once to the local health board in order to start the proper machinery for control. Now, it should be noted that the physician has no reason for hesitancy in reporting these cases—a public knowledge of the case does not affect him or his practice in any way—it affects only the family in which the case exists. The very publicity is socially objectionable to some; the investigation, the fumigation and the isolation are exasperating to all, while the expense threatens to go beyond limits. You know it would cost less treated quietly at home; you feel sure that no one is likely to catch it; surely your doctor, your capable doctor, can stamp this thing out as well as any young whipersnapper of the public service; why not hide it? If the doctor would only consent!

Then may come the temptations, sometimes by inuendo, or by veiled suggestion, by direct proposal or by appeal oft repeated, and perhaps with tearful eyes. Do you appreciate what you would do for your friend? You would make him lose his self-respect and yours; you would make him a law breaker and worse.

Unless the guardian of the public health cries aloud from the housetops to warn the public, he is morally responsible for the death of every man, woman or child who contracts the disease through the case he conceals. And should he consent, do you think the physician slinking in and out, the prey of conscience and anxiety, could give you the best professional results?

It may take courage on your part to face notoriety, quarantine and expense, but it is always better in the end for your conscience, to leave your doctor free to follow the line of—this time let us say—*duty*.

If we are to demand the truth and prompt action from the practitioner, how much more necessary is it that those in charge of the machinery of control—the health boards—the public sanitarians—should be freed from the pressure of commercial interests, from railway and steamboat influence, etc. The public has a great duty and a privilege here—to stand fast by the profession in its struggle for the instant truth—the "open shop" of modern sanitation—the truth that shall make you free. Belonging to a profession of sacrifice, an apostle of altruism, an exponent of charity—temptation alone can divert the physician.

Do you know what defleetion from the line means here? Consider. Let us suppose the first case of yellow fever in New Orleans last April had been reported instantly to a strong National Board of Health, possessed of suitable powers? Do you believe the five hundred lives lost this summer would have been sacrificed? Do you believe the millions of dollars of injury to trade and commerce would have occurred? They would not. Let the public demand the truth and support the physician who gives it, and they will get it in spite of state and city officials, in spite of newspapers or other representatives of the so-called commercial interests.

In conclusion—till the world again falls under the sway of superstition and ignorance there can be no return of the great plagues that in the past afflicted mankind, for the foundations of this work are sure. These things could only have been attained in at atmosphere of freedom—they are the fruit of untrammeled minds. Let us hope that the day will come when in every home where the physician enters as a

guest, he will breathe the same atmosphere of freedom. Free to speak or to remain silent, free to give or withhold, free to have counsel of his own choosing and free from those emotional disturbances which, however incident to the home of affliction they may be, are easily covered in the homes of the brave.

APPENDICITIS.*

By JOSEPH PRICE, M. D., Philadelphia, Pa.

Some one has asked me to discuss a real live subject. I have made a choice of a subject I consider always so active and alive that it requires our daily and hourly consideration in practical surgery—*Appendicitis.*

The disease is not like yellow fever or cholera or some of the plagues; it is always with us. It destroys the flower of the youth of the country, and is terribly common in all communities and in all ages. It was difficult to establish the pathology, and thrice more difficult to establish the treatment. After we thought the last word had been said as to treatment, an old ignorant homeopath in New York replied to the advanced thinkers and workers that the appendix has a function and should not be removed; that its office was that of a pump-handle, and that sweet oil was the treatment of appendicitis. I presume that oil was intended for a lubricant for the pump-handle. Large numbers of the regular and irregular professionals throughout the country tried the oil treatment.

Nothnagel, of Vienna, recommended the ice bag or cold storage, and this became the popular treatment for a long time, and was quite universally adopted. Later, a Chicago surgeon recommended starvation and cold storage. All these methods have given us, primarily and secondarily, a high mortality.

The *diagnosis* of appendicitis in males is always easy. In boys and children, it is about the easiest diagnosis we have to make in surgery. Three or four cardinal symptoms are sufficient. Pain, nausea, slight elevation of temperature and other prominent symptoms are usually present. It is scarcely necessary for you to place your hands upon the child suffering from acute appendicitis. You can sit down in a rocking chair eight feet from a child and it will make the diagnosis for you.

In girls and in women, the diagnosis is not so easy, and ought to be studied out with more care. I see large numbers of patients at home and away from home who have been treated actively by the variety of methods; the most of them I find in cold storage.

At present there is nothing like a uniform consensus of opinion among good surgeons. The big four method seems to be the most commonly practiced—rest, lavage, and cold storage, with starvation. It troubles me that surgeons are so easily influenced that their practical experience does not guide them—early surgical intervention following early diagnosis gives such pleasing results. The early surgery is so simple when compared with the extensive and trying complications of neglected and postponed surgery. The only explanation I have for much of the present timidity is the fact that the general surgeon is afraid of infecting or spreading infection, and waits for the walling-off process and limiting membranes.

The surgeon accustomed to dealing with pelvic suppurations—and they are the most common, complicated and trying conditions with which we have to deal—has no fear of intrapelvic or peritoneal filth or infection. He has learned how to cleanse and arrest; how and when to drain, and treats the peritoneum with sacred surgical consideration. The "walled off" theories have influenced surgeons to do incomplete work. Willard Parker put the bowels in splints with opium and waited for "pointing," and did the lateral incision—a method now very commonly practiced, but a method that I rejoice that I have never practised.

I could not be influenced to leave my work so incomplete—to leave a dirty and infectious portion of omentum, a few or many inches of adherents ileum, a gangrenous appendix with one or more perforations, with one or more protruding fecal concretions or foreign bodies. The mental picture which I would retain after doing a simple incision and poking in a drain of gauze rag would chagrin me. Again, I could not overlook the multiple post-cecal pus accumulations, the dirty puddle of infectious fluid on the pelvic basin, the filthy condition when the trouble remains in the iliac fossa, or a more serious and complicated condition—the gangrenous appendix and the adherent bowel over the

*Report of remarks made before the Dallas County (Texas) Medical Society, October 30, 1905.

ileo-pectineal line, and in the pelvic basin. A working knowledge of the subject will not permit me to overlook the numerous string bag snarls of ileum, figures of eights, adhesions that one finds high up and in the pelvis.

I have just finished an operation on a boy who has had three severe attacks of appendicitis. He has been in a prominent hospital for three weeks—the surgeons waiting for an interval operation. I found adherent in his pelvis all the ileum it would hold—quite four feet of ileum radiating from a broad adhesion. I call them "star fish" adhesions. The appendix had been amputated by a slough that was beautifully enveloped in an adherent omentum over the star fish fixation of bowel in the pelvic basin—on the pelvic floor—quite four inches from the head of the cecum. This boy could not possibly get well with so many loops of adherent bowel; he must die soon of obstruction of the bowel.

Primarily, the operation would have been easy; the bowel complications easily handled. When we strike the first day or the first hour, we never lose a patient. The mortality and complications increase with the number of days. I should say the first, nil; the fifth day, 5 per cent., and the mortality following all the other methods of procrastination higher.

Some good papers have been written upon interperitoneal infection, demonstrating the high mortality when it occurs. You will find in your *Transactions* of 1903, page 286, a brief and scientific contribution and discussion, "The Gross and Microscopic Anatomy of the Vermiform Appendix and Their Bearings on Appendicitis." The author called your attention to the fact that it was a relic or remaining defect in our anatomy, a little anatomical cesspool, a retrograde, lymphoid sinus or canal with an imperfect circulation. Douglas calls your attention to the disturbances of its feeble circulation. The imperfect drainage, numerous constrictions, favor culture of venomous germs. Embolism of the superior mesenteric artery, or any of its branches results in speedy death of the portion of the bowel involved. A fecal concretion or foreign body is a ball valve or tourniquet. It is interesting to note how often we find in an amputation one or more fecal concretions resembling a date-seed protruding. The discussion that followed was short, scientific and progressive.

"You discussed when and where to operate, and agreed that the mortality was not increased by house-to-house work, country or cross-road surgery. With this, I heartily agree. I have done much trying and complicated surgery in the mining regions, agricultural districts and small towns, and I am satisfied that we can save more patients in private, when the work is well done, than in general hospitals. The delay and agitation or churning in transportation are harmful and increase the mortality. The conveniences of a well-appointed hospital save much time and are a great comfort to the surgeon; but he gets his patient and does his operation one or two days later than the house-to-house operator. If you do the work well and supply a good nurse, all will go well. Now that the general practitioner is a precise diagnostician and has the 'phone at his command, the mortality in the disease should be nil, and the Ochsner treatment forgotten. If I can leave one of my nurses with my patient, I rarely think of the operation again, until she reports for duty and asks for another patient. Transportation kills a few patients; occasionally one dies in the train or ambulance on the way to the hospital. Again, a patient suffering from an acute and distressingly painful affection should not be tortured by shipment. Some one in the discussion referred to the fear of the knife in operations; another to the knowledge of the people of the real gravity of the disease, and the importance of surgical intervention. Physicians want to cultivate the faculty of presenting such a subject fairly and educate their community up to the importance of absolute confidence in professional judgment and opinion. I have ceased to talk about operations. I tell parents or patients that he or she must be relieved at once, and but few ask "how?" I would relieve them through the mouth or arms if I could and avoid the mutilation of a single cell. The surgeon that tells his patient that he is going to cut him or open him, should be sent to a kindergarten school to make mud balls. Do not permit anyone to question your motives. I have not had a patient to refuse operation for some years.

A few days ago I discussed the subject historically, pathologically and diagnostically, first with two doctors and father and mother of a

handsome boy; the discussion lasted over one hour. I am sorry I had not a stenographer behind the door—it would have saved me the trouble of writing this paper. The fine lad was just one square from the hospital, where I had just operated for the same delayed pathological condition. The right iliac fossa and pelvic basin were full of filth and septic and infectious fluid—the appendix in both cases gangrenous and perforated—extensive adhesions and numerous acute obstructions in the two children. I did a clean removal of the appendix, level with the cecum, closed the opening, freed all adhesions, cleansed the peritoneal and pelvic cavities and drained. Both recovered; surely both would have died by the Ochsner or any other treatment.

Now, in conclusion, Mr. President and gentlemen, I want to entreat you to educate yourselves in the pathology, diagnosis and treatment of this, one of the most dangerous of acute and infectious diseases with which you have to deal. Do not be guided wholly by a paper discussion or a book—go to some good hospital where the operations are done daily and see them. How suddenly the disease develops! How rapidly it kills! How dirty and infectious a small or large portion of the peritoneal cavity becomes! Do not attempt to treat this disease except as you would treat similar pathological conditions at other points of the body. You would remove septic accumulations, necrosed tissue; make toilets and drain. I want to urge you to avoid imperfect removals of the appendix. Don't do four-fifths or five-sixths of an operation, but do a complete one. Do not do a stump or pedicle operation. Do not do a grain-bag operation, throwing a ligature around its base, but remove it by one of the two or three suture and scissor methods completely.

"And, now a final word: Be sure to avoid imperfect removals of the appendix. When you operate, perform it most thoroughly. I thank you for your welcome.'

FATAL CASES IN SMALL-POX.*

By LLEWELLYN ELIOT, M. D., Washington, D. C.,
Physician-in-charge of Small Pox Hospital.

It is well to pause occasionally and study our past work; pass in review our failures and our successes, in order that we may avoid the one and profit by the other, in the future.

In the practice of any busy physician, a mortality in enteric fever of ten in one hundred cases, or a mortality in pneumonia in a similar proportion, causes comment, while a mortality of variola of from thirty to fifty per cent. excites practically no adverse criticism, because we are prepared for any rate—it may be as low as one per cent., or it may reach as high as one hundred per cent.—for the reason that very few men give close attention to the treatment of this disease.

As a general proposition, it may be stated that fatal terminations in small-pox occur on the ninth, the eleventh, or the thirteenth day of the disease. That is to say, should a patient fall ill of small-pox on the first day of the month, his death would, under ordinary circumstances, not occur until the ninth day; surviving the ninth day he will live until the eleventh day; surviving the eleventh day, he will live until the thirteenth day, and should he pass the thirteenth day, his recovery may be expected. Cases of the hemorrhagic type are not included in this statement, since the intensity of the disease may cause death in a few days. This is an observation based upon my experience.

The fatalities occurring during small-pox, acording to my experience, have been due to pneumonia, uraemia, apoplexy, glossitis, or obstruction of the bronchial tubes, the larynx, and the nares by pustules. These pustules so narrow the lumen of these passages that the proper amount of air does not reach the lungs and carbonic oxide poisoning follows; the system then becomes saturated with the two poisons and death must necessarily result.

According to my observation, death will occur in *every* case where the eruption fails from *any* cause to develop properly upon the forehead; in other words, where it does not show the distinct papular, shotty eruption, but where the entire forehead and portion of the face are flat and smooth—it is immaterial what may be the condition of the eruption upon other portions of the body. This is a strong, dogmatic statement, but it is borne out by the facts.

During my early management of variola, pneumonia and coma, as causes of death, were much more frequent than they were in the later years. The reason for this is easy to find. In

*Read before the Medical Society of the District of Columbia, October 18th, 1905.

the first place patients were moved from their homes to the hospital in the wagon used by the dog catchers; secondly, the hospital building was far from having the proper temperature in cold weather; thirdly, there was no intelligent nursing; fourthly, the great standby for quieting delirious patients, as well as to induce sleep, was either morphia sulphate or chloral hydrate. Therefore, did the patient disturb the nurse, who was, as a rule, an inmate of either the alms-house or the work-house, it was only natural to have recourse to the morphia bottle, and paralyze the pneumonic lung, lower the heart action, or poison the patient; as a result death was charged to pneumonia or coma when morphia was the real cause. Then again, I read in one of the French medical journals in 1879, an article strongly advocating treatment by salicylic acid and bicarbonate of soda; this mixture produced in solution sodium salicylate, and locked up the kidneys, prevented the excretion of urine and death resulted in coma. Iced water used externally was another factor in the matter. As there was no resident physician the nurse had unlimited opportunities for the display of misguided judgment or disobedience of orders.

Albumin in the urine in cases of small-pox, unless the amount is excessive, does not portend evil, although such cases must be watched for manifestations of kidney involvement. Albumin I have found in the majority of those cases where urinalysis has been made. In two cases death was directly due to kidney affection and not to small-pox—notwithstanding the disease in each instance was of the confluent variety, with high temperature.

One case terminated in apoplexy, accompanied by facial paralysis. The pustules in this case were numerous, being confluent upon the face and scalp, semi-confluent upon other parts of the body; they did not reach the proper size, but remained flat, and assumed a grayish color. At the expiration of thirty-six hours after the stroke, death occurred with stertorous respiration.

Hemorrhage following miscarriage caused one death by reason of deficient power for coagulation of the blood; this want of coagulability prevents death from heart clot.

Sudden death occurred in six cases; these cases were of the malignant or hemorrhagic variety of the disease, and I can only explain them upon the theory of systematic saturation with the variola poison.

It was necessary to restrain three patients with straps until death, to prevent injury to the patient or the attendant, for some of these patients are temporarily possessed of almost incredible strength and restraining straps become an absolute necessity.

Temperature may have no influence upon the course of the disease, for my last fatal case had a registration of 100 degrees only, while one other drove the mercury to the top of the column, 111 degrees.

The term hemorrhagic small-pox does not include those cases where small amounts of blood are thrown out into the pustules; it embraces those cases only where blood is expectorated, is discharged from the uretha, the rectum, the vagina, the nose and into the mucus membranes. The pocks have usually a purplish hue from the beginning.

1106 P Street, N. W.

THE EARLY AND PREVENTIVE TREATMENT OF OTITIS MEDIA ACUTE.*

By OSCAR WILKINSON, A. M., M. D., Washington, D. C.

This is the age of preventive medicine and the early and preventive treatment of acute otistis media has not received the attention that its gravity demands. I have two excuses for bringing this trite subject before this Society to-day: First, it is one of the most common diseases of childhood and one which is most neglected by the general practitioner: Second, because the general practitioner is first to see these cases and can do more for them than any one else.

I know of no disease that is more amenable to early treatment than acute inflammation of the middle ear, of "ear-ache," in children. It ought to be the exception that these cases should come to suppuration, instead of the rule, as I fear it is to-day. The general practitioner feels that his patient will be all right as soon as the

*Read before Medical Society of Virginia during the 36th annual session, held at Norfolk, October 24–27, 1905.

ear begins to discharge, while that is the very thing he ought to prevent. Instead of taking hold of the case as if it were of serious consequence. he passes it on as a trivial affair, and the child, as soon as the pain leaves him, is permitted to run out barefooted play in the rain, go with head uncovered, or play in the water, or sit on damp ground, followed at night by a renewal of the attack which ends in suppuration, which may ultimately result in the loss of hearing and in a few cases mastoid inflammation, and fortunately less frequently, brain abscess or meningitis. I am not making these statements to frighten any one, but make them as one who sees daily, the harmful effect of neglected cases.

In order that I might impress upon you the gravity of chronic non-suppurative and suppurative diseases of the middle ear and thus show the importance of preventive treatment of disease of this organ, I beg to call your attention to a few facts. Most life insurance companies refuse to insure chronic suppurative cases. They consider a discharging ear such a menace to life that they are unwilling to take the risk. Dench (*Wash. Med. Annals,* 1905) found, out of 19,323 cases of purulent otitis media treated in the N. Y. Eye and Ear Hospital, 218 of brain abscess, meningitis, or some intra-cranial lesion. Geppert found a latent otitis media in 75 per cent of all inmates in a Children's Hospital. Bürkner (*Archiv. für Ohrench,* vol. XX, p. 81), reports 104 deaths from the effect of aural suppuration in a series of 33,017 cases of ear diseases of various kinds. Halisher found, out of 225 children excluded from school on account of some trouble which prevented them from advancing, that 80 had then, or had had, otitis media.

Symptoms. Kerley, (*New York Med. Journal,* July 8th, 1895,) says that acute otitis in the young is more frequently overlooked by the general practitioner than any other disease. He thinks that it is no fault of the doctor, but is due to its varied symptomatology. Out of 70 cases observed by Kerley, there was only one symptom present in every case, and that an elevation of temperature above the normal; every child had fever. Pynchon (*Columbus Med. Journal,* March, 1904), thinks that pain is the most important symptom, but Kerley (l. c.) found only 22 out of his 70 cases that complained severely of pain, and he says, "If it had been left to the usual sign of pain or tenderness of the parts, in 50 of the cases, a diagnosis would not have been made when it was." Nine had been seen by other men who had failed to discover the cause of the fever.

Besides pain and fever, the other symptoms of acute otitis media are a decrease in the acuteness of hearing, restlessness, sleeplessness, and a sense of general discomfort shown by rolling and tossing upon the bed or complaining generally. These attacks are usually brought on by the exanthemata, diphtheria, grippe and coryza. Fridenberg (*American Journal of Surgery,* 1904) says that acute otitis media except from diphtheria, scarlet fever, etc., is due to nasopharyngeal diseases. Kerley found that coryza had been the exciting cause of otitis media in 81 per cent of his cases. The acute inflammation set up in the nasal mucosa by a cold extends to the Eustachian tube and then to the middle ear.

Bacteria are always present in these membranes (*Dench, Pierce*) and the result of an acute inflammation in these parts depends largely upon the virluent type of the invading host, the soil which they find and the natural resistance of the patient. The short and open Eustachian tube in children permits of easy access to the middle ear, and that together with the fact that children suffer more from coryza, etc., accounts for the frequency of otitis media in children.

Before a judicial treatment can be instituted, it is necessary to know the condition of the tympanum and middle ear. In order to get this knowledge it will be necessary to make an ocular inspection of the drum membrane. This is usually not difficult to obtain when the physician will use a little tact, unless we are dealing with a very unruly child.

The treatment of acute otitis media should be both local and constitutional. The child should be put to bed with the head and shoulders elevated, not permitting the child's head only to be placed on the pillow, thus cramping the neck and preventing a return of the venous circulation from the head. Calomel should be given, followed by the good old family remedy castor oil, or a saline purge. If the attack is followed by, or associated with acute coryza, I am pursuaded that castor oil is the preferable remedy, as I am inclined to think it

has a specific action in reducing inflammation of the mucosa of the head. The child should be given a liquid diet, and stimulants should be avoided. The ear should be covered with a flannel cloth securely tied so as not to be removed when the child turns over in its sleep. This is a point I wish to emphasize, as I am sure harm is often done by using moist heat and afterwards permitting the ear to go uncovered. In families where the children are subject to ear-ache, such a bandage should be kept on hand. The ear should be protected at all times with a flannel cloth. External to this, dry heat, as hot as can be borne, should be constantly applied until relief from pain is secured. I am in the habit of ordering warmed drops of 5 to 10 per cent of carbolized glycerine, containing atropin, cocaine and adrenalin instilled in the ear every hour or every two hours. If the child is seen early I am a warm advocate of politzerization. Usually the primary pain of acute otitis media is due to rarefaction in the middle ear from tubal inflammation, and by using the Politzer's bag at this time we can often give immediate relief. It is at this stage we can do the greatest good. This if done before any secretion is present in the middle ear, relieves the rarefaction which has produced the initial pain and secures drainage when secretion takes place.

If there is no relief from these methods within a few hours the use of the leech will often give relief. This is a remedy that is not usually used, but which often gives remarkable relief.

If there is fever present it should be combated with aconite or gelsemium. Where the pain is severe an analgesic should be given. Phenacetin supported by caffeine, given with care is often found to be very effective in relieving both the temperature and the pain.

If, within 24 hours, there is still no relief secured, and if there is an evidence of pus or mucus in the middle ear as shown by a bulging drum, the best remedy is the incision of the drum membrane. This should be done under a general anesthetic, as a rule, and should be done thoroughly. Gas is an admirable anesthetic in these cases. Dench (*Archives of Otology,* April, 1905), with whom I heartily agree, says that the "incision should extend from the lower pole of the membrane tympani upwards and backwards following the posterior peripheral attachment through the posterior folds and well upward into the tympanic vault." He says that the "early and free myhingotomy in all cases of acute otitis in children is urgently called for." While we feel that this is rather radical, there is no doubt but that the early and free incision of the drum often cuts short the attack and prevents serious after complications. Where there is pus or secretion in the middle ear there is but one rational method of treatment, and that operative.

This consists in the removal of the cause which has produced the catarrhal process in the nose and naso-pharynx, combined with proper constitutional regime. In most cases which suffer with recurrent attacks of otitis media which either do or do not suppurate, you will find either adenoids or enlarged tonsils or both. The removal of these growths is most urgently called for. There is probably no operation attended with as little danger as adenotomy, which gives such beneficial results. These growths from the nature of their position, being in close proximity to the Eustachian orifices, are necessarily offending bodies and their early removal becomes a matter of necessity. Diseased tonsils in children, especially those who are subject to earaches, should always be removed. The general health of the nose and nasopharynx can never be considered in a normal condition when these offending bodies are left.

Chronic nasal catarrh should be treated by douches or sprays, using Dobell's solution, Seiler's tablets or any of the various alkaline nasal washes. When the douche is used, and it is usually best in children, the containing vessel should be held very slightly above the child's nose, as a very gentle flow of the douche is desired.

Hypertrophy of the turbinates should be touched with argentini nitratis, grains 10-20 to the ounce of water, rendered anesthetic by means of cocaine. These hypertrophies usually reduce rapidly after the adenoids are removed, and a better circulation is permitted in the post-nasal space. Where there is a deflection of the septum or an exostosis which obstructs the nasal passage, it should be operated upon. After any of these operations it is necessary to see

that the nose and throat are properly cared for until they are healed and the membranes assume a normal appearance. The neglect of this often leaves a chronic nasal discharge, the nature of which discharge often prevents the membranes from healing. The catarral process in the naso-pharynx is apt to extend to the middle ear with each attack of cold; this explains the high percentage of cases of otitis media acute following coryza as found by Kerley.

The constitutional treatment consists in meeting the indications as presented in each individual case. These little patients, as a rule, thrive on some preparation of iron—the syrup of the iodide of iron being the one which I am accustomed to use. In cases in which there are large lymphatic glands, or where there is marked anemia, this treatment should be combined with that of cod liver oil, generous diet, proper clothing and plenty of fresh air. By complying with these simple rules, gentlemen, you will confer on these little sufferers a great boon and deprive us specialists of certain thankless and tedious jobs, which often bring no comfort to the sufferer or credit to the profession. There is nothing more pathetic to the aurist than to have brought to him a young child with both membranæ tempani entirely destroyed, accompanied with a profuse, offensive discharge. In most of these cases we can but ameliorate the symptoms and such children are apt to be more or less permanently deaf, with danger at any time of an extension to the mastoid cells or abscess of the brain. These cases are grave. Dench considers that all chronic suppurative conditions of the middle ear should be subjected to a radical operation if the discharge is not relieved after judicious treatment.

It is the general practitioner who owes these cases much! it is he who can do more to prevent these conditions than any one else, and if you will give these cases your attention, the number of deaf children and the number of mastoid operations and brain abscesses will be reduced 50 per cent. Chronic otitis media non-suppurata is a child of these recurrent attacks, and this condition is the cause of probably 50 per cent of all deafness. If these children could have early and proper treatment there is no disease to which childhood is subjected that would give more gratifying results. Jacobi (*Arch. of Otology,* 1905) says "After all, the treatment of non-suppurative diseases of the middle ear is rather ineffective." In support of this view he refers to eminent British and American authorities; unfortunately, however, he refers to their articles in regard to sclerosis of the middle ear—that opprobrium of otology. It is exceedingly unfortunate that so great an authority as Jacobi has made such a statement without fixing its proper limitations.

There is a vague idea amongst general practitioners that the treatment of defective hearing in general is usually ineffective, but the sooner the general practitioner learns that the diseases of the ear are just as amenable to treatment as the diseases or any other organ, when they are treated early, the better it will be for all concerned. There is probably no branch of medicine that has been so much neglected as that of diseases of the ear until the last two decades. Since that time, however, otology has been making rapid advances, and to-day we feel as confident of success in the treatment of the diseases of the ear, when we can see the cases early, as we are in the treatment of diseases of any other part of the body. The idea that the treatment of the ear is more difficult and less satisfactory comes from a lack of knowledge of its present rational application.

All middle ear catarrhal conditions in children when taken in their incipiency are amenable to treatment. This consists as has been before stated, in removing any offending condition of the nose or naso pharynx and keeping these organs in a healthy condition. Since we know more of the pathology of these organs, by combining constitutional with local treatment, in accordance with their pathology, it becomes an easy matter to produce for these sufferers, permanent relief, and that in a short time. Practically all conditions of the middle ear, excepting suppurative conditions in which the tissues have been destroyed and sclerosis in the old yield most readily to judicious treatment. When the general practitioner is convinced of these facts there will be fewer cases of chronic suppuration of the middle ear, chronic deafness, brain abscesses and deaths from diseases of the ear.

1404 *L Street, N. W.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE XII.

Treatment of Inflammation—Antiseptic Versus Antiphlogistic Methods. Prophylactic and Curative Treatment Local and Constitutional Measures Employed With their Indications and Practical Application.

As long as the phlogistic theory was accepted, inflammation was thought to be due to an increased combustion to the tissues, and was treated by depleting measures, such as starvation, purgation, bleeding and the application of leeches, blisters, cups and caustics. The antiphlogistic treatment of inflammation has now given place to the antiseptic, and we no longer given place to the antisptic, and we no longer combat the results but endeavor to remove the cause. The prophylactic treatment of inflammation by the use of aseptic and antiseptic measures has made possible the achievements of modern surgery. Inflammation which was once universally present in all wounds is now prevented by disinfecting accidental wounds and by avoiding the infection of operative wounds. Despite the universal acceptance of modern surgical technique, cases of inflammation still develop, the fact being due either to failure to see the patient early enough or to some defect in the application of recognized principles, hence the necessity of the study of its treatment. The prophylactic or preventive treatment of inflammation will be taken under aseptic and antiseptic technique. To-day we will only discuss the curative treatment, or the methods used to arrest inflammation after it is in existence.

1. Local Treatment.—The local treatment of inflammation consists in the application of remedies to the inflamed area for the purpose of relieving symptoms, such as pain and swelling, and also of correcting the abnormal condition of the circulation and favoring termination by resolution. These measures will be discussed under different heads.

1. *Bleeding.*—The withdrawal of a large quantity of blood from the general circulation, or venesection, once the sheet anchor of the antiphlogistics, has been almost abandoned, as it is now recognized that it not only impairs the patient's resistance but also increases the local congestion by diminishing the *vis a tergo* of the heart. Scarification, with the direct abstraction of blood from the inflamed area, however, does great good and should be more frequently resorted to more than is the practice of a majority of surgeons. Local blood-letting unloads the dilated and engorged capillaries and favors the contraction of the vessels and the re-establishment of the normal circulation. It remover from the tissues a large number of bacteria and eliminates toxic products which would otherwise be absorbed. Finally it relieves tension, thus lessening pain and often averting the danger of gangrene. The best way to accomplish the above results is to disinfect the inflamed area and then make numerous short incisions into it, the cuts being arranged in parallel lines those in one line overlapping those in the adjacent line. The flow of blood resulting will usually be free and copious. If necessary, however, it can be increased by immersing the part in warm sterilized water, or by covering it with a warm, moist antiseptic dressing. The subsequent management of the scarified part should be on general surgical principles. It is needless to say that the leech has no longer a place among the resources of the modern surgeon.

2. *Counter Irritants.*—The seton and moxa once in common use have been completely abandoned. The blister, cautery and iodine preparations are rarely used by the surgeon, although they are still extensively employed by the physician. Counter-irritants applied directly over an inflamed area do not act as derivatives but as irritants, increasing the congestion of the already turgescent blood vessels. If employed at all they should be applied to tissues near by, but not continous with those primarily diseased. In cases where time is all that is necessary to effect a cure, or in certain chronic conditions, when in the opinion of the surgeon the patient is not in a condition for the application of radical and efficient measures, the judicious painting about the affected part with tincture of

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

iodine will serve the useful purpose of keeping the patient from falling into the hands of another practitioner.

3. *Compression.* Gentle, uniform but efficient pressure is a valuable method of treatment both in the early and late stages of inflammation. In acute cases it restrains the tendency to excessive swelling and prevents the collection of serous or bloody discharges between the lips of the wound. In chronic cases it is one of the best remedies we have to promote absorption and hasten resolution. Compression has to be carefully and properly employed, especially in the early stages, as sloughing or complete gangrene may result from interference with the circulation. It must be remembered that while compression may not be too great at the time it is applied, it may become so later by swelling. Compression may be secured in an acute case by enveloping the part in voluminous folds of cotton and utilizing its resiliency by bandaging it tightly with an unyielding binder. Or it may be utilized in a chronic case by applying a gauze, flannel or elastic bandage, or by strapping it with adhesive plaster.

4. *Cold.* The sensation of heat imparted by inflammation to both patient and attendant naturally suggests for the treatment the application of cooling remedies. Cold acts beneficially by causing contraction of the dilated blood vessels and to a certain degree by inhibiting the growth of bacteria. It does harm by reducing the vitality of the part. Cold should be employed, therefore, in the early stages of inflammation when there is hyperemia and congestion, and it should not be used in the late stages when there is stasis and threatened gangrene. Cold may be applied either in the wet or dry form. The wet form consists in the constant irrigation of the part with cold solutions, or the application to the part of dressings wrung from ice water, or bathing the affected area with evaporating lotions which have a refrigerant effect. The popular reputations of tincture of arnica, fluid extract of witch hazel and spirits of camphor are not due to any specific medical virtue but to the fact that they all contain alcohol, hence evaporate rapidly and produce cold. Dry cold is applied by means of bottles, bags and bladders filled with water and ice; occasionally by coils of rubber tubing through which cold fluids circulate. In using dry cold care should be taken to prevent freezing the skin.

5. *Heat.*—The local application of heat at certain periods of inflammation gives more relief and does more good than any other single agent. Heat acts by soothing the sensory nerves, thus diminishing pain; by drawing blood to the surface, thus acting as a derivative; by favoring the formation of collateral circulation, thus relieving stasis; and by liquefying exudation, and hastening either its absorption or conversion into pus. Heat, like cold, may be employed either in the moist or dry form. The application of moist heat is usually in the form of a poultice. These are composed of a great variety of materials, varying from hops, linseed meal and bread and milk to chicken entrails and fresh cow dung. The only virtue of a poultice is heat and moisture, and it is unnecessary to secure them with the association of filth and microbic infection. Moist heat can be most satisfactorily and effectively applied by soaking a thick layer of cotton in a hot antiseptic solution, squeezing it moderately dry, applying it to the part and covering it with some impervious material, such as oil silk or rubber tissue. Owing to the danger of absorption, the antiseptic should not be carbolic acid or bichloride of mercury, but some non-toxic drug such as boric acid, acetate of aluminum or, best of all, chloral hydrate. Dry heat is applied in the form of hot water bags, hot salt bags, beer bottles filled with water, or flat irons, stove-lids, bricks, etc., heated and wrapped in flannel. The frequent occurence of burns inflicted on patients even in our best hospitals, make it necessary to warn against this danger.

6. *Elevation.*—Considerable benefit will result if it is found practical to keep the inflamed part elevated. Elevations favors the reutrn of venous blood from the part and edematous fluids in obedience to the law of gravity are drawn from the inflamed area, thus diminishing tension and relieving pain. A patient with an inflamed finger soon learns that a dependent position of the hand increases the swelling and pain, and instinctively carries the affected member in an elevated position. This knowledge should be borne in mind by the surgeon and put to practical use.

7. *Physiological Rest.*—It is important in the treatment of inflammation to give the part as far as possible mechanical and functional

rest. The mere muscular effort to keep the body erect makes the heart beat fifteen times a minute more than it does when the body is recumbent and relaxed, hence it is frequently advisable to confine the patient to bed in order to diminish the amount of blood going to the inflamed part. The functional activity of an organ increases its blood supply, hence as far as compatible with the life of the individual, the part should be given rest. In arthritis the joint should be immobilized by a splint; in gastritis food should be administered by the rectum; in retinitis light should be excluded from the room; in acute inflammation of the brain quiet and freedom from excitement should be enforced.

8. *Parenchymatous Injection.*—As soon as it was recognized that inflammation was usually due to germs it was believed that the condition might be arrested and the patient cured by the hypodermic injection of solutions containing germicidal drugs. This treatment, while logical in theory, was found almost valueless in practice. All of the official chemical antiseptics are poisonous and when used in sufficiently large amount to saturate the tissues they kill not only the germs, but the patient. When an efficient non-toxic germicide is found, parenchymatous injections will occupy the foremost place among surgical resources in the treatment of inflammation. At present the method is practically limited to the treatment of carbuncle in the early stages by injecting in and around the infected area a small quantity of 3% aqueous solution of carbolic acid.

9. *Massage.*—Rubbing and kneading the tissues do great good in chronic inflammation, but cause too great pain to be employed in acute conditions. They exercise a decided influence in restoring normal circulation, break up inflammatory deposits and hasten their absorption. Frequently the endemic use of certain drugs such as iodide of potassium, mercury and iodoform may be combined with massage to the benefit of the patient.

II. Constitutional Treatment.—It is necessary for the surgeon to remember that while he endeavors to subdue inflammation by local measures he must at the same time try to improve the patient's general condition by constitutional treatment.

1. *Stimulants.*—Weakness due to septic infection, whether it be collapse in acute cases, or exhaustion in chronic, calls plainly for the use of an alcoholic stimulant. When the need of the patient is urgent, whiskey will be found the most reliable agent and should be given either by mouth or rectum in sufficient dose to produce the desired effect. If the case be a chronic one, the palate and purse of the patient should be consulted, and beer, ale, porter, sherry or champagne sometimes substituted. The action of alcohol on the system is still a question of dispute by theorists but the concensus of opinion of practical men is that it is not only a stimulant but that in disease it lowers fever and lessens oxygenation of tissue.

2. *Antipyretics.*—As fever is the result of the introduction of phlogistic substances into the blood the logical way to reduce it is not by the administration of drugs, but by the use of such local measures as will arrest the inflammatory process. Antifebrine, antipyrine, antikamnia and other similar drugs will reduce temperature if given in sufficient doses, but they should not be employed, as they do so at the expenses of the patient's vitality. If is is found necessary to treat the result rather than the cause, fever should be controlled by baths and sponging with alcohol, which if frequently and properly used will not only reduce the temperature but refresh the patient and increase the eliminative action of the skin.

3. *Purgatives.*—Although the routine use of purgation is no longer practiced there are certain conditions in which their proper employment does much good. In inflammatory conditions when vomiting and diarrhoea indicate an effort of nature to effect elimination of poisonous substances through the alimentary canal, relief of the symptoms and benefit to the individual will result from the administration of small broken doses of calomel. In inflammation of the meninges and of the peritoneum brisk saline cathartics do immediate and decided good.

4. *Diuretics and Diaphoretics.*—Powerful agents to produce diuresis and diaphoresis are no longer employed in the treatment of inflammation owing to the weakness and prostration that accompany their action. When it is desired to gently stimulate the action of the skin and the kidneys the end is accomplished by hot packs, steam baths, the use of sweet spirits of

nitre and the direction to drink large quantities of some pure light water.

5. *Emetics.*—The use of emetics is mentioned simply to condemn it. The only instance in which emetics can ever be employed to advantage is in the early stage of acute gastritis, when the administration of warm mustard water will serve to empty the organ and relieve it of irritating contents.

6. *Anodynes.*—The relief of pain is the first demand made by the patient. This should be accomplished when possible by local measures rather than by the use of anodynes. Elevation and rest, the use of heat and cold, the relief of tension by scarification, and the evacuation of a deeply located collection of pus will frequently prove so beneficial that resort to the use of drugs will not prove necessary. In acute inflammation, however, pain is often so intolerable that chloral, bromide of potash, acetanilid, codeia or morphia have to be resorted to. When inflammation is chronic and pain is therefore likely to continue for a considerable time the different preparations of opium should be prescribed with caution for fear of creating a drug habit. A surgeon should endeavor to preserve his sympathies unblunted, but his head should control his heart. The relief of pain is not his highest mission in life and the hypodermic syringe should not be his first and last resort.

7. *Diet.*—The homeopath has taught us that in the treatment of diseases food is as important as physic. In inflammation the starvation of the antiphlogistics has been abandoned and the present practice is to give a patient an abundance of simple but nutritious food. It is as bad, however, to overfeed as to underfeed, and it often requires good judgment to strike the happy mean between a too scanty diet and one that will overtax the patient's digestive and eliminative organs. The amount of food people eat in health is largely a matter of habit. Sickness is not a good time to attempt reformation, therefore, don't try either to stuff an abstemious patient or to cut down too suddenly the rations of a "big feeder." If patient can't take food by mouth, then Valentine's Meat Juice, Peptonoids or Panopeptine should be given by the rectum. If a liquid diet is indicated then the use of buttermilk, egg albumen, and chicken or beef broth will be found satisfactory. If solid foods are not contra-indicated then the fancy of the patient should be consulted and any simple food that is nourishing and easily digested should be permitted.

8. *Tonics and Alteratives.*—In chronic inflammation tonics and other drugs are often of great service. Bitter stomachics, such as nux vomica, gentian, and cinchona are indicated for loss of appetite; iron and arsenic for anemia; quinine for malaria, etc. In specific inflammations such as those caused by rheumatism, syphilis and tuberculosis, the salicylates, iodides, mercury, guiacol, cod liver oil, etc., should of course be employed.

Book Notices.

Physician's Visiting List for 1906. Fifty-fifth year of Publication. Philadelphia. Blakiston's Son & Co.

This little book is similar to the many preceding editions, in that it has a calendar for two years—1906 and 1907, a table of signs, incompatibility, poisoning, the metric or French decimal system of weights and measures, table for converting apothecaries' weights and measures into grams, dose table in both English and metric systems to correspond with the new U. S. P., 1900, methods of resuscitation, signs of death, etc., calculating utero-gestation etc. This visiting list is sold in several different sizes, sufficient for from 25 to 100 patients per day or week, and varying in price from $1.00 to $2.25. There is also a perpetual edition, selling for $1.25 and $1.50, as well as a monthly edition—75 cents and $1.00.

Manual of Diseases of the Eye. By CHARLES H. MAY, M. D., Chief of Clinic and Instructor in Medical Department of Columbia University, etc. 4th edition, revised, with 360 original Illustrations, including 21 Plates, with 66 Colored Figures. New York: William Wood & Co., 1905. Small 8vo. Pp. 400. Muslin $2.00 net.

Beside a British edition, this *Manual* has been translated into German and Italian. Such would indicate the popularity of this book. The reason for such popularity is made plain by an examination of the text, which is written in a plain style, and easy of comprehension by the student; and the profusion of illustrations—many of which are original—greatly assists the reader in understanding. The *Manual* covers, in a condensed form, practically all the diseases of the eye and

approved operations about that organ, that the college student is expected to learn. The details of methods of diagnosis throughout, is a very striking feature. A good index is appended to the volume.

Pathology and Morbid Anatomy. By T. HENRY GREEN, M. D., F. R. C. P., Emenitus Lecturer on Clinical Medicine at Charing Cross Hospital, etc. Tenth American, Revised from Tenth English Edition. Revised and Enlarged by W. CECIL BOSANQUET, M. A., M. D., Oxon. F. R. C. P., London, etc. With a Colored Plate and 348 Illustrations in the Text. Lea Brothers & Co., Philadelphia and New York. 1905. Cloth 8vo. Pp. 610. $2.75 net.

We know of no book that attempts to take the place of "Green's Pathology," for the general practical uses of the student or the doctor. Some works are more exhaustive, and more in detail. but "Green's *Pathology*" gives the whole matter in a nutshell. Each edition is an improvement on its predecessor only in bringing the subject matter of the volume more fully up to date. It is the very generally adopted text-book in the colleges and universities, and there is no disposition to adopt another text-book for this. The work covers practically all subjects of Morbid Anatomy and Pathology that the student is apt to study—so far as the developments of this specialty has brought out. As a reference work for the busy practitioner it has no superior. A good index helps in the ready reference to a subject.

Therapeutics: Its Principles and Practice. By HORATIO C. WOOD, M. D., LL. D., Professor of Materia Medica and Therapeutics, University of Pennsylvania, Adapted to the Eighth Edition of the United States Pharmacopocia. By HORATIO C. WOOD, Jr., M. D., Demonstrator of Pharmacodynamics in University of Pennsylvania, etc. Philadelphia and London: J. B. Lippincott Co., 1905. Cloth. 8vo. Pp. 907. Price, $6.00 net.

Besides the inclusion of over 70 new drugs, with full description of their uses and doses, and the addition of new matter the present edition has been made to conform to the changes in the U. S. Pharmacopoeia of 1905, which has recently been issued, and which is just now attracting so much attention of pharmacists and doctors. A good arrangement in the present edition consists in the reproduction of the essential features of any article from the subordinate matters, by the use of large and small type respectively, so as to catch the eye of the reader. Also drugs of little importance, or not recognized by the U. S Pharmacopoeia are described in small type. This work through each of its former editions has become standard authority, and is largely adopted in Europe, as well as in this country. The Index seems to be perfect in referring to the drugs whose uses are described.

Practical Treatise on Sexual Disorders of the Male ..and Female. By ROBERT W. TAYLOR, A.M., M.D., Formerly Clinical Professor of Genito-Urinary Diseases at College of Physicians and Surgeons, New York, etc. Third Edition. Thoroughly Revised. With 130 Illustrations and 16 Plates in Colors and Monochrome. Lea Brothers & Co. New York and Philadelphia, 1905. Cloth 8vo. Pp. 525.

It is fortunate for people at large that the reputable doctors of to-day have undertaken the scientific study of sexual disorders. The two former editions of the book now under notice did much to remove the subjects considered in it from the nonsense and false claims of quacks and charlatans. In the present edition, many new sections have been added, so that the doctor is enabled to find in this book, with the aid of the excellent index appended thereto, a scientific description of nearly all the troubles of the sexual organs of male and female—not specially invading the work of the gynecologist. This is a book which will prove of frequent use to every general practitioner, as well as to specialists. Its popularity abroad is attested by the fact that it has been translated into Italian, and is adopted as a text and reference book in many colleges.

Clinical Diagnosis and Urinalysis. By JAMES RAE ARNEILL, A.B. M.D., Professor of Medicine and Chemical Medicine University of Colorado, etc. Illustrated with 79 Engravings and colored Plate. Lea Brothers & Co., Philadelphia and New York, 1905. Cloth 12mo. Pp. 243. Price $1. net.

This is one of the popular "Medical Epitome Series" edited by Victor Cox Pedersen, A.M., M.D., of the New York Polyclinic Medical School and Hospital. While urinalysis, etc., take up about 70 pages, the remainder of the book considers the blood in various diagnostic bearings, the examination of the stomach, the feces, sputum, etc., and the diagnostic lessons thus to be learned. Equipments and how to proceed in such examinations are detailed. For self review a number of questions are appended to each section.

Open-Air Treatment of Pulmonary Tuberculosis. By J. W. BURTON-FANNING, M.D., Cantab, etc. Chicago: W. J. Keener & Co. 1905. 12mo. Pp. 176. Flexible cover Cloth $1.50 net.

There is no longer doubt as to the great

value of open air treatment of consumptives, especially where the camps have a sunny exposure, with the patients properly protected against excessive cold blasts, etc. The concluding sentence sums up the book as to treatment: "Utilize certain agents which have proved themselves to be really active against the disease; these are, *open air, methodical rest* and the *proper use of exercise and food.* These general measures are scientifically applied according to definite indications, and are continued for a sufficient length of time. This last point—persistence with treatment—is perhaps the most important one of all. These, I contend, are the only reliable agents now at our command, and it is their intelligent application that constitutes the best treatment for pulmonary tuberculosis. The less the issue is confused by the introduction of unnecessary prescriptions the better."

Editorial.

Clinics At Alms Houses.

Every now and then, a hue and cry is raised about the use of alms house patients for clinical purposes. When traced to the cause, we generally find that some scheming member of a city council, from presumably political motives only, introduces a resolution, or speaks through the newspapers of the indignity shown the poor inmates, in exposing them to public gaze, and in subjecting them to all sorts of rude remarks, shameless observation, and cruel experimentation by young and inexperienced medical students. Parties who know the facts, know that in properly conducted institutions, such statements in public prints or before sittings of city councils, etc., are but an exposion of hypocritical sympathy.

The old time doctor was very generally accompanied in the sick room—even with the wealthiest and most influential of patients—by "the young man reading medicine under him." While he went to assist the doctor, if needed, he was there to learn such facts about the disease as his preceptor might be able to point out. If deemed best for the patient, specific directions were given by the doctor to the young man who was serving his apprenticeship as to what to do in an emergency, and what signs and symptoms would justify his prompt recall to the case. As everybody knew, one prime object of leaving the medical student thus was that he might learn by personal observation, the course of the disease. He was serviceable, while a student of medicine.

But medical studies are now conducted more methodically, and a greater number of years of college course are required than formerly. The demand for doctors has become more common, resulting in the multiplication of colleges, and in a much greater number of medical students. When cases of sickness suited to medical or surgical clinics present themselves in communities where medical colleges exist, they are brought before the classes approaching graduation, or sections of the classes go to the bedside to see the patient, and they learn all it is possible for the students to learn by observation. They are there to observe how the teacher approaches his case, how he makes his diagnosis, what line of treatment he prescribes, etc. The teacher may have to make some remarks as to the causation of such disease, its pathology its signs and symptoms, the peculiarities of the complications of the case in hand, etc. If such remarks in the presence of the patient are apt to influence the course of the disease in the given instance the students are simply requested to make notes of what they observe as to pulse, temperature, etc., and "the lecture" or the talk about the case is given in a hall beyond the hearing of the patient. In altogether suitably sized detail, the students, under proper restrictions, are permitted to visit the bedside at prearranged hours "to follow up the case"; but in no way to interfere with the conduct of the case or prove meddlesome, or rude, or harsh in remark or act. Recognizing his position as a teacher the lecturer is stimulated to his very best efforts in behalf of the patient. Such is a clinic.

It is not probable that the medical college professor of to-day would imprudently subject his patient—however, poor he or she may be—to causeless or imprudent exposure of person, unkind remark, or a course of irrational experimentation. He knows that his reputation as a clever physician or surgeon would be at stake, for the students admitted to clinics in alms houses, dispensaries or hospitals are, for the most part, mature enough in years and in medical or surgical study to severely criticize and expose the wrongs of the clinical teachers.

Beyond such considerations clinical teachers have been long enough in the profession to realize the sense of sympathy for the afflicted poor.

In private practice, as well as in general hospital or alms house work, he is continuously ministering to their wants. With other charitable workers in the community, he is constantly appealing to corporations, to the churches, to the brotherhoods of various kinds, to the wealthy citizens, etc., for more ample hospital or dispensary provisions for the poor—well knowing that for any success he may secure his only reward can be, at most, but expressions of gratitude from the poor. When such patients present reasonable objections to be used for clinical purposes, it is not in the heart of the good doctor to compel them so to be utilized. Exceedingly few of the class of patients referred to, object to submitting themselves to properly conducted clinics. In fact, our observation assures us that the vast majority prefer to have their cases discussed. They find a pleasure in talking about their remarkable cases.

We are not defending abuses of the clinic room, nor can we do less than censure any one who would abuse the privileges of his position as a teacher. But we cannot refrain from an expression of distrust in the honest sympathy of any one who would go to the lengths of some of our so called "city fathers" who deny all rights of medical men to use appropriate cases for clinical material.

The Seaboard Medical Association of Virginia and North Carolina

Will hold its next regular meeting in the Y. M. C. A. building, at Newport News, Va., December 5, 6 and 7, 1905. Dr. John E. Phillips of Suffolk, Va., is President, and Dr. Jno. R. Bagby of Newport News, is Secretary. The program has not yet been arranged, but Dr. Junius T. Lynch, of Norfolk, Leader of Medical Subject, has selected for discussion "The Uric Acid Diathesis," while Dr. Lomax Gwathmey, the recently elected President of the Medical Society of Virginia, and also of Norfolk, as Leader of Surgical Subject, will speak of "Post-Partum Infections." The Secretary, Dr. Bagby, further announces papers on "The Normal Puerperium and Its Care," by Dr. Herbert Old, Norfolk; "Pathological Aspects of Puerperal Infections," by Dr. E. C. Taliaferro, Norfolk; "Prophylaxis and Care of the Nursing Breast," by Dr. W. A. Plecker, Hampton, Va.; "X-Ray Treatment of Lupus Vulgaris," by Dr. Jas. W. Hunter, Norfolk"; Intestinal Parasites," by Dr. W. P. Isley, Hampton Va.; "Pigmentation," by Dr. Greer Baughman, Richmond; "Some Remarks on the Diagnosis of Nephrolithiasis," by Dr. Caude D. Kellam, Norfolk; "Audibility of Cardiac Murmurs," by Dr. Geo. K. Vanderslice, Phoebus, Va.; "The Mongrel and Cretin Infant and Friedrich's Disease—With Report of Cases of Each," by Dr. W. T. Parrott, Kinston, N. C.; "Pneumogastric Cough," by Dr. Clarence Porter Jones, Newport News; "Some Remarks on the Physical, Mental and Moral Effects of Ovariotomy," by Dr. A. K. Tayloe, Spartanburg, S. C.; "The Importance of Early Recognition of Middle Ear Complications in Acute Diseases," by Dr. B. R. Kennon, Norfolk; and Clinical Cystoscopy," by Dr. D. Lee Hirschler, Norfolk. Other papers have also been promised but their titles have not been announced.

Among the entertainments scheduled we note a "smoker" by the Old Dominion Brewery, on the 5th; a luncheon by the business men on the 6th; and a banquet by the Newport News Medical Society on the night of the 7th. Indications point to a great success.

Care of the New-Born Baby's Eyes.

Of all inflammatory diseases of the conjunctiva there is none of greater importance on account of the chronicity and the disastrous results liable to attend upon it than ophthalmia neonatorum. The infantile conjunctiva is peculiarly susceptible to the pathological secretions which have their origin in the genito-urinary tract of the mother and it has been authoritatively stated that at least 25 per cent. of all cases of blindness may be traced to this disease. Modern antiseptic measures in accouchement have very materially reduced the number of these cases. Too much, however, cannot be said as to the importance of immediate attention to the eyes of every newborn infant. As a prophylactic measure the eyes should be thoroughly bathed with a ten per cent. solution of glyco-thymoline in distilled water at a temperature of 105 degrees F., three times a day for the first four days. If this simple treatment is carried out by the nurse she will save the sight of many of her little charges. In writing on this theme, Dr. L. R. McCready, of Grand Rapids, Mich., states: "If the eyes of every infant at birth were filled with a ten per cent. glyco-thymoline solution, there would be no cause for discussion on this subject."

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 17.
Whole No. 233.

RICHMOND, VA., DECEMBER 8, 1905.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

SOME REMARKS ON GONORRHOEA.*

By HUGH McGUIRE M. D. Alexandria, Va.

I do not propose, in the paper I present for your consideration this morning, to bring to your notice anything new or original. I shall merely go over old ground famaliar to us all and, by emphasizing certain points, will, I hope, bring about discussion which will produce a higher idea of the grave importance of this often neglected disease.

To my mind there are few subjects which merit more serious consideration by the profession than gonorrhœa. Keys says of it: "Gonorrhœa, a malady scoffed at by the light brained, hot blooded younger members of the community, but deserving grave consideration from serious minds, since its ultimate results are far reaching and potential. In its train are found ascending pyelitis, of which I have seen some desperately acute examples, fatal general infection, fatal peritonitis from seminal, vesicular periprostatic suppuration with extensive burrowing abscesses. Add to this the vascular and articular complications, the far reaching influence of the disease upon the uterus and its adnexa, the sterility to which it gives rise in both sexes, and the untold surgery it furnishes the gynecologist, and gonorrhœa rises in dignity from its putrid source, and becomes an object worthy of serious study for every conscientious surgeon and physician."

How true is Keys' strong statement! How important it is that both the public and the profession should take a more serious view of the disease, and realize the necessity of limiting its spread, by stamping out every possible case! We must make the public understand the importance and danger of this disease and not allow our cases to get beyond our control until entirely cured. Most young men do not understand the danger to their future happiness this trouble can cause; and it is our duty as conscientious practitioners to inform them of it. The ass who originated the saying that clap was to be preferred to a cold in the head has done almost irreparable mischief. Our patients should be told that they have a serious disease—that the exact time it will take for a cure, cannot be stated, but that it will certainly be longer than he has been led to believe by his sporting friends.

White and Martin state that an average case lasts eight weeks; that complications may occur even if he leads a careful life, but that they are much more liable to occur if our directions are not carefully carried out; that these complications will certainly greatly postpone his recovery and increase his discomport, that they may ever bring about conditions which will make a cure impossible and a future marriage criminal.

We should, before undertaking the management of his case, require from him a promise to faithfully carry out instructions and to continue under treatment until cured. It should be our one idea to get this man well before he transmits his disease to another, and, possibly, an innocent person. The discomfort of the patient we are primarily called on to treat, while demanding our attention, is a minor consideration. The suffering of the same individual when complications arise, while naturally more severe, and the cure more difficult, is still secondary. The absolute cure of his ailment, so that the disease cannot be spread by him and others in the community infected, should be our supreme object. If he alone suffered, matters would not be so bad. This, however, is not always the case.

The patient almost recovers, all discomfort ceases, and, except for a slight discharge, often only apparent in the early morning, he is well. Years later, thinking all chance of infection has passed, having, in fact, almost forgotten his

*Read before the Medical Society of Northern Virginia, Nov. 15, 1905.

previous indiscretions, he may decide to marry. When the man marries, trouble begins, and the fearful danger of this loathsome disease becomes apparent. A short time only elapses before the wife, who deserves only good at his hands, is an invalid. Vulvitis, vaginitis, urethritis, cystitis, pyelitis, endometritis, metritis, salpingitis, ovaritis, peritonitis and other sequelæ may follow. She may become a chronic invalid, with her physical health and nervous strength permanently impaired. Severe surgical measures may partly relieve her condition, but when the tubes and ovaries have been involved, she will never entirely regain her health. More cases of sterility in both sexes have been caused by gonorrhœa than by all other causes combined."

You may say I have quoted an extreme case, and I readily grant that I have. We have all seen these conditions so often, however, that we cannot say they are uncommon. Statistics tell us that nine men out of every ten have had gonorrhœa Some teachers, with whom I differ, say the disease is never cured. These figures are fearful, but teach us the importance of the subject.

The Committee on Prophylaxis of Venereol Disease, in their recent report to the American Medical Association states: "In women through most serious involvement of the pelvic genital organs and their adnexa destroying fecundity and giving rise to mutilating operations, 80 per cent. of all deaths from diseases of women are due to gonorrhœa. Fifty per cent. of all involuntarily childless marriages are caused by gonorrhœa of the female organs of generation, of which 45 per cent· are due to marital infection by men."

I firmly believe the medical profession is largely responsible for a large proportion of one of our most disgusting and fatal diseases.

Our fault lies in allowing patients suffering from gonorrhœa to drift out of our hands before they are entirely cured. Too often they are given a syringe and an injection, and never seen again. We fail in the duty we owe the individual and the community when we fail to impress on our gonorrhœal patients the seriousness of their disease, and the absolute necessity of continuing treatment until cured.

When are they cured? The question is an important one, and in many ways, hard to answer. A patient who has had gonorrhœa, but who shows no symptoms for several months, has no discimfort, and absolutely no discharge, and whose urine is perfectly clear, may be regarded as well. If, on the other hand, there is even the slightest discharge, or he is subject to relapses after sexual or alcoholic excesses; he probably still has gonorrhœa, and before being allowed to marry, should have a careful microscopic examination of the discharge made. A single negative report should not be accepted as positive proof that the danger of infection has passed. Several examinations should be made, or better still, an expert bacteriologist should be asked to prepare a culture from the discharge. If a negative result is still reported, in all probability, a marriage will be safe.

I will now briefly discuss the treatment of the disease, laying special stress on the methods which have proved most successful in my hands. My remarks under this head will be confined to the care of male patients.

During the acute stage, cleanliness is of the highest importance. The parts should be cleaned with soap and water several times daily. A suitable dressing should be worn to protect the clothing and I regularly advise the use of a suspensory bandage, as it lessens the danger of orchitis. Severe exercise should not de indulged in. In fact, confinement to bed is desirable, though usually not practicable. I have, on many occasions, seen marked improvement in gonorrhœal patients who have been compelled to go to bed for other troubles, and I believe every case would be shorter if the first week was spent in bed.

Of course, alcohol in every form, and sexual excitement, should be forbidden. Gin is allowed by some practitioners, but is fully as harmful as the other alcoholic preparations. During the acute stage, when the discharge is plentiful, and the anterior urethra alone involved, an abundance of water and milk will be beneficial.

Internal medication, while at times very useful, has been over valued. I doubt if the urinary antiseptics are of any service in the urethra—urotropin, methelene blue, salol, the benzoates and borates give good results in cystitis, but I have failed to see any effect on the acutely inflamed urethra. The alkalies are of decided value when the urine is acid and diuretics are indicated, when the water is scant and highly

concentrated. Otherwise, there is no necessity for their use.

The anodyne drugs are serviceable when inflammation is very acute, chordee present, or the patient highly nervous or sensitive. Here bromide of potash, and the coal-tar preparations will usually suffice; but if they do not, there is no objection to the moderate use of codeia or morphia. The use of water should not be be neglected for these symptoms. When urination is very painful, the penis can be immersed in hot water during micturition, and great relief is obtained. A hot sitz-bath will often insure the patient a comfortable night. Should erections occur, ice cold applications will be serviceable.

The balsams are probably the most useful drugs we have for internal use during the acute stage. If they cannot be digested, they should, however, be abandoned. A favorite prescription of mine is for a capsule put up by Cherry Bros., popularly known as Cap. C. C. & S. S. It contains cubebs, capaiba, sandal oil and salol. Probably the most useful single drug of this class is sandal oil.

In acute anterior gonorrhœa, the local treatment is most important, and, in my opinion, should be commenced at the earliest possible moment. I have had greater satisfaction with the permanganate of potash irrigations than with any other one treatment. I use Valentine's modification of Janet's method, and usually employ about a quart of a hot, one to six, or one to four thousand solution of the drug. When possibly, the irrigations are given twice daily for the first week, and their frequency then gradually reduced.

There are patients, however, who can not, or will not, give the time for treatment that the irrigations require. In these cases I have gotten excellent results with argyrol. I prescribe this in ten per cent. solutions and direct that it be injected every three hours and retained in the urethra from five to ten minutes. When the most acute stage has passed, the frequency of the injection can be lessened. The dirty, black stain, which argyrol leaves wherever it touches, can be immediately removed by the application of a one to five hundred solution of bichloride of mercury.

So satisfactory are the results from the permanganatic irrigations and the argyrol injection that, for the early stage of the acute anterior cases, I have discontinued the use of all other local remedies. After a period of from one to three weeks, the discharge has, in most instances, become very slight, and an astringent injection is needed to complete the cure. I am in the habit of using for this purpose two grains of sulphate of zinc to the ounce of liquor plumbi subacetatis dilute. The astringent injection should only be retained for twenty or thirty seconds.

The foregoing treatment is all that is required in most cases of gonorrhœa; but unfortunately the disease is not always confined to the anterior urethra, and the complications I will now briefly discuss are frequently seen, and often tax the patience of both the patient and the doctor before they are conquered.

Acute posterior gonorrhœa should be constantly watched for. After a case has been under treatment, either by the irrigation or the injection method, for a few days it will be well to have him urinate in two glasses. The urine in the first will, of course, be turbid; that in the second should be clear. If it is at all hazy, and especially if the patient complains of any discomfort in the perineal region and pain at the neck of the bladder during urination, posterior gonorrhœal urethritis has developed. I usually begin treating this trouble by posterior irrigation with the permanganate solution. The anterior urethra is first well irrigated, and when it is made sterile, the posterior is similarly treated. I prefer doing this with the aid of a soft catheter, which is inserted until a few drops of urine flow out. It is then pulled forward about an inch and the permanganate solution introduced. The bladder is filled, the catheter removed, and the patient required to pass the solution. This is done several times at each treatment. The solution usually used is a one to four thousand permanganate. Injections are discontinued when posterior urethritis develops.

In most instances, the method just described will bring about a cure in a week or ten days. When it does not, the condition must be regarded as chronic. For these cases nothing gives as good results as deep instillation with the Ultzmann's syringe. The bladder is first emptied and about twenty drops of the solution selected inserted into the membranous urethra. Nitrate of silver and protargol are the most useful drugs we have for this condition—the

former being usually the most efficacious. I usually begin with a weak solution (about one to one thousand); and as tolerance is obtained increase its strength until sometimes a two per cent. solution is employed. Protargol can be used in from one-half to a five per cent. solution.

Another valuable remedy is the hot rectal douche. About two quarts of hot water, as hot as can be borne, are used at bed time. The Cheatwood tube is admirable for this purpose, but a double rectal tube of rubber will serve almost as well. I wish to emphasize the fact that sounds, unless stricture is present, do harm. Injection of astringent solution, and in some instances all local treatment, serve to keep up the irritation, and a rest from treatment will, in many instances, bring about a cure.

The prostate and vesicles are often involved, and here, too, the hot douche, especially when used in conjunction with intelligent massage, is most valuable.

If, in spite of all treatment, and after a course of tonics and a change of climate the condition of posterior urethritis continues, a perineal cystotomy should, as a last resort, be performed. The rest thus given to the neck of the bladder often relieves a case otherwise incurable.

The condition of acute anterior gonorrhœa urethritis has been discussed. When the condition becomes chronic, a different treatment is required. Here the urethroscope is valuable and by its use local points of inflammation can be detected and treated. The application of a ten per cent. solution of silver nitrate to the spot will usually effect a cure; or a much milder solution can be applied by means of the Ultzmann's syringe. The massage produced by the use of a steel sound will also be beneficial. When strictures are present, they should, of course, be dilated or cut before any treatment will be of service.

Gonorrhœa cystitis should be treated as bladder inflammation produced by other causes. Rest in bed, alkalies and anodynes are necessary. When prompt improvement does not follow, I use bladder washings of permanganate of potash, one to six thousand. If relief is not marked, I then resort to instilling twenty drops of a one to three hundred solution of silver nitrate. If this is well borne, the strength of the solution is increased—a two per cent. strength being sometimes employed.

Acute prostatitis gives symptoms similar to those of cystitis, with the addition of the enlargement of the organ, easily detected by rectal examination. It is treated by a milk diet, confinement to bed, with elevation of the pelvis and saline purges. Counter irritation to the perineum, and hot, and in some cases, cold rectal irrigations with the Cheatwood tube, are of great service. The medicinal treatment is similar to that used in acute cystitis. Retention of the urine is troublesome, and continuous catheterization often necessary. Should abscesses form, the perineal incision and drainage should be performed.

In chronic cases of prostatitis, posterior urethral irrigations and instillations are demanded, and the use of the hot or cold rectal irrigations of great help. The massage of the gland by rectal touch is probably the most valuable one remedy.

If retention is a marked symptom, over dilatation of the internal vesicle, sphincter should be done.

The extension of the gonorrhœal infection into the seminal vesicles gives rise to vesiculitis or spermato cystitis. It is a very frequent condition, probably being present in every case of epididymitis. In many cases theer are no symptoms, the complications overlooked and it subsides without treatment. In acute cases however, the symptoms of acute posterior urethritis are present; at times, retention of the urine and violent rectal tenesmus are also present. Emissions may be frequent and painful and the semen mixed with blood—the urine then containing free pus, blood and tissue shreads and often spermatozoa. Epididymitis is often also present. Rectal examination will reveal a mass situated upward and outward from the prostate.

The treatment for the acute stage is the same as that suggested for acute prostatitis. Of course, while the inflammation is violent, no local treatment is employed. When vesiculitis is chronic, and the symptoms consequently much less violent, the best results are obtained with the hot rectal douche and massage. When the vesicles can be felt by rectal touch, they are inflamed, otherwise they cannot be detected. To perform massage, as first suggested by Fuller, the patient having a full bladder, bends at right

angles over a table, the finger is inserted into the rectum and the vesicle gently milked, thus expressing the contents of the vesicles through the duct. The posterior urethritis, which is always present, is also treated. Treatment extending over a long period is usually required. Massage is given every four or five days. Sexual neurasthenia is almost universally an accompaniment of vesiculitis and the moral treatment, hence, highly important.

Epididymitis and orchitis are frequent complications of gonorrhœa. Rest in bed and elevation of the testicle are imperative. I have gotten better results from a twenty-five to a fifty per cent. solution of guaiacol in glycerine than from anything else. It is applied with a camel's hair brush. Hot applications have been of more service to my patients than the cold, which are more usually employed. When the swelling has reached its height and begins to subside, strapping the testicle hastens recovery. The suspensary should be worn for several weeks and all local treatment discontinued until this complication is entirely relieved. I have never had a case of persistent recurrence of epididymitis. Should I do so, I would advise a vasectomy.

I have already occupied so much of your time that I will not discuss the extra genital complications of gonorrhœa, nor will time permit me to touch the large question of urethral structures.

Report of a Case of Unruptured Tubal Pregnancy of Four Months Development.*

By J. WESLEY BOVEE M. D., Washington, D. C.
Professor of Gynecology, George Washington University.

Ectopic pregnancy is by no means a new subject, though always interesting. The most frequent form of it is the tubal variety. From the standpoints of diagnosis and treatment great inetrest centers in its subdivisions into isthmic and ampullar.

When of the latter variety, tubal abortion is threatened and usually successful. If of the isthmic the tube nearly always ruptures with extrusion and perhaps death, of the fœtus. This usually occurs between the fourth and the twelfth week of gestation. By rupture is not meant a rupture of all the layers of the tubal structure. Probably this rarely, if ever, occurs. The ovum becomes attached to the mucosa, and the syncitial cells rapidly perforate and wear away the muscular coats of the tube. From some slight exertion, though not always, the peritoneal coat alone ruptures. A few cases have been said to have gone to full term without rupture, and a few rupture as early as the fourteenth day. In a series of over ninety cases of ectopic pregnancy in my work that have been subjected to operation, the duration of which varied from about one month to nine years, I have had but this one of unruptured tubal pregnancy that has advanced to four months. For that reason, this case is especialy interesting.

The history is as follows: M. C., 41 years of age, colored, was admitted to Providence Hospital April 1, 1905. Her family history was negative. She had lived in Maryland all of her life, had had the usual diseases of childhood and was always healthy, previous to the present illness. She was married in 1885, has six living children, and two that died from unknown causes. Three years ago, she noticed a growth in the abdomen, the size of which increased slowly until last January. Since then the rate of enlargement has been very rapid. She has had one child with normal labor since the appearance of the tumor. She had vomitings in the mornings, suffered with pain in the back, radiating down the inner sides of the thighs, which were sharp and most severe on the left side. Menstruation began at the age of sixteen years, lasted from four to six days, was regular and remained so until the birth of the last child in April, 1902. It was irregular from that time, until it stopped in December, 1904. A discharge continued from the vagina and she was confined to her bed until she was admitted to the hospital. On admission, she was suffering with severe pain, vomiting continually, being unable to retain anything in her stomach.

Upon examination, the lower abdomen was found to be distended by a tumor most marked on the left side and extending upward nearly to the umbilicus.

April 13, 1905, operation was done, which consisted of the removal of the uterus and both appendages through the abdomen.

Remarks.—The uterus was enlarged and contained a few small fibroids. The left tube con-

*Read before the Medical Society of Northern Virginia, at Alexandria, Va., November, 1905.

tained a four months' pregnancy, with a slight attempt at tubal abortion. Both appendages were markedly adherent and as vaginal drainage seemed imperative, complete extirpation was done. The fœtus was alive as evidenced by convulsive movements for a few minutes after removal. It was located about two inches from the fimbriated end of the tube, from which it was separated by a blood clot of dark color. There was no point of rupture in the wall of the tube, nor was there any free blood in the peritoneal cavity.

Whether the universal adhesions about the tube and ovary prevented escape of blood, or the fœtus from the tube, will probably be a question in your minds. Probably they had this effect, inasmuch as they were universal and ancient. As no uterine hemorrhage had occurred, we must infer that disturbance of the fœtal structures was but slight, if any at all had occurred.

The Rochambeau.

Report of Cases—I. Floating Kidney Causing Hepatogenous Jaundice. II. Quick Death from Volvulus. III. Varicose Veins of the Arm.

By MARTIN D. DELANEY, M. D., Alexandria, Va.
Attending Surgeon to Alexandria Hospital.

I do not wish to tire you with a long paper this evening, but instead, will report some interesting cases that occurred during my term of service at the Alexandria Hospital.

Floating Kidney Causing Hepatogenous Jaundice.

Mrs. N., age 30 years, had been very healthy, until married when she developed pus tubes, which were removed by operation. She got along very nicely for about six months, when she developed a severe pain in the region of the gall bladder accompanied with jaundice, slight fever, rapid pulse and chalky stools at times. On making a thorough examination, I found that she had a floating kidney and so informed her of the fact. I had palpated the gall bladder when I had the abdomen opened for the removal of the tubes and found it normal. Not being satisfied that a floating kidney was causing all her pain, she went to Baltimore where she was informed "that she probably had gall stones and should have them removed." I insisted that she did not have gall stones, but she was not easily satisfied and after dragging along for a few months, she consulted a physician in Washington who informed her "that she probably had appendicitis." I removed the appendix when I removed the tubes and knew that was not so. She finally consented to have the kidney sutured in place, but made me promise that I would make an incision over the gall bladder in order to be sure that there were no stones present. I made the incision, according to her request, but found the gall bladder perfectly normal. I found that the kidney had slipped from its normal position and that it was pressing on the common duct. The incision was then closed and the patient turned on her left side; a hard pad was placed under her side. An incision was then made over the right kidney in the usual place; and after some difficulty the kidney was brought up into the incision and firmly anchored. In about three days the jaundice cleared, the stools retained their normal appearance, the fever and pain disappeared. She is now in perfect health and has gained weight rapidly.

Volvulus Death in Less than 24 Hours.

Miss P., age 16, was operated on for appendicitis in August, 1905. She made a rapid recovery, the wound healing by first intention. She was discharged from the hospital in 21 days. She gained rapidly in strength and flesh, from the time she left the hospital to the time she was taken sick—a period of four weeks—she gained twelve pounds; previous to that she had been an invalid for three years. On the afternoon of September 30, 1905, I was called to see her; she was vomiting continuously and complaining of excruciating pain in the region of the umbilicus. Her pulse was about 100, but of good quality, her temperature was normal. Her mother informed me that she had eaten of raw onions, sliced tomatoes, some boiled shoulder, bread, butter, milk, etc. She said that her daughter's appetite had become ravenous and that she could not stop her from eating. I prescribed some remedies to settle her stomach and quiet her pain and directed her mother to wash out her bowels. I then left the house. The next morning about six o'clock I was again call-

*Read before the Medical Society of Northern Va. Nov. 15, 1905.

ed to see her. I found her pulseless, with face deadly pale, subnormal temperature and bodily surface cold. On examining her abdomen I found dullness in the umbilical region, the rest of the abdomen being tympanitic. I made a diagnosis of internal hemorrhage, her bowels having moved freely from the enemata administered the previous evening. I raised the foot of the bed, administered 1-20 grain of strychnia hypodermatically and then returned home for some saline solution. When I returned I administered a quart under the breasts and had her sent to the hospital. When she got to the hospital, she was placed on the operating table, chloroform was administered and an incision made; after getting through the peritoneum the blood gushed out; it was spounged away with the idea of seeking the bleeding point. On examining the bowel, it was found that about two feet of it was gangrenous. She was nearly dead at the time, and we decided there was no use trying to do an enterectomy on a person in her condition. She died in a few hours. A post-mortem showed about two feet of the ileum about 18 inches from the ileo-cecal valve to be gangrenous and twisted completely. In becoming twisted it had ruptured the mesenteric vessels, causing death by internal hemorrhage. The rest of the bowel was perfectly normal, as were all the glands. The site from which the appendix had been removed was also in a normal condition.

Varicose Veins of the Arm.

This condition seems to be so rare that it is not mentioned in text books. I have never seen a case before that needed surgical interference.

G. H., age 27 years; occupation, rate clerk in Southern R. R. office. He had been suffering with varicose veins of the right arm as long as he could remember; they were probably hereditary as I could not find any pressure as a cause. The symptoms produced were excruciating pain in the arm at times, excessive swelling, the veins standing out in large knots similar to varicose veins of the leg. Palliative treatment by means of bandaging and various applications together with rest of the part gave only temporary relief; the condition was gradually becoming worse, the arm swelled to about twice its normal size. I advised operation, to which he consented. After making a circular incision below the elbow I tied all the superficial veins. The wound healed by first intention. Since the operation, he has never had any trouble with the arm, being able to work every day.

911 *Prince Street.*

SURGICAL TREATMENT OF NEPHRITIS.*

By G. PAUL LA ROGUE, M. D., Richmond, Va.
Assistant in Clinical Surgery, University College of Medicine, etc.

The signs of inflammation of the kidney having for their basis some local etiologic factor—such as a stone, abscess, renal mobility, etc.—present certain indications for surgical intervention and are not discussed in this paper. True bilateral Bright's disease, dependent upon extra-renal systemic causes, is accompanied by the evolution of a different morbid precess, both in the kidneys and in structures throughout the body, particularly in the circulatory apparatus.

Clinical Pathology. Acute nephritis and acute exacerbations of the chronic disease, like acute inflammation in other structures, is associated with pathologic vascular engorgement, limited swelling. round cell infiltration, connective tissue cellular proliferation, and consequent distension of the organ, rendering markedly tense its relatively non-distensible true capsule. As a result, there occurs impeded circulation, blood stagnation and consequent impairment of nutrition to the specialized functionating renal elements, the epithelial cells lining the uriniferous tubules, finally resulting in degeneration—albuminoid, fatty, dropsical, and in some cases amyloid in character. Along with this there occurs squeezing out from the capillaries of serum and blood cells, and this, together with the secretory products of the epithelial cells becomes moulded into tubular casts blocking the tubules, intensifying the impaired vitality and acting as foreign bodies, causing further exfoliation of the lining epithelium.

The kidney of chronic Bright's disease always presents a degenerative process in the specialized functionating elements of the kidney, sooner or later becoming associated with, or followed by fibro-sclerotic changes in the connective tissue interstitial renal structure. The large

*Read in abstract at the 36th Annual Session of the Medical Society of Va., at Norfolk, Va., Oct. 24-27, 1905.

white kidney of parenchymatous nephritis presents an organ under high intra-capsular tension, not from vascular engorgment (there is diminished amount of blood) but from dropsical inliferation and exudative products in the interuriniferous tubules by casts, exfoliated epithelium and detritus; together with cellular proliferation and exudative products in the interstitial connective tissue, and vessel wall hyperplasia.

The physiologic effect of suchmorbid changes is manifestly *renal insufficiency.* Clinically this is marked by autotoxæmia, hydræmia, general anasarca, ascites, hydrothorax, high circulatory tension with cardiac hypertrophy; finally, insufficient compensation and myocardial degeneration, ending with gradual fall of blood pressure due to circulatory failure.

When the renal process is not too severe and of gradual development, upon cessation of the underlying cause and the adoption of sustaining hygienic, dietetic and medicinal remedies, the degeneration process may be checked, and there may ultimately result a physiologic exaggeration of hypertrophy of the remaining functionating renal structuers, together with contraction of the newly formed cicatroid connective tissue, until finally the organ becomes transformed into the contracted, shrunken kidney of chronic interstitial nephritis, representing a natural effort to compensate for loss of function and to replace degenerated structures. In this, the engorgement of the organ is considerably reduced from narrowing of the vessels by hyperplasia of their walls and by proliferation of the interstitial cellular elements with subsequent contraction, in which the fibrous capsule also takes part and becomes densely adherent. As a result, the intra-capsular tension becomes markedly reduced and the amount of blood within the kidney is lessened to correspond with the impaired functional power of the renal parenchyma.

Clinically, there is increased urinary excretion often to the extent of polyuria, disappearance in great part or it may be entirely of the œdema and other mechanical effects of hydræmia, with remittent periods of subsidence of headache and other effects of toxæmia. The compensation is, however, never perfect. Renal epithelium, when once positively degenerated, never becomes properly regenerated, nor *in toto* replaced. The watery portion of the urine may filter through the denuded tubules in even excessive amount, but the poisonous organic elements are insufficiently excreted, since the selective function in the remaining epithelial cells is never adequately exaggerated. Such patients are constantly in danger of uræmia.

Such, in brief, is the picture of the natural evolution of the pathologic process. Upon slight provocation, however, there will occur acute hyperæmia or inflammation with the attendant phenomena of vascular engorgement, extravasation and cellular proliferation, further intensifying the renal insufficiency, and productive of clinical phenomena of acute exacerbation of symptoms.

The immediate anatomical effects of renal decapsulation, as proposed by Edebohls in the treatment of nephritis, are the release of excessive intra-capsular tension and more or less undesirable laceration of the renal cortex. In cases of diffuse nephritis, the large white kidney of chronic parenchymatous disease, and in the engorgement accompanying acute exacerbations in the course of any form of chronic nephritis, the organ immediately expands upon incising the capsule. This is not so with the contracted, shrunken, granular kidney of chronic interstitial nephritis where there is no increase of tension. Laceration of the renal cortex is obviously more pronounced in the contracted sclerotic kidney with the densely adherent capsule. There is no doubt coincidently some effect on the sympathetic nerves from traumatism, but this has not been definitely demonstrated.

As a result of the removal of this circulatory resistence (the true capsule) and consequent relief of tension in the organ, there is permitted increased rapidity of circulation, removal of stagnated blood, and intra-vascular drainage of certain nephrotoxines and other poisonous material, and partial resorption of inflammatory products. With this, the remaining healthy functionating epithelial cells become revitalized, undergo at least physiologic, if not anatomic hypertrophy, and an effort is made to partially compensate for the degenerated cells. The local bleeding also favors the depletion and drainage process. The physiologic effect is diuresis. There is increase of urine often to actual polyuria, diminution at least relative of albumin, casts, and epithelial cells, and with this rapid subsidence, often complete removal

of anasarca, ascites and the other effects of hydræmia.

The remote effects have been conclusively demonstrated, clinically, experimentally and by a few autopsies in the human subject. There is acceleration of intra-renal fibroid changes, the production of sclerotic kidney; a new connective tissue capsule is formed from the connective tissue cells of the intertubular structure and surrounding cellular proliferation. This, like scar tissue everywhere, contracts, becomes dense and intimately related to the renal cortex. It is in a large measure devoid of blood vessels, certainly large ones, and shows no intercommunicating anastamotic branches. The organ becomes firmly fixed, and all the clinical phenomena of a rapidly progressive contracted, shrunken kidney are instituted. Such phenomena become apparent generally within a few months (3 1-2 months—Elliott), after which relapses occur, and death finally ensues. About 75 per cent. of the renal mortality is due to diffuse nephritis, (Hall and Herxheimer). In many experimental cases the new capsule has been shown to be completely formed within from eight to twenty days, though for contraction to occur at least a month is required. (Claude, Albarran, Gifford Hall Herxheimer and others).

Puncture of the kidney and capsular incisions produce a similar effect in relieving tension, though manifestly less marked than complete decapsulation. The damage to the cortex is less severe and the newly formed cicatrical capsule less regular in structure.

With this conception of the pathology of the disease, rationale of the operation and subsequent morbid process, it is manifest that the operation is to be reserved purely for advanced progressive, uncontrollable renal insufficiency—kidney breakdown—sufficiently severe to threaten life and demonstrably irremediable by less radical measures. Such indications may present themselves during the course of nephritis as rapidly progressive or obstinate œdema, threatening or actual anuria, total or almost total albuminuria, with a corresponding abundance of tubular casts. renal epithelium and blood cells, impending or actual convulsions, coma or other manisfestations of uræmia, *rarely* the eclampsia of pregnancy, labor or the puerperium.

Such indications are generally associated with severe acute nephritis or a dangerous acute exdecapsulation upon a repetition of the indiriety of the disease—the large white kidney.

In some cases, operation on one organ is efficient. Double decapsulation is frequently necessary. The unilateral operation should be performed, save when there is doubt that it will be productive of a satisfactory result, in order that the opposite kidney may be available for decapsulation upon a repetition of the indications. In some cases by thus tiding the patient over a few critical months, the natural evolution of the morbid process into the shrunken kidney of interstitial nephritis, may be accomplished. When the result, however, cannot be predicted, it is wise to denude both organs at once. If, during the operation, collapse ensues and the patient's condition threatens life on the table or immediately afterward, the surgeon should rest content with the unilateral operation in the hope that improvement may occur.

The technique of the operation is identical with that of nephropexy by the denudation method, save that the capsule may or may not be excised, after being stripped off, and fixation sutures are unnecessary. The tissues are thick on account of dropsy and the kidney is therefore less easy to find. The edge of the pleura may be depressed by the weight of the hydrothorax, and must be guarded against incision. Hypodermoclysis and enteroclysis are of no use while the operation is being done, since the tissues are sufficiently "water logged" to furnish the necessary fluid to stimulate diuresis, and the additional fluid throws work on the already weak heart. The wound should always be closed, though gauze drain for the dropsy in the subcutaneous tissues is useful for the first twenty-four or forty-eighty hours.

The operation may be done rapidly under nitrous oxide or light ether or chloroform anæsthesia, in some cases with the aid of local anæsthesia by the infiltration method. Ante and post operative treatment must be rigid to the minutest detail, guarding particularly the circulatory apparatus against pulmonary complications. notably œdema. The most rigid aseptic technique must be employed and the water (urine) soaked dressings dressings must be changed sufficiently often to maintain a dry wound.

The subjects are always poor surgical risks. There is always cardio vascular disturbance, of-

ten pulmonary edema and a tendency to pleuritic inflammation; invariably auto-toxæmia; at least 20 to 25 per cent of all cases present a tendency to nerve degeneration as shown by neuro-retinitis; the digestive apparatus is impaired. the skin sluggish, liver and bowels nonactive and the subcutaneous tissue, infiltrated with dropsy, is ready to invite wound infection and oppose repair.

The operation, while comparatively simple, is therefore attended with a high mortality, variously estimated at from 20 to 47 per cent. It is difficult to estimate the percentage of improvement on account of the inaccuracy of the records reported and the wide variations in the character of cases operated upon.

The operation should not be performed until all less radical measures have failed to give relief—should always be regarded as a last resort. and is contra-indicated by impending circulatory dissolution. It is difficult to decapsulate a sclerotic contracted kidney, and such a procedure always causes laceration and tearing away of a great part of the already atrophic thinned renal cortex even at autopsy.

The etiologic factors of the disease are, of course. still left, and such patients must be guarded carefuly and rigidly treated throughout the remainder of their lives. Renal re-decapsulation has been performed at least once with a fatal result and on pure logical grounds is a dangerous procedure.

506 *East Grace Street.*

Resection of the Ileum With End-to-End Approximation by the Connell Stitch—*Report of Case.*

By THOMAS M. PARKINS, Staunton Va.

The time at my disposal, after being notified by our Secretary that I was expected to read a paper at this meeting, was too short for me to attempt to write upon any subject that required an exhaustive research; so I trust you will pardon me for presenting to your notice a report of a case in my own experience, without any extracts from or comments upon the writings of others. I give you the case just as it occurred, and not only expect, but urge upon you a full and free criticism of both my work and the manner in which it is recorded, for it is only by such friendly criticism that we may expect to be really benefited by our meetings.

On September 2nd, 1903, I was called hurriedly by Dr. Roller to see a case of strangulated hernia. I was unable to get another physician to go with me at the time, and knowing the urgency of such a case, I obtained the services of a trained nurse and took what instruments and dressings I thought necessary for a simple herniotomy.

I found the patient a colored boy of 14 years; temperature 104 degrees, pulse 140, and respiration very rapid and labored. History was that the boy had been suffering very much for the past four days; there had been no bowel movement; abdomen was very much distended with gas; skin dry and parched; some vomiting, but not excessive.

Dr. Roller was called some hours before and had immediately diagnosed a left inguinal hernia; and, after repeated efforts at reduction, he became convinced that it was irreducible and strangulated, and that he was up against "the real thing" and needed assistance.

After a very hasty consultation, we resolved to operate and relieve the constriction, but saw very little hopes of saving the patient's life.

We had for an operating room, a dark negro cabin with one small window; for table, an old piano box. As there was no time for cleaning room, we depended upon clean sheets and towels. My dressings were already sterile, and instruments were soon boiled. By covering the table with sterile sheet, and using a plentiful supply of sterile towels we soon had everything ready. Patient was shaved and scrubbed and site of operation rendered as near aseptic as possible.

Dr. Roller administered the anesthetic, which required his undivided attention, and the subsequent success of the operation was due, in a large part, to his care and skill, for which I am indebted.

With the assistance of the nurse, I proceeded with the operation, first exposing the sac, when it was easy to see that we had a gangrenous condition to deal with. Upon opening the sac, it was found filled with fluid and gangrenous gut, which proved to be part of the ileum.

The internal ring was then opened sufficiently to allow me to draw down the intestine until

*Read before the Augusta County Medical Society, November 8, 1905.

sound tissue was reached on each side of dead part. I then determined to resect the diseased portion of gut and do an end to end approximation, instead of suturing the free ends of the bowel to the abdominal opening and leaving a fecal fistula, which is at times advised, although the patient's condition was as bad as it could possibly be, and I had not the proper assistance to enable me to do an expeditious operation, or to allow me to carry out my purpose with much hope of success before the boy's death.

Nevertheless, I determined to try it, as a few days previous I had read a very complete description of the Connell stitch, and I was anxious to do it, believing it could do the patient no harm. Having already drawn down the ileum and obtained healthy tissue upon each side, I smoothed out the mesentery and mapped out in my mind a triangular portion of it with a base of about seven inches at the attachment to the ileum to correspond with the part to be resected.

The mesentery was then tied off on two sides, along the site of the proposed triangle, leaving the base to come off with the diseased portion of bowel; the gut and mesentery were now taken out *en-masse,* care being taken to cut close to the mesenteric ligatures.

Previous to resecting, I had gently, firmly pressed all fecal matter several inches away from either end of proposed incision, but did not ligate or compress gut, for the simple reason that I had nothing suitable to do it with.

Everything was then sponged off with gauze and made as dry as possible. The free ends of the bowel were slightly everted and sponged off, and whenever fecal matter which was all liquid was seen, it was immediately wiped off before coming in contact with serous surface; the ends of the bowel were then approximated by the Connell stitch with No. 3 silk.

As there was no one to assist me, I had to do away with the three traction stitches, as is advised, and instead sutured all the way around without an interruption, the first suture including the attachment of the mesentery of both ends.

I found the work a great deal easier to do than I had expected; I had no trouble in tying the last stitch and leaving the knot within the lumen of the bowel, thus having all knots tied on the mucous surface. The intestines were then put upon a slight stretch to see if there were any openings; there seemed to be a slight one between the last two stitches, so they were re-enforced by two Lembert sutures

I next worked some of the contents of the gut past the united part to see if the canal was patulous and to detect leakage, if any; everything seemed to be all right, so the intestines were returned to the abdomen. The hernial sac had no adhesions, and was cut off even with the abdominal wall, the peritoneum being closed with a continuous catgut suture, without drainage.

An attempt was now made to do a radical operation for cure of the rupture; the cord was lifted from its bed and the latter was closed by bringing the deep fascia together with interrupted sutures and a new bed made for the cord; we then closed and dressed the wound in the usual way.

The boy was under the influence of chloroform for about one and a quarter hours, and at the end of the operation he seemed to be in almost as good condition as at the beginning. I now left him in the care of Dr. Roller and did not see him again for four days, but was kept posted as to his condition; the next day he was so distended with gas that he could scarcely breathe; pulse 140, temperature 102. Second day abdomen not so much distended, pulse and respiration better, but no improvement in temperature. Third day patient was about the same as second, still a high temperature. On the fourth day, Dr. Roller 'phoned that scrotum was very much inflamed, with a very bad odor about the wound and that he would like for me to see the patient.

The left scrotum was found to be full of pus, and upon opening it, the testicle dropped out. Upon examination, we found that the cord had become strangulated and sloughed off. Now, whether the cord was originally strangulated with the gut, and I failed to notice it, or whether damage was done in the new canal, I do not pretend to say, but am inclined to the former belief. All the dead tissue was now carefully cleaned away and the wound was found to be in good condition and granulating nicely, the peritoneal sutures being in tact, and peritoneum completely closed. From this time, the patient did nicely and made an uneventful recovery. He is now strong and healthy without any sign of hernia, and is in the next room, where I will be glad to have you examine him, if you wish to do so.

The principle points of interest in this case

are, First, it teaches us that apparently hopeless cases can sometimes be cured, and that we should never refuse to operate, as a last resort, for fear our patient will die on our hands; Second, it shows what any of you can do in an emergency, for it was the first case of the kind that I ever saw; Third, the ease with which entero-enterostomy may be acomplished with the Connell stitch; and, Fourth, to warn you to examine the cord carefully in a case of strangulated hernia. If it is dead, remove it and the testicle, and close the wound; and if the cord is not injured, be careful not to hurt it.

The whole of the after-treatment in this case was rendered by Dr. Roller, to whose painstaking care the success of the operation was in a large manner due, and I wish to accord full credit to him.

THE PRACTICAL VALUE OF SCIENTIFIC AIDS IN DIAGNOSIS—WITH REPORT OF CASES.*

By W. S. WHITMORE, M. D., Mt. Sidney, Va.

It is my purpose in presenting this paper to pay particular attention to those practical laboratory means which may greatly aid us in making diagnosis in those obscure cases all of us see from time to time. It is with diagnoses that we as practitioners of medicine and surgery are especially concerned. Once the diagnosis is made, the general plan of treatment is clear.

All of us know how easy it is to fall into the rut of making careless examinations of patients, but sooner or later realize that there is more trouble than we had anticipated at our first examination.

We also appreciate the fact that the subjective symptoms of one disease often stimulate those of another. In other words, the subjective symptoms alone cannot be relied upon to make a diagnosis. This then being the case, it becomes necessary for us to bring as much information to bear on the case as lies in our power. To the successful, up-to-date practitioner anything that aids in making clear his diagnosis appeals in strongest manner.

The medical profession is, as a whole, a class of investigative, industrious scientific men who willingly spend their lives and means in ministering to the suffering of their fellow men. It is this investigative spirit that has done so much to cope with the deadly diseases to which man is heir.

Since the days of Anthony Leewenhoek, who has been called the father of microscopy, there has been a stirring among scientific men to find the causes of disease, and so ardent has been this desire that the investigators have, from time to time, jeopardized their lives in their endeavors. If there is a single scientific instrument by which the medical profession has been enabled to unravel the intricate problems of life, it is the microscope. It alone, or in conjunction with other instruments, often gives us assurance of conditions that lie deeply hidden in the tissues.

The first practical aid I shall speak of is the examination of the blood. It may be made to find out the number of red corpuscles, the number of leucocytes, the amount of hæmoglobin, or the presence of the *plasmodium malariæ*. In this brief paper, I shall not attempt to discuss the manner of making blood counts, etc., or the kinds of stain, but will try to point out the practicability, as well as the necessity for making a systematic examination of the blood in all doubtful cases, whether surgical or medical. We have some diseases, but for the examination of the blood, the diagnosis would remain in doubt or else be made too late to be of any avail. No amount of physical examination of the patient will differentiate it from many others.

The following brief report of a case coming under my observation sometime back will illustrate this point:

A negro man, aged about thirty-five years, fairly well nourished, complained of general weakness, some nausea, palpitation of the heart and shortness of breath on exertion. Physical examination showed considerable distention of abdomen, slight tenderness over same, spleen enlarged, pulse rather rapid, no temperature, heart and kidneys negative, appetite fairly good. Blood stain showed great increase in leucocytes, neucleated reds, *myelocytes, eosinophiles* in increased number. Leucocyte count showed 125,000 per c. mm. By taking into account the subjective symptoms along with the findings in the laboratory, the diagnosis of splenic my-

†Read before the Augusta County Medical Society, November 8th, 1905.

elogenous lenkæmia could be made with certainty.

We are called hurriedly to see cases where there is a question of differential diagnosis of acute appendicitis from gastralgia, renal or hepatic colic, intestinal obstruction, ovaralgia, typhoid fever, etc. In this day when our most successful men have relegated the medical treatment of appendicitis to the rear, and have found that the most favorable treatment is surgical interference within the first twenty-four hours, it causes us to make our diagnosis quickly, and not wait until a mass the size of one's head is found in the region of the appendix, or the diagnosis suggested after general peritonitis has been superadded as a complication of a ruptured or gangrenous appendix. The differentiation lies in the fact that with appendicitis we have a marked leucocytosis, while in the other diseases mentioned above, there is an absence:

For example: I was called at 4 A. M. to see a man suffering with great pain in the left epigastrium; saw him in one-half hour from beginning of pain, found him tossing about on bed and exclaiming that if I didn't do something for him, he would die.

Hurried examination showed no temperature, intermittent pulse, no tenderness in abdomen, very slight distention, pressure slightly increased pain which was rather paroxysmal, no nausea. Gave 1-4 grain morphine sulphate hypodermatically, very little relief in half-hour, so repeated dose. In meantime patient tried to void urine without result. Soap-sud enema given but retained *in toto*. No previous history of such attack. From second hypodermic patient rested fairly well until daylight. The day previous played tennis very vigorously, took Turkish bath at 9 P. M., at 10 P. M. ate stewed oysters and a n apple, went to bed shortly after, slept well until awakened by pain about 3:30 A. M. At 6:30 A. M. temperature about 100 F., blood count showed 26,000 leucocytes per c. mm., diagnosis of appendicitis made, ice cap placed over McBurney's point, slight tenderness over appendix—pain shifting from left epigastrium to umbilical region. At noon considerable tenderness over appendix, no pain, leucocyte count 18,000 per c. mm. Appendectomy done in P. M. confirmed the diagnosis of acute appendicitis.

It is to be understood that not so much importance is to be laid on the count and other symptoms to be relegated to the back-ground, but with the aid of the microscope and the Thoma-Zeiss blood counter much valuable aid may be obtained.

The individual resistance to bacterial infection, as well as the type of inflammation present, will have largely to do with the number of leucocytes in the peripheral circulation.

Those of us who have lived in a malarial section know the many forms in which malaria presents itself, and we soon learn to expect other symptoms than the classical ones of chills, fever and sweat. We further do not care at all times to make our differential diagnosis therapeutically, for much uncertainty exists and precious time may be lost by so doing.

The following cases exemplify the relief given to the surgeon in those cases where, after operation, a rise in temperature takes place without an appreciable cause. The wholesome dread of infection in abdominal work causes the surgeon to think of so many complications; as pelvic abscess local peritonitis, mural abscess, etc.

Case III.—Mrs. S. Complete hysterectomy for sloughing sub-mucous uterine fibroid, abdominal route. About five days after operation, patient's temperature rose without a pronounced rigor, and remained up, no distention or tenderness over the abdomen, wound negative, urine negative, lungs negative, bowels open, no leucocytes, temperature reached 102 F., patient's expression anxious pulse weak, blood stain showed presence of malarial parasites. Hypodermics of quinine and urea hydrochlorate given with prompt fall of temperature, patient made uneventful recovery.

Case IV.—Mr. C. Admitted to hospital for chills, fever and sweats, skin showed great amount of jaundice. His physician had exhibited quinine for sometime in large doses, but without result. Stools rather clay colored, constipation, no itching, some emaciation, no tenderness over abdomen, a chill almost every night, blood examination showed no leucocytosis, no *plasmodium* found, X-ray failed to show any stones in gall-bladder. Diagnosis, however of gall-stones, with intermittent fever of Charcot made, which exploratory incision confirmed.

The Tallqvist hæmoglobin-scale is a necessary adjunct to every physician or surgeon in the treatment of anemias. How often have you been approached by a solicitous mother who

tells you that her daughter has been complaining for sometime of being languid, palpitation of heart, shortness of breath on slight exertion, constipation, menses irregular, scanty or absent. The appearance of the daughter is pale, not unlike that of anemia of beginning consumption or Bright's disease. No physical signs of phthisis. A drop of blood on blotting paper compared with scale gives you a reading of 40 or 50 per cent. hæmoglobin, and from it a diagnosis of chlorosis is made.

It is also a valuable guide to operation, as Mikuliez has pointed out.

In the treatment of our most fatal disease—phthisis—we realize if anything is of avail, it is an early diagnosis with appropriate treatment. To begin treatment in pre-bacillary stage is without doubt the best, but usually we find them in bacillary stage.

Those cases of tedious convalescence from measles, pneumonia. or typhoid fever all need to be carefully examined for T. B. While a negative finding may not be confirmatory, a positive one is.

This brings us to another valued aid—the examination of the sputum. This should be made from time to time if negative result is gotten, or until the condition of patient is satisfactory to attendant.

Case V.—A sailor in U. S. Marine Service passed through an attack of enteric fever. Physical examination at beginning of attack showed no organic weakness. It was noted in his convalescence that his evening temperature was about 100 F., no cough. some meteorism, constipation, no leucocytes, no plasmodium. Physical examination of chest gave no distinct indication of phthisis. Patient required to expectorate, sputum examination showed T. B. in abundance. Placed on appropriate treatment, discharged to U. S. Marine Sanatarium New Mexico.

The last aid I shall speak of is the chemical and microscopic examination of the urine.

In justice to ourselves and patients, it is as necessary for us to note character of urine as it is the tongue or pulse.

How often do we find cases complaining of weakness of digestion, palpitation of heart, rather rapid decline of strength? On examination of urine, we find present a low specific gravity, trace of albumen (or this may be absent) with history of irregular output. The diagnosis of interstitial nephritis can safely be made.

The microscopical examination of such urine will often show casts of all descriptions. Of particular value is the determination of the source of blood in cases of hæmaturia.

The urinometer, the ureometer, and the chemical examination for sugar are in too common practice to need mention.

Of course, there are aids and aids, but the scope of my paper has been intended to pay attention to those that have proven of practical utility in my experience, and, further, those that may be used in the brief time we have for such work. The X-ray apparatus, the Widal reaction, incubators for Klebs-Loffler bacilli in the determination of diphtheria, endoscopes. etc., all have their part to play in diagnosis and have proven efficient, but need more time for their employment than can usually be given.

In conclusion, I wish to say that my sole purpose in presenting this brief paper is to emphasize the value of those scientific aids spoken of in making early diagnosis, and by so doing, the saving of valuable time and much suffering on the part of our fellow man.

THE PHYSICIAN AS A CITIZEN.*

By C. W. RODGERS, M. D., Staunton, Va.

I thank you for the honor conferred upon me in electing me president of your Society. Knowing that as a penalty for such an honor you would expect me to have something to say to-day, and being too modest to believe that I could enlighten you upon any medical topic, I shall ask your indulgence while I shall attempt to define the position occupied by us as medical men in our relation to the State.

By education and training, we are better qualified than the average man to deal with many questions pertaining to the health and happiness of the Commonwealth. Are we living up to our privilege and making our impress felt as it should be upon the hygiene and sanitation of our country? Are we leading mankind towards a greater physical perfection. and as a necessary sequence. to a higher moral plain and a broader mental development?

Our profesion has done much towads the ad-

*Read before the Augusta Medical Society, November, 8th, 1905.

vancement of civilization. much to increase longevity much to make life in this twentieth century the beautiful thing it is to many; and I glory in it. I am aware that many individuals in our profession are loved and honored by the little circle to whom they minister. as it falls to the lot of few men of any calling to be loved and honored; but taken as a class I do not believe we are accorded by the public the respect that should be ours; nor do I believe that our peculiar knowledge is utilized in the council of people to the best advantage for the public good. There are many reasons why this is true.

First. by the very nature of our calling our work is done quietly and away from the public eye. While the great statesman stands up on a rostrum and imparts his garnered stores of know-knowledge to thousands of his fellow-men and receives their applause, we stand by the humble cottage frequently in the midnight hour. and fight, single handed, the old man with the scythe, using equally as much learning as our brother, the statesman; but the great public never hears of it and we have only our consciousness of duty well done to reward us—perchance if we be successful. the happy smiles of our small family.

Again, while we work in unison with natural law, and to the scientist our methods are plain, to the ordinary individual our work partakes much of the mysticism. and is, therefore, as with the witches of old, "Something to be used and feared, but not respected."

The tenets of our profession from time immemorial have been opposed to publicity and advertising. These things are as they should be and we would not have them different; but we should make a distinction between the physician as a practitioner of medicine and the physician as a citizen. As physicians practicing our art, we must continue to go about in a quiet way among the sick and suffering, administering to their ailments; but as citizens of this great republic. we should be bold to express our opinions freely on all questions before the people, but more especialy on questions of sanitation and hygiene. Our technical education makes our opinions valuable on these subjetcs, yet, unfortunately, the modestly that suits us so well in our professional duties too often becomes a fixed habit and interferes with our usefulness as public spirited citizens, and as a result we are not properly represented in the legislative bodies of our cities and States.

At the risk of being called a dreamer of dreams or a fanatic, I am going to express my opinion on needed reforms that I believe would be brought about if physicians were properly represented in our halls of legislation. You need only glance at our laws to see that physicians have not been concerned in their making.

Under our preesnt system of laws, a man who steals a penny may be arrested and imprisoned, but that same man would be allowed to kill men, women and children without fear of molestation, because our wise laws allow him to expectorate his tubercular laden sputum when and where he pleases. If doctors were law-makers, we would be protected as carefully from the man with a loaded lung as from the man with a loaded gun.

If doctors were law-mkaers, our public schools would have medical inspectors whose duty it would be to detect contagious and infectious diseases in their incipiency, and children so infected would be debarred from school, and by so doing much sickness and suffering would be prevented. It needs only a glance at statistics to show that a disease like scarlet fever gradually increases from the beginning of schools until they are closed, thus showing that the medium of contagion is largely through schools.

If doctors were law-makers, out-cast women would not be allowed to infest our towns and ply their trade while suffering from one or several contagious maladies and be allowed to infest large numbers of our young men with their loathsome diseases; they would at least be under strict medical inspection and supervision.

If doctors were law-makers, men and women about to marry would be required to undergo medical inspection and secure a certificate of health. Persons suffering from contagious diseases such as syphilis and tuberculosis would be forbidden to marry, as would idiots, epileptics and criminals, and all persons who, from any physical or mental defect, would be likely to increase the number of defective and diseased children. We all know how sadly true it is that many pure women marry only to receive upon their nuptial couch diseases that may make them invalids for the remainder of their lives, and not infrequently destroye life itself; yet all this could be prevented by the medical inspection I have mentioned.

If doctors were law-makers. our jails and

penal institutions, instead of being criminal colleges, graduating amateurs into hardened criminals, would be scientifically conducted institutions where the disease of mind or body that is responsible for the crime would be properly treated, and many who start on the downward road would be given back to society and would become useful and productive members.

Is it probable, if doctors were law-makers that this great country would spend something like one hundred million a year on its navy while its epileptic and feeble minded are allowed to go uncared for, or, at best, committed to a lunatic asylum? I am pursuaded we would allow the navy to struggle along somehow with ninety-nine million, and give at least one million a year towards suitable homes and training schools for these poor unfortunates.

I could mention may other instances of unwise lack of sanitary legislation, but instead, let us turn our attention towards devising ways and means for correcting these evils.

I think I hear some one say there is need of such legislation, but what can we do? A good doctor is seldom a politician, so how are we to influence legislation? I do not believe we half appreciate our power. I believe it would be very difficult, if not impossible, to elect a man to a public office if he were opposed by all the doctors in his electorial district; *vice versa,* a man with the sanetion of all the doctors would be hard to keep out of office. At any rate, we would generally hold the balance of power. That being true, let *co-operation* be our watchword. Let us educate the public in regard to these vital reforms by every means in our power, and as citizens of this great Republic, let us help to fill our legislative halls with men who will take some interest in these matters.

We would not elect men to rule over us who knew nothing of our existing man-made laws; why should we not require him to know equally as much of nature's laws, as they so vitally effect our health and happiness?

Let us hope the time is not far distant when we will have influence sufficient to see a Secretary of Medicine in our President's Cabinet; then we may hope that matters pertaining to public health will receive at least as much attention as at present bestowed upon the subjects of Foresty and Fishery.

I hope that this imperfect presentation of an important subject may interest you sufficiently to stimulate further thought along these lines and that by these means we may come more fully into our inheritance as leaders of men in the onward march toward a more rational civilization.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

Suppuration — Causes — Pathology — Symptoms—Variety— Diagnosis — Prognosis — Treatment— Pus — Composition — Clinical Types, Etc.

Suppuration is the process by which the products of inflammation are converted into pus. In all inflammation there is exudation and transudation. In suppuration there is not only exudation and transudation, but the transformation of these products into pus, the exudate being converted into pus corpuseles and the transudate into pus serum.

CAUSES OF SUPPURATION.

Authorities who claim that inflammation is always due to the destructive action of bacteria on tissue are equally insistent that pus can only result from the same eause. While it is true that practically all cases of suppuration that come under the observation of the surgeon are due to infeetion of the patient with pyogenic microbes, still, it has been clearly established by many experiments in the laboratory that certain chemical irritants—such as mereury, turpentine, croton-oil, etc—are capable of producing pus in all respects similar to bacterial pus, except that a micro-organism is present in the latter and necessarily absent in the former. Furthermore, competent investigators have proved that the toxins of pyogenic bacteria from which the organisms themselves have been removed by filtration or sterilization produce a destructive action on the leucocytes and other cellular elements of the part, by which they are converted into pus corpuscles.

In these experiments chemical products are

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University Colleie of Medicine, Richmond, Va.. and will be published in this journal in regular order until completed.

the source of pus formation. From these and other observations we are warranted in asserting that even in cases where actual infection has been known to precede suppuration the pus microbes are not the direct and immediate causes of pus formation, but act by producing toxins—purely chemical bodies—which are the essential agents in the process.

In previous lectures, it has been maintained that inflammation was caused by irritants, bacterial or otherwise, and it is here held for reasons that have been outlined, that suppuration is also caused by irritants, some of them not of microbic nature. Non-bacterial pus and bacterial pus, while identical in histological structure, differ in their clinical behavior for reasons that will be apparent. Non bacterial pus is aseptic, does not produce suppuration when inoculated into another animal, and does not tend to become disseminated but remains localized in the tissues. This is due to the fact that the cause of this type of suppuration is a non-vital agent, incapable of self increase, and having its activity arrested when its chemical affinities are satisfied. Bacterial pus, on the other hand, contains numerous microbes; will reproduce suppuration when inoculated into a second animal, and does not usually remain localized but tends to spread and become disseminated. This is due to the fact that the cause of this type of suppuration is a living organism; hence its infectiousness, and that the inheritent power of the germs to multiuly and increase *in situ,* accounts for its tendency to become progressive. As non-bacterial pus is rarely seen outside of the laboratory, and hence has only a theoretical and scientific interest, and as the surgeon in his practical work always has to deal with pus resulting from microbic infection, we will next discuss the conditions that predispose to this type of suppuration.

1. *Diminished Vitality of Tissue.* The healthy body resists the invasion of bacteria. The defense is weakened or totally absent if the tissue is injured. The most frequent cause of diminished resistance of tissue is disease, such as inflammatory processes, or traumatisms, such as blows or bruises. A mild type of inflammation frequently predisposes to suppuration, and a slight injury, such as a fall, often results in suppurative osteomyelitis.

2. *Anatomical Structure of the Part.* Pyogenic germs are almost constantly present in limited number in the circulating blood. Unless they effect localization, they produce no trouble. The anatomical structure of certain parts of the body makes them a vulnerable point for these peripatetic organisms. As illustrations, may be mentioned the lymphatic glands and the juncture of the shaft and the extremity of the long bones.

3. *The Condition of the Blood.* The life and vitality of the tissues of the body are directly dependent upon the condition of the blood. If the blood is deficient in any essential element, as in anemia, or if it is impure from constitutional causes, as in diabetes, then the localization of pyogenic germs and the production of suppuration is not only favored, but is invited.

4. *The Number of Germs Introduced.* The natural inherent resistance of the body may be able to offer successful defense against a limited number of germs, but is not adequate to resist the invasion of a large host. Experiments on animals show that the injection of a small number of a certain germ produced no effect, while the injection of a large quantity of the same culture caused speedy death.

Pathology of Suppuration.

When pyogenic organisms effect localization in tissue, they undergo multiplication, elaborate their specific toxins, and produce inflammation. This is attended by the changes described in previous lectures; namely, ischemia, hyperemia, congestion and stasis, accompanied by transudation and exudation. In addition to them, however, there is the conversion of the inflammatory product into pus. This is accompanied by the liquefying or peptonizing action of the germs or their toxins on the exudate and transudate. The exudate or cellular element is converted into pus corpuscles, and the transudate or fluid element is converted into pus serum. Inflammation is a battle between cells. In suppuration the number of white blood cells throughout the body is actually increased by leucocytosis, and the number of white blood cells in the inflamed part is still further relatively increased by chemotaxis. Therefore, the number of cells in the part is enormously augmented. In the battle, if the cells are victorious, the germs are killed, and they are removed by phagocytosis. If, however, the germs are victorious, then the cells are killed, and their bodies compose the corpuscular element of the resulting pus. In the destruction of a living

cell and its conversion into a dead corpuscle, there is, first, intoxication of the cell with the chemical poison elaborated by the germ; then, molecular disintegration of its substance and loss of its outline; and finally, a fragmentation of the nucleus.

In the change of coagulated lymph and of liquor sanguinis into pus serum, there is liquefaction of the solid element and the formation of a peptone by a fermentative process which renders the resulting fluid incoagulable. Park writes the story as follows: "The leucocytes are the defending arm, the vessels its lines of communication, the leucocytes being in effect the standing army maintained by every composite organism. When this body is invaded by bacteria or other irritants, information of the invasion is telegraphed by means of the vaso-motor nerves, and the leucocytes are pushed to the front, reinforcements being rapidly furnished so that the standing army of white corpuscles may be increased to thirty or forty times the normal standard. In this battle, cells die and are often eaten by their companions. Frequently the slaughter is so great that the tissues become burdened by the dead bodies of the soldiers in the form of pus, the activity of the cells being proved by the fact that their protoplasm often contains bacilli in various stages of destruction. These dead cells, like the corpses of soldiers who fall in battle, later become hurtful to the organism which, during their lives, it was their duty to protect for they are fertile sources of septicemia and pyemia."

Description of Pus.

Pus is the liquified material which forms as the result of suppurative inflammation. In inflammation due to infection with pyogenic organisms, the continued and increasing action of the irritant causes the escape of an excessive amount of exudate, the polymorpho-nuclear leucocyte being the principle element. The action of the toxins present in the tissue converts the leucocytes into pus corpuscles, causes degeneration of the fixed tissue elements and leads to liquefaction of the inter-cellular substance, until finally the whole area undergoes necrosis. Senn described pus as dead or dying tissue composed of cells with a fluid inter-cellular substance. Pyogenic germs when grown on beef gelatine cause liquefaction of the culture medium by virtue of their peptonizing action due to the liberation of a ferment. It is in consequence of the same peptonizing action that the inflammatory products are converted into a fluid or pus.

Pus is a yellowish white substance, the consistency of cream. It is usually odorless and has an alkaline or faintly acid reaction. Its specific gravity is about 1,032. It is composed essentially of two elements, the fluid portion and the cellular portion.

(1). *The Fluid Portion of Pus, or Liquor Puris* is derived either from the blood serum or from the liquefied inter-cellular substance of the tissue. It is a transparent, pale greenish fluid and contains soluble compounds, the result of inflammatory process, such as peptones, toxins, etc.

(2). *The Cellular Portions of Pus, or Pus Corpuscles,* is derived from two sources; i. e., from the emigrated leucocytes and from the embryonal cells of the inflamed area. Pus corpuscles are, therefore the bodies of dead cells. They are usually round, but sometimes are fantastic in shape, due to the death agony of the victim of the pyogenic germs. They are composed of granular protoplasm and contain sometimes as many as fifteen or twenty nuclei, due to disintegration of the protoplasm and nucleus of the cell. If subjected to the action of acetic acid pus corpuscles clear up and show their fragmented nuclei more plainly. If placed in water, they become larger and swollen from absorption of fluid. If treated with liquor potassa, they are dissolved and changed into a gelatinous mass.

Clinical Varieties of Pus.

1. *Laudible pus* is thick creamy pus, without odor or irritating properties and soon cleans off, leaving healthy granulations.

2. *Sanious pus* is pus mixed with blood. It is usualy irritating and is indicative of a serious type of infection.

3. *Ichorous pus* is pus undergoing decomposition. The pus cells are few in number and the fluid is thin and aerid.

4. *Fetid pus* is pus that stinks. It is due to a special pyogenic germ and is usualy found in the region of the anus of genitalia.

5. *Chromatic pus* is pus that has a brilliant color. Sometimes it is blue, sometimes red, the hue being diagnostic in each instance of infection with a certain organism.

6. *Serous pus* is pus mixed with serum. Its

presence indicates the infection of a serous cavity.

7. *Mucous pus is* pus mixed with mucus. Its presence indicates infection of mucous membrane.

8. *Inspissated pus* is pus which has become encapsulated, the pyogenic germs exterminated and the fluid element removed by absorption.

Symptoms of Suppuration.

The symptoms of suppuration vary so greatly with the locality infected and the variety of the pyogenic organisms introduced that the subject cannot be satisfactorily discussed in general terms, but must be taken up in detail in succeeding lectures under the different structures of the body and the different types of pus-producing germs. It may be broadly stated, however, that the constitutional symptoms consist of fever usually preceded by sensations of chilliness or an actual rigor. The local symptoms commonly embrace swelling of the part which becomes tense and brawny and is colored by a crimson blush. Pain is acute and throbbing, and the part is hot. As pus approaches the surface, the tissues near the center of the inflamed area become softer and finally fluctuation is capable of being demonstrated. The pressure on the overlying skin causes it to become thin and white, and "pointing" is said to have occurred. Finally, there is rupture, and the spontaneous escape of the pent-up pus. When this occurs, all symptoms at once begin to improve.

Varieties of Suppuration.

Suppuration is divided into acute, sub-acute and chronic suppuration, according to the time taken for the process to convert inflammatory product into pus.

1. *Acute suppuration* is caused by germs of great virulency introduced in large numbers. The symptoms come on sharply and the process reaches its climax quickly. In this type, the pus corpuscles are derived exclusively from the leucocytes, as there is not time for embryonal cells to develop.

2. *Sub-acute suppuration* is caused by infection with germs of less qualitative or quantitative power than the above. The symptoms develop more slowly and last for a longer time. In this type, pus corpuscles are derived from both leucocytes and embryonal cells, as both constitute an element in the exudate.

3. *Chronic suppuration* is caused by infection with germs of mild or attenuated virulency. The symptoms develop slowly and are persistent. In this type, the pus corpuscles are formed almost exclusively from embryonal cells of granulation tissue.

Diagnosis of Suppuration.

The diagnosis of suppuration is easy when the anatomical location of the inflamed area is such as to render the local symptoms obvious. When the process is deep seated, the diagnosis is often difficult and can sometimes only be made by a careful study of the temperature chart, a count of the white blood cells to determine the presence or absence of leucocytosis, and occasionally by the use of the aspirator.

Prognosis of Suppuration.

The prognosis of suppuration depends upon many factors, such as the character of infection, the anatomical location of the process, the general condition of the patient, the courage and ability of the surgeon, and the facilities at hand in the nature of instruments, dressings, assistants, etc.

Treatment of Suppuration.

The reasons given under a previous heading make it impossible to discuss the treatment of suppuration, whatever its form or wherever it occurs, in general terms. The type and location so modify the indications that they must be taken up later in detail. Here all that can be said is that in every case of suppuration the following practice may be followed with advantage:

1. Incision, early and free, to relieve tension and prevent further extension.

2. Irrigation, to mechanically remove offending material and prevent absorption.

3. Disinfection, to destroy accessible microorganisms, to limit further destruction and to prevent the danger of subsequent putrefaction.

4. Drainage, to remove either by gravity or capillarity the pus that forms after evacuation and before complete sterilization.

Book Notices.

Manual of Chemistry. By W. SIMON, Ph. D., M. D., Professor of Chemistry, College of Physicians and Surgeons of Baltimore, etc. Eighth Edition, Thoroughly Revised, with 65 Illustrations, 1 Colored Spectra Plate, and 8 Colored Plates Representing 64 Chemical Reactions. Lea Brothers & Co. Philadelphia and New York, 1905. Cloth. 8vo. Pp. 643. Price $3 net.

Simon's *Chemistry* has becom eso well established as the text book of colleges generally that it would seem unnecessary to do more than call attention to the issue of the new edition. This revised edition is made in accord with the late revision of the U. S. Pharmacopœia. Hence, while it is a text book specially adapted for students of medicine, pharmacy and dentistry, it is useful alike as a guide book to lectures and laboratory work of beginners in chemistry. In compliance with requests, dental metallurgy has been more fully considered than in previous editions. As the publisher's announcement states: "Assuming no previous knowledge, it opens with a section on chemical physics, heat, light and electricity, and then proceeds to the principles of chemistry the non-metals and metals, and their combinations, analytical chemistry, organic chemistry, and physiological chemistry, and the examination of normal and abnormal urine—thus carrying the reader from the beginning to the end of its objective."

Pathogenic Micro-Organisms including Bacteria and Protozona. By WILLIAM HALLOCK PARK, M. D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, etc. Assisted by ANNA B. WILLIAMS, M. D., Assistant Director of the Research Laboratory. Second Edition. Enlarged and Thoroughly Revised. With 165 Engravings, and 4 full Page Plates. Lea Brothers & Co. New York and Philadelphia, 1905. Cloth. 8vo. Pp. 556.

The recognition of the possible connection of the protozoa with exanthemata and syphilis, as also because of their known causative relationship to a number of other diseases, has given them in recent years an inportance nearly equal to the bacteria. Hence they should be as carefully studied. This second edition of Dr. Park's work well brings out these facts. As a college text-book—especially this improved edition—it is unsurpassed in the clearness of descriptions, and in the pointing out of the various diseases of which these micro-organisms are causative. Hence the book becomes also useful to the practitioner and is especially serviceable to health officers who devote themselves in reality to the etiology and prevention of preventable diseases. The chapter on malaria and the diseases due to it has been practically rewritten, and brought up to date. Such things as the stegomyia fasciata—the yellow fever mosquito—is thoroughly described, with an account of its habits, etc.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. Part VII. Diabetes Mellitus—its Pathological Chemistry and Treatment. By PROF. DR. CARL VON NOORDEN, Physician in Chief to City Hospital, Frankfort, A. M. Translated by Florence Buchanan, D. Sc., and L. Walker Hall, M. D. New York. E. B. Treat & Co., 1905. Cloth. Small 8vo. Pp. 210. Price $1.50.

This is the last of the announced series of monographs of von Noorden, edited by Dr. Boardman Reed, of Philadelphia. It consists of some lectures delivered by invitation in the University and Bellevue Hospital Medical College on diabetes mellitus—special attention being given to its pathological chemistry and treatment. After defining the disease the pathogenesis of glycosuria is described. Then the acetone bodies are considered in detail. Other changes in metabolism in diabetes take up about 20 pages. The general course and prognosis of diabetes occupy some twenty more pages. Practically the remainder of the book is devoted to treatment. While we fail to find much that is new in this division, he yet points out very clearly the limitations of such drugs as opium, salicylates, antipyrin, syzygyum jambulanum; warns against overestimation of the value of health resorts, and then defines the dietetic teratment found most generally useful. Throughout the book is full of practical suggestions which may lead to rich discoveries.

Neurotic Disorders of Childhood. By R. K. RACHFORD, M. D., Professor of Diseases of Children. Medical College of Ohio, etc. New York. E. B. Treat & Co., 1905. Cloth. 8vo. Pp. 440. Price $2.75.

The ease and style of the author makes it difficult for one interested in the subject to lay the book aside until he has finished with the last page. A great deal of instruction is derived from such examination of its contents, and,

therapeutically, good advice is very generally given. While numerous causes are given for some of the reflex disorders, we are much surprised that more emphasis is not laid upon the risks of such things as congenital phimosis, etc., which in the experience of most practitioners, is found to be a most common cause of neurotic disorders of children. Especially is this omission regretable since the condition is so easily removed, and the neurotic disorders disappear afterwards. More emphasis, also should have been laid upon the faults of proper dentition—an extremely common cause of neurosis in children. The book includes a study of *auto-* and intestinal intoxications, chronic anæmia, fever, eclampsia, epilepsy, migraine, chorea, hysteria, asthma, etc. A revision of this work which would include the evil influences of phimosis, faulty dentition, and some other like conditions would make it a most serviceable book.

Manual of Chemistry—Inorganic and Organic. By ARTHUR P. LUFF, M. D., B. Sc., Lecturer on Medical Jurisprudence in St. Mary's Hospital Medical School, etc.; and FREDERICK JAMES M. PAGE, B. Sc., Lecturer on Chemistry and Physics to London Hospital Medical College, etc. Illustrated with 43 Engravings. Third Edition. Revised Throughout. Chicago. W. T. Keener & Co., 1905. Cloht. 12mo. Pp. 555. Price $1.75 net.

This is a good book for the class room, as also for the apothecary and doctor of medicine. In addition to the general facts of chemistry, it deals with the analysis of a great number of chemical substances used in practice, such as aspirin, heroin, mesotan, veronal, etc. In short, in this direction, it covers the synopsis of the Conjoint Board and the Society of Apothecaries—making it a book of constant service for reference by students, teachers, etc.

Practical Message, in Twenty Lessons. By HARTWIG NISSEN, Instructor and Lecturer in Massage and Gynastics as Harvard University Summer School, etc. With 46 Original Iulustrations. Philadelphia. F. A. Davis Co., 1905. Cloth 8mo. Pages 168. $1 net.

The author states that this book is written just as he has been teaching "massage" at the Harvard Summer School. His method is a combination of the best and most useful "manipulations" and "movements" in other systems as well as original. After a history of the subject, description of movements and manipulations, etc., he points out the value of massage in hysteria and hypochondria, chlorosis and anemia, insomnia, diabetes mellitus, and numerous local diseases or diseases of organs, etc. The results of massage in various diseases, etc., are so convincing as to establish the method as a standard therapeutic measure. One must read the book for details of procedure in given cases. It is unfortunate that there is the omission of an index.

Post Operative Treatment. By NATHAN CLARK MORSE, A. B., M. D., Surgeon-in-chief to Emergency Hospital, Eldora, Iowa, etc. Containing 5 Plates and 155 other Illustrations. Philadelphia. P. Blakiston's Son & Co. 1905. Cloth 8vo. Pages 468. Price $4 net.

As stated on the title page, this is "an epitome of the general management of post-operative care and treatment of surgical cases, as practiced by prominent American and European surgeons, together with suggestions concerning the technique of certain operations, with a view to securing better post-operative results." So far as we know, this is the only book on the subject named in the title; and yet a more needed one could scarcely have been presented. The individual surgeon often falls into a rut. The student or the post-graduate sees "the brilliant operation," but rarely behind the curtain after the patient is returned to his hospital room so as to follow up the case. While the work before us lays no special claim to originality of method, the author has put himself to much trouble to collect and arrange into valuable volume the experience and teachings of those surgeons who have the best results. The book is systematically arranged, and a very complete index is appended which greatly facilitates easy reference to the post-operative course to pursue in given cases.

Preventive Medicine, including a Disquisition on Therapeutic Philosophy. By WILLIAM COLBY COOPER, M. D. Published by the Author. Cleves, O. 1905. Cloth 12mo. Pages 147. $1.

This is abook without a table of contents or an index, but with an appendix entitled "Cooperisms," aphorisms and epigrams. The book is not worth the space to give it further notice. We wish that we could say that it is worth a dollar.

Physical Diagnosis, including Diseases of the Thoracic and Abdominal Organs. By EGBERT LE FEVRE, M. D., Professor of Clinical Medicine and Associate Professor of Therapeutics, University and Bellevue Hospital Medical College. Second Edition, thoroughly Revised and Enlarged. Illustrated with 102 Engravings and 16 Plates. Lea Brothers & Co. Philadelphia and New York, 1905. Cloth. 12mo. Pp. 479. $2.75 net.

The commendations of the first edition from many sources justify our speaking of this revised edition—with so many improvements of illustration and description—as about the best of *manuals* on Physical Diagnosis that we have seen. As the colleges nowaday require the teaching of this subject in the second or third year of their curriculæ, the author gives a brief account of the morbid changes in different organs, and of their secondary effects—both immediate and remote—which enables the student the better to appreciate the conditions to which the physical signs point. The plan of the book is steadily progressive, and he who masters it is greatly helped in the perfection of his powers of diagnosis. It is a great mistake to suppose that this book is suited only to the classroom; it is of great service to the practitioner in his every day work as well.

Memoranda of Poisons. By THOMAS HAWES TANNER, M. D., F. L. S. Tenth Revised Edition. By HENRY LEFFERMANN, A. M., M. D., Professor of Chemistry in Womans' Medical College of Pennsylvania, etc. Philadelphia. P. Blackiston's Son & Co., 1905. Cloth. 16mo. Pp. 177.

This little book should always be on the doctor's table to meet an emergency. Besides describing the poisonous effects of agents, it details the antidotes as far as known, and the rational treatement in other instances. This revised edition includes a section on formaldehyde poisoning, and another on the antidotal methods for snake bites. The toxicology of poisonous foods is also presented as fully as can be in so concise a book. A thorough and well arranged index is appended.

International Clinics. By Leading Members of the Medical Profession throughout the World. Edited by A. O. J. KELLY, A. M., M. D., Philadelphia, Pa. Volume III. Fifteenth Series, 1905. Philadelphia and London. J. B. Lippincott Co., 1905. Cloth. 8vo. Pp. 302. Price $2.

This quarterly of illustrated clinical lectures has well won its way to the prominence of standard authority, because of the well selected authors on the subjects of which they write. Each issue covers all fields of practice. In the volume before us, we have been specially impressed by the papers on "Injuries and lesions following the toxic use of alcohol," by T. D. Crothers, of Hartford, Conn., and the one on "Paralysis Agitans; Hemiplegia, Combined Sclerosis, and Ataxia Paraplexia; Locomotor Ataxia; Acute Confusional Insanity," by Dr. Daniel R. Brower, of Chicago. But other papers are alike interesting and instructive, according to the special cases that may be in the hands of other practitioners. It would well repay any practitioner to become a regular annual subscriber to these *International Clinics.*

Principles of Bacteriology. By A. C. ABBOTT, M. D., Professor of Hygiene and Bacteriology University of Pennsylvania, etc. Seventh Edition. Enlarged and Thoroughly Revised. Lea Brothers & Co. Philadelphia and New York, 1905. Cloth. Small 8vo. Pp. 689.

Abbott's Bacteriology has long ago become a standard "practical manual for students and physicians." In this revised edition, nomenclature has been made to conform to the suggestions of advanced bacteriologists. Sufficient is stated to acquaint the student with the manifold directions taken to apply bacteriology to the study of infections and immunity. A material improvement in this last edition is the inclusion of the practical results of the study of bacteriology to preventive medicine. Throughout the book, the author has striven, and very successfully, to present a work of real value—alike for the class room, the laboratory worker and the practitioner of medicine. The section on technique (or, as the author calls it, on methods) contains a description of those procedures which, after trial, have been found most generally trustworthy.

Manual of Diseases of the Nose and Throat. By CORNELIUS GODFREY COAKLEY, A. M., M. D., Professor of Laryngology, University and Bellevue Hospital Medical College, etc. Third Edition Revised and Enlarged. Illustrated with 118 Engravings and 5 Colored Plates. Lea Brothers & Co. New York and Philadelphia, 1905. Cloth 12mo. Pp. 594. Price $2.75 net.

Special attention has been devoted throughout to questions of examinations, diagnosis and treatment. A special chapter is given to ther-

apeutics of nasal and throat diseases. The author, however, selects from the multiplicity of medical and operative measures those which his experience and observation have appeared to be best, and he gives full details. With the evidences of thorough revision of each chapter, that on diseases of the accessory sinus has been entirely rewritten and many new cuts added. In the section on therapeutics is a classification of drugs used in this specialty according to their local actions, and a number of useful prescriptions with a statement of the indications for their selection, which will prove of much practical interest to the general practitioner, as well as to the specialist. The full index is a material help when looking at a subject.

Editorial.

The Southern Surgical and Gynecological Association.

Will convene at Louisville, Ky., December 12, 13 and 14, 1905, for its eighteenth annual session. The preliminary program, which has just been issued by the Secretary, Dr. W. D. Haggard, of Nashville, Tenn., indicates that this meeting will be in every way a signal success. Thirty-three papers are listed from authors, mostly widely known,—covering sections well distributed from Boston to Galveston—including the Eeastern, Southern and Central States. Dr. Lewis C. Bosher, of Richmond, is President, and an excellent presiding officer he is.

All railroads will give one and one-third fare on the certificate plan.

The Southside Virginia Medical Association

Will hold the last quarterly session of its second year at Petersburg, Va., on the second Tuesday of December (12th), 1905. Many scientific papers will be read. Dr. M. R. French, of Emporia, will lead in the subject for general discussion. Drs. Wm. S. Gordon, Robt. F. Williams and W. Brownley Foster, of Richmond, Dr. D. D. Wilcox and Mr. Thos. A. Brown, Commonwealth's Attorney, of Prince George Co., of Petersburg, invited guests, will read papers, as will also Drs. Hu. B. Mahood and L. Lofton, of Emporia, W. B. Daniels, of Templeton, and J. F. Slade, of Sussex C. H., Va., these latter being members of the Association. Election of officers will take place at the night session. Dr. John E. White, of Wakesfield, Va., is the present secretary, to whom parties should promptly communicate titles of papers, etc. This association represents six or seven counties of Southside Virginia, and is an active, progressive one.

Dr. Wm. S. Christian.

It was a matter of general regret on the part of members of the Medical Society of Virginia, that Dr. Christian suffered so much from the effects of a recent fall that he was unable to attend the session, except the first night. Since adjournment, however, he has returned to his home at Urbanna, Va., and has resumed his practice.

Dr. Joseph Price in Texas.

There is but one Dr. Joseph Price in America. Although his professional life has been spent in Philadelphia, he is by birth a Virginian; and with the late Dr. Hunter McGuire, and Dr. Herbert M. Nash, of Norfolk, contributed to the fund of $800 for Prize Essays on the Medical and Surgical History of Virginia. These essays, on motion adopted at the 1904 session of the Medical Society of Virginia, were placed in the hands of Dr. R. M. Slaughter, Theological Seminary, Va., for proper compilation and editing for the Society.

Dr. Price, beside the Virginia Society, is an honorary member of a number of other medical societies, and his visits to their meetings and participation in the scientific proceednge are always most welcome. But we doubt if he ever received such an ovation as was given him on the occasion of his recent visit to the Dallas, Texas, Medical Society. His "talk" was on appendicitis, which we present in this issue, from stenographic reports. During the afternoon after his lecture, up to 6 P. M., at St. Paul's Sanitarium, he did consecutively nine major operations—six of which were for appendicitis—flitting from one operating room to the other as he finished with each operation, explaining to the auditorium filled with doctors,

each step as he proceeded. In these off-hand remarks, he stated that in his observation, the playing of golf by young ladies had increased the percentage of appendicitis cases among their sex to an alarmingly high rank.

The Tri-State Medical Association of the Carolinas and Virginia

Meets at White Stone Lithia Springs, S. C., the last of February or first of March, 1906.

Dr. H. A. Royster, of Raleigh N. C., is president; Dr. R. E. Hughes, of Laurens, S. C., is secretary and treasurer. The following appointments have been made:

Chairmen of Section for North Carolina.—*Medicine,* Dr. E. T. Dickinson, Wilson, N. C.; *Surgery,* Dr. D. T. Taylor, Washington, D. C.; *Obstetrics,* Dr. C. A. Julion, Thomasville, N. C.; *Gynecology,* Dr. J. E. Stokes, Salisbury, N. C.; *Ear, Eye, Nose and Throat,* Dr. R. V. Brawley, Salisbury, N. C.

South Carolina.—*Medicine,* Dr. F. J. Carroll, Summerville, S. C.; *Surgery,* Dr. T. L. Potts, Spartanburg, S. C.; *Gynecology,* Dr. R. A. Cathcart, Charleston, S. C.; *Obstetrics,* Dr. Frank Lander, Williamston, S. C.; *Eye, Ear, Nose and Throat,* Dr. W. P. Porcher, Charleston, S. C.

Virginia.—*Medicine,* Dr. L. G. Pedigo, Roanoke, Va.;*Surgery,* Dr. J. Shelton Horsley, Richmond, Va.; *Gynecology,* Dr. W. E. Anderson, Farmville, Va.; *Obstetrics,* Dr. J. M. Robinson, Danville, Va.; *Eye, Ear, Nose and Throat,* Dr. J. F. Woodward, Norfolk, Va.

Necrological Committee.—Dr. Jas. A. Burroughs, Asheville, N. C.; Dr. Doris Furman, Greenville, S. C.; Dr. W. L. Robinson, Danville, Va.

Invitation Committee.—Dr. G. DeFoix, Wilson, Spartansburg, S. C.; Dr. J. S. Irvin, Danville, Va.; Dr. J. W. Long, Greensboro, N. C.

Publications.—Dr. G. T. Sikes, Grissom, N. C.; Dr. T. P. Whaley, Charleston, S. C.; Dr. C. M. Edwards, Richmond, Va.

Committee on Delinquents.—Dr. J. F. Swann, Cunningham, N. C.; Dr. W. C. Black, Greenville, S. C.; Dr. L. G. Frazier, Port Norfolk, Va.

Committee to Report on President's Address, *viz:—Prevention of Typhoid Fever and Tuberculosis,* Dr. F. J. Cleminger, Asheville, N. C., chairman; Dr. C. V. Reynolds, Asheville, N C.; Dr. J. H. Roqne, Laurins, S. C.; Dr. H. H. Wyman, Aiken, S C.; Dr. W. S. Gordon, Richmond, Va.

The Subject for General Discussion at the next meeting will be "Rheumatism."

Leaders of Debate are Dr. J. P. Munroe, Davidson, N. C.; Dr. J. H. Allen, Spartansburg, S. C.; Dr. C. B. Earle, Greenville, S. C., and Dr. Virginius Harrison, Richmond, Va.

Medical Examining Board of Virginia.

The last meeting of the present Medical Examining Board of Virginia will be held at Richmond, Va., December 12, 13, 14 and 15, 1005 for the examination of applicants for license to practice medicine or surgery in this State. That this Board has been faithful to its duties, and shown every care to protect the people of Virginia from incompetent doctors, quacks and pretenders, the records of the past four years abundantly testify.

During the recent session of the Medical Society of Virginia, (held at Norfolk, October 24-27, 1905), the following named doctors were nominated for commission by Governor Swanson, recently elected, to serve for the term of four years, beginning April 1, 1906, to represent the regular profession of Virginia:

1st Congressional District, Dr. Wm. B. Robinson, Tappahannock.

2nd Congressional District, Dr. Herbert M. Nash, Norfolk.

3rd Congressional District, Dr. J. E. Warrinner, Brookhill.

4th Congressional District, W. W. Wilkinson, La Crosse.

5th Congressional District, R. S. Martin, Stuart.

6th Congressional District, Sam'l Lile, Lynchburg.

7th Congressional District, Dr. Robt. Randolph, Boyce.

8th Congressional District, Dr. R. M. Slaughter, Theological Seminary.

9th Congressional District, E. T. Brady, Abingdon.

10th Congressional District, Dr. C. W. Rodgers, Staunton.

From State at large, Drs. R. W. Martin, Lynchburg; A. S. Priddy, Bristol; and R. Bruce James, Danville.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 18. Whole No. 234. RICHMOND, VA., DECEMBER 22, 1905. $2.00 a Year. 10 Cents a Copy.

Original Communications.

INFANTILE DIARRHOEA, WITH REPORT OF A CASE.*

By CHARLES SHEPARD WEBB, Ph. M. D., Bowling Green, Va.
Formerly Prof. Practice of Medicine in Southern Medica
Prof. Chemistry in Washington Seminary, etc.

You are prepared to say, of course that this is a hackneyed subject, and to this I readily agree. But, then, as medicine is not an exact science, we are obliged to keep right on telling each other the things that we know, and the things that we don't know, hoping that in the general sifting some grains of wheat may fall out of the abundant chaff. So much has been written on this subject, and so diverse have been the opinions and experience of the various writers, that when we begin to "read up" on it in search of help for some particular case, we find ourselves in a mysterious maze, which, to say the least, is decidedly embarrassing. I have had occasion recently to do this very thing, searching, perhaps, twenty or more authorities without finding any certain relief. The occa- without finding any certain relief.

The occasion was the illness of a bob (age 17 months) which continued from July 20th for forty-two days before he could be pronounced out of danger. I was with him day and night continuously during all that time, an unusual privilege, accounted for by the fact that the little sufferer was my own child. I, therefore, had the best opportunity of my life for watching a case of this kind at all hours and in all stages of its development. I desire to acknowledge my indebtedness to Doctors W. L. Broaddus, R. L. Glassell and R. H. Holloway, who saw the case with me. I would not bring it before this learned body except for two reasons; first, because nearly all of the gravest symptoms of which we read were combined in one case; and, second, because I wish to call special attention to certain facts which were developed in the treatment, and which impressed themselves upon my mind more forcibly than ever before.

CASE. Age seventeen months; sex, male; physical development unusualy strong and vigorous; never before had a day's sickness; eleven teeth; namely, eight incisors and three canine; had been weaned from mother's breast three months before, fed on milk from home-kept cow, with rice and a biscuit occasionally, excellent hygienic surroundings, with plenty of out-door life. During the first three weeks in July the weather was excessively warm.

Bowels. July 20th began suddenly copious discharges, watery and mush-like, of dingy color and offensive odor. By the next day the discharges were entirely of blood and mucus, well mixed and very frequent, about thirty in twenty-four hours. On the third and fourth day there was some abatement in the frequency, but none in the character of the bowel discharges. On the fifth day vomiting and copious discharges of such nature as, coupled with other symptoms to be presently mentioned, marked the case as one of cholera infantum of severe type. The discharges continued without abatement for three weeks, numbering between twenty and twenty-five every twenty-four hours, copious, watery, of characteristic musty odor, never any sign of fecal matter, nor of fecal odor. The blood and mucus had ceased on the fifth day and never re-appeared. After the twenty-sixth day, the discharges came down to twelve or fifteen in the twenty-four hours, then gradual improvement until the first appearance of fecal discharge or odor about the thirty-fifth day. During all of this time the odor of the discharges was variable, sometimes none at all, somtimes the musty odor already mentioned, and sometimes foul, almost cadaverous. The color was also variable; but I must not fail to

*Read before the 36th Annual Session of the Medical Society of Virginia, held at Norfolk, October 24-27, 1905.

mention the persistence, during much of the time, of the familiar "green discharge" so annoying to the practitioner because he does not know what that is, nor how to correct it. We are told by one that it is due to the "conversion of bilirubin into biliverdin," but how this conversion is accomplished, and how to put a stop to it, we are not informed. Another declares that it is due to the activity of a "chromogenic microbe," but that statement has not been verified, nor do we know how to be rid of him and his services. Ever since I have been practicing medicine, I have earnestly desired to discover some certain relief from this condition, but have never been able to announce it. At times, during the case under consideration, the rectal tenesmus was so violent that the bowel was almost everted, and would stand open so as to give as good a view of the rectum as could have been obtained by the use of a speculum.

Circulation. The temperature, taken in the axilla, was not above 102 degrees in the first week. This was unsatisfactory because the surface was cool, but the rectal temperature could not be taken at this time because of extreme tenesmus, and the over-sensitive condition of the rectal membrane. When, however, this could be done, the highest rectal temperature observed was 103 degrees. The usual pulse rate was about 140, sometimes 160, and in the last two weeks about 120. Sometimes the feet and ankles and hands and wrists were cold and clammy, while the chest and abdomen and back were hot, and rectal temperature 103 degrees. The skin, during most of the time, was dry and harsh.

Other Symptoms. This child, before his illness began, was able to articulate quite distinctly, but from the fifth to the thirty-fifth day he never uttered a sound that could be heard, neither word nor cry, nor fret nor moan. During much of that time he was in a semi-comatose condition, swallowing in an automatic way anything that was given him; but sometimes seemed to be thoroughly awake, looking at us with a dazed expression, and lying without resistence in whatever position he was placed. When lying on either side, the head was thrown back until the face was almost perpendicular to the chest, the spinal column being also slightly arched backwards. There did not seem to be any decided muscular rigidity, and only once did I catch the peculiar expression of the eyes that led me believe that these manifestations were slight, tetanic waves. Only once did he have a pronounced general convulsion. When lying on the back, the head was going from side to side, with pendulum-like regularity, and when turned over on the side, the backward arching would begin again. These symptoms were more or less prominent during the third and fourth week. As already stated, he had eleven teeth when his sickness began, and we had no reason to expect that any others were on the way until about the tenth day, when we discovered that he was cutting five more; namely, all four first molars and one canine. The evident distress from these, together with the disturbance of the nervous system, made it advisable to lance the gums as many as five different times, which was very dextrously done by my dentist friend, Dr. Edward E. Butler. The relief was immediately apparent and the symptoms correspondingly modified. Let me pause here long enough to say that the lancing of the gums during dentition has, in a great measure, gone out of fashion, but in our hurried search for new things, we must not forget that the old can sometimes serve us well. Of its absolute necessity and of its demonstrated benefit, I am fully convinced.

Treatment. Diet: Of course, in all such cases the question of nutrition is of first importance. I have often said, and am now more fully convinced than ever before, that infant feeding is purely a matter of experiment, all theories and all scientific deductions concerning digestion paling before the actual fact. The usual contingent of non-professional advisers was at hand, and it must be admitted that many a good suggestion comes from some experienced old mother, so I make it a rule to hear all such with the greatest respect and attention. But we must not fail to keep prominently before our minds the fact that what will suit one child will not suit another, and what will suit a certain child one day may not suit the same child the next day. There cannot be any routine practice here. Of course, everybody knows that mother's milk is the best of all, but very few babies can get that at the age of seventeen months. This child, for the first five days, was fed on cow's milk, but the stomach rejected it on the fifth, when, as will be seen by the symptoms already described, he became alarmingly ill. He lived, for the next

five days on two teaspoonfuls of liquid peptonoids every two hours, day and night, nothing more, except boiled water, the copious bowel discharges continuing during the same time about once an hour. How he lived on that alone, I do not know, but the fact that he did it, impressed forcibly upon my mind one thought; namely, how little will support the human body if that little be taken at *short intervals* and with *persistent regularity*. On the eleventh day he vomited the peptonoids, and believing that he was rapidly passing away, we decided to try something else. Horlick's Malted Milk was rejected instantly. We then returned to cow's milk, sterilized, mixed with equal portion of lime-water, giving one teaspoonful every half hour, which was retained; then, after half a dozen feedings (if such they may be called) we increased to two teaspoonfuls, then to four, and finally to one ounce, the intervals being two hours. It will be seen that he was getting six ounces of milk in twenty-four hours. Finding that he was not gaining any strength, but rather losing, we gave the white of egg dissolved in water, at intervals, for one day, but it came through without being digested at all. We then tried Mellin's food, prepared in the usual way, but it came through just as so much sand would have done, and the diarrhœa and other symptoms grew worse. After running the gauntlet this way with various preparations, both proprietory and home-made, we came back to the sterilized cow's milk, mixed sometimes with table tea (two cups of milk to one of tea, which did well) and then with limewater, until finally we crept up to the undiluted sterilized milk, gradually increasing the allowance as we found it could be borne.

I wish just here to record my judgment that when the fresh milk of a healthy cow can be obtained, it is the best substitute for mother's milk, and the best of all food for a sick baby. But perhaps some one may say that I have jumped at this conclusion because I found it best in the case under consideration. But, really, this case only served to confirm an opinion already formed from all my previous experience in baby practice. I wish further to say that great care must be taken in sterilizing the milk, lest it be too long subjected to heat, for *boiled* milk will not nourish the baby. He maw keep it down all right, but will gradually lose strength and vigor.

Drugs. In attempting to control the diarrhœa, the most favored drugs were used, including calomel, castor oil, bismuth subnitrate, bismuth subgallate, zinc sulpho-carbolate, salol, ipecac, protan, different preparations of opium, etc. These were used either singly or in suitable combinations, without any apparent benefit. After faithful trial for about two weeks, they were all abandoned, and the problem before us was to keep the child alive, if possible, until nature could establish normal conditions.

After all, this is the point that should claim out attention. So, to this end, we devoted our attention to the question of nutrition, as already detailed, and to others measures as the following: When the temperature was high the body was sponged with alcohol and water, with an occasional dose of acetanilid. When the extremities were cold they were rubbed with alcohol and olive oil. The colon was washed out with normal salt solution, sometimes with alum and zinc sulphate (10 grs. of each to the pint), or with Listerine (two ounces to the pint). For the rectal tenesmus, injections of starch and deodorized tinct. of opium were often tried but always so promptly rejected as to be of no avail. The teratment found most beneficial for this condition was the washing out of the colon, as above stated, and then the injection of one ounce of olive oil. This was always followed by relief, well marked and prolonged. Strychnia sulphate was given whenever the condition of the pulse seemed to indicate, making the intervals six hours, the dose being 1-200 of a grain, equivalent to 1-20 gr. for an adult. French brandy was also freely used, half to one drachm every two hours, p. r. n. For the tetanic convulsions the main reliance was dead tinct. of opium(two minims) with sodium bromide (four grains). This acted satisfactorily. The child seemed too weak for chloral, and opium was preferred because it stimulates the heart, lowers the pulse rate, and is classed with the cerebral depressants. Besides, it controls the nerve centers and does *not* increase the tendency to coma, because it is now believed that opium produces sleep by a double influence; (1), on the vascular system, causing anemia of the brain; and, (2), on the cerebral cells, diminishing their activity, and consequently lessening their demand for blood. This little

patient had also a bad case of stomatitis which was successfully treated with two atomizers, one with borax solution (one to thirty, as advised by Strumpell) and the other with the following:

℞—Acid. Carbol.....m. xxxiij
Glycerin.
Listerin. .....aa ℥ss
Alum
Zinc. Sulph.....aa gr. v
Aquæ .....q.s ℥iv

This makes a two per cent. solution of carbol ic acid.

To sum up the drugs from which most benefit was derived, I would mention calomel, castor oil, bismuth, opium, strychnia, olive oil and alcohol. I would not like to undertake the treatment of a case of this sort without a little calomel and castor oil. We are told that fifteen varieties of bacteria have been isolated from the stools of children suffering from summer diarrhœa. I believe that calomel is about as good an antiseptic as we can safely use, and should be freely given, as the case may require. As to bismuth subnitrate, I saw no benefit from it at first, giving it in two grain doses every three hours; but later I decided to give five grains every two hours, each dose suspended in a teaspoonful of mucilage acacia,, for which hint I am indebted to Dr. Janeway, of New York. From this I found the greatest benefit. Whenever the stools had a foul, cadaverous odor it was almost immediately corrected by a few doses as above described. The salts of bismuth being insoluble, their action is chiefly a local one, they being sedative to the end-organs of the nerves, though a minute quantity (it is believed) passes into the blood, promoting constructive metamorphosis by increasing the appetite and digestion. They are also feebly astringent, coloring the stools from their conversion, in part, into the sulphide. They are said to produce toxic symptoms if taken in large doses for a long time; hence it is best to administer one day and omit the next. The action and uses of the other drugs mentioned in the above list, have already been sufficiently described. I might say, however, that if any preparation of opium is to used, it is better to give it unmixed with anything else, because children are so susceptible to its influence that the doses must be few and far between. So, if combined with other things that ought to be given oftener, we would be seriously embarrassed.

In conclusion I desire to say that so far as human instrumentality is concerned, this little patient owes his life to untiring persistency, to promptness, and to excellent nursing more than to any special exhibit of medical science.

It is said that "eternal vigilance is the price of liberty." It is certainly the price of *life* in a case like this.

REPORT OF INTERESTING SURGICAL CASES.*

By EDWARD T. HARGRAVE, M. D., Norfolk, Va.

Case No. 1.—*Appendix Sloughed Off; Operation.*

J. A. P., white male, 24, carpenter. Family history negative. Enjoyed excellent health with the exception of four attacks of "belly ache" within the passed two years. The attacks had never lasted more than two hours, and he had never been treated by a physician.

July 8, 1904, 3 P. M. while at work, he was taken with sudden severe pain in the abdomen, and on his way home a druggist gave him one dose of paregoric and ginger, which gave him relief for several hours.

I saw him first at 7 P. M. and found his condition as follows: Temperature, 99 degrees; pulse, 80; respiration, hurried. Bowels regular. Tenderness and rigidity marked over abdomen, but no swelling. Pain constant and severe—referred to umbilicus. Placed ice bag to abdomen and gave morph. sulph. gr. 1-8 hypodermatically. Saw him again at 11:30 P. M. and found him worse. Temperature, 99.5 degrees; pulse, 90; suffering much pain. Abdomen was swollen and very tender. Gave morph. gr. 1-4 and kept ice bag to abdomen. 7:30 A. M. admitted to St. Vincent's Hospital. Temperature, 99 degrees; pulse, 100; respiration, 30; suffering great pain, anxious countenance, abdomen much swollen and extremely tender. Prepared for immediate operation, but operating rooms engaged and not avail-

*Read by title before Medical Society Virginia during its 36th Annual Session at Norfolk, Va., October 24-27, 1905.

able till 12. At time of operation, his temperature was 100 degrees; pulse, 96; respiration, 30, and man appeared to be very ill.

Operation: Incision over region of appendix. Upon entering the peritoneal cavity, a large quantity of very offensive green pus poured out of wound. Omentum adherent to parietal peritoneum and intestines. Appendix was black and lying loose in abdomen with some fecal matter. Peritoneum and intestines very much injected and looked as if peritonitis had set in. Cecum inspected and a round hole where appendix had sloughed off was found. The hole was closed with a fine silk suture, the abdomen flushed with a large quantity of warm sterile water, and an iodoform guaze drain inserted. The patient did not take the anesthetic well, and it had to be discontinued once or twice. Suffered with nausea and distention for forty-eight hours, but only received one hypodermic of morphia after operation. His recovery was uneventful. Previous to operation I did not consider the man desperately ill on account of his good general condition, and the short duration of sickness. This case illustrates the fact that symptoms are not always indicative of the gravity of the internal lesion, and it is safest to operate within the first twelve or twenty-four hours.

Case No. 2.—*Cancer of Descending Colon. Death before Operation.*

W. A. J., colored male, 50, collector, and ex-soldier. Family history negative. Had always enjoyed good health until date of last illness, excepting several attacks of cramp colic, which had always yielded to domestic remedies. Last attack occurred two years ago, and was relieved by one dose of Squibb's mixture. July 1, 1905, was taken with an attack of cramps, and after trying domestic remedies, he called in a colored physician, who administered several heroic doses of cathartics, including two doses of croton oil, morphine and other sedatives. Vomiting began after twenty-four hours, and continued from time to time until he was admitted to hospital.

I saw him in consultation July 4th at noon and found patient with an enormously distended abdomen, small, rapid pulse, high temperature, sunken eyes, clear mind and very anxious for us to do something for him. He gave a very intelligent history of his illness. He was sent to the Protestant Hospital immediately, where Dr. Gwathmey saw him with me. Patient was placed on a table and we started to give oxygen-chloroform, but he began to sink rapidly and died before we could enter abdomen, notwithstanding heroic stimulation, artificial respiration, etc.

Partial post mortem revealed an annular cancer in first part of descending colon about 1 1-2 inches long, involving all the coats of the bowel except the peritoneal, and occluding the lumen so that you could scarcely get a small probe through it. One or two caseous tubercular glands were found in the mesentery below area connected with the part of the bowel containing the growth. The contents of the abdominal cavity presented evidence of a general peritonitis.

The interesting features connected with this case were: The absence of any loss of weight, cachexia, or other symptoms of malignant disease, and the regularity of the bowel prior to last illness. I think it likely that the powerful purgatives caused the complete obstruction by irritating growth.

Case No. 3.—*Small-celled Osteo-Sarcoma of Femur. Amputation. Recovery.*

J. R., colored male, 50, oyster shucker, house cleaner, and local preacher. Admitted to Protestant Hospital Feb. 10, 1905. Family history: Mother and father died from unknown cause at an advanced age; two brothers and one sister, all dead, cause of death unknown. Had all diseases of childhood, and pneumonia when a lad. Denies ever having any specific disease, and enjoyed good health until November, 1904. While at work shucking oysters on the above mentioned date, he was suddenly taken with a pain in the knee and lower part of thigh. He is positive that he has never at any time been injured. The pain was not sufficiently severe to compel him to stop work until about December 5th, and I saw him for the first time three weeks later.

I found the knee slightly swollen and sensitive, and treated him for articular rheumatism, using iodides with salicylates because he denied any specific history so emphatically. I did not see him for several weeks, and his condition improved sufficiently by January 1st to enable him to go outside and walk around. After he had been up for several days, the pain return-

ed, and I saw him the second time about January 15, 1905. The pain had returned and was confined to the thigh almost entirely. There was no tenderness except on very deep pressure just above the knee, and I compared the two limbs and the only difference found was the knee on the affected side appeared slightly larger. His temperature was normal, pulse rather quick. I ordered ascending doses of iodide potash and was sent for again February 10th. The day before he had noticed for the first time a swelling just above the knee, and that night about 12 o'clock he heard and felt his leg snap, and told his wife that it was broken.

I ordered his removal to the Protestant Hospital, and his condition was as follows: Temperature, 100.8 degrees; pulse, 120, full and strong; respirations, 26; heart, lungs and kidneys normal, no leucocytosis. Thigh was fractured about three inches above the knee, and the sight of fracture was symmetrically swollen. I thought the hardness of the swelling was callous and attempted to secure union by placing limb in an extension apparatus, and inspected seat of fracture daily for several weeks, and noticed that the swelling increased. The man was growing a little weaker each day, and I decided to amputate. Dr. Smith, of the Protestant Hospital staff, diagnosed sarcoma, and Drs. Ruffin and Royster agreed with him. A few hours before the time set for the operation, the man's condition became critical and he was hurried to the operating room. He was placed on the table, and active stimulation begun with the anesthetic. I had his limb bandaged in cotton, and surrounded him with hot water bottles. His temperature had fallen several degrees within a few hours, the tumor had greatly increased in size, and the pulse rate had jumped to 150 and very weak. In doing Weyth's hip joint operation, a great quantity of partly coagulated blood gushed from the part of the thigh next to tumor when I attempted to cut away four inches of soft tissue to give me room to ligate vessels. Being informed that the patient was pulseless, and thinking that I was dealing with an aneurysm, I hastily amputated at the lesser trochanter. The anesthetic had to be discontinued before the bone was sawn through, and was not resumed, and the patient was kept alive with great difficulty. The patient's condition remained desperate for 24 hours, but aside from an infected wound, his recovery from the operation was uneventful, his general health being fully restored after a few weeks.

An examination of the tumor showed that it was not an aneurysm, as the vessels passed under and to the side without communicating with it. The walls of the tumor were very hard, about an eighth of an inch in thickness and the cavity was filled with disintegrated bone, and some blood, the greater part of the latter having been pressed out during the operation. The hemorrhage in the cavity of tumor caused the dangerous symptoms. Dr. Taliaferro, confirmed our diagnosis and reported that it was a "small cell osteo-sarcoma." The patient refused to have the balance of the bone removed before he left the hospital, and an examination of the stump a few days ago revealed a recurrence of the disease.

Case No. 4.—*Uterine Fibroid, Pus Tubes, etc.*

V. A., colored female, married 15 months. Family history negative. Had always been healthy. Menses regular, normal in duration and quantity, never had whites, or the slightest vaginal or pelvic trouble. August 18, 1905 at 3 A. M., she was taken with a sudden, sharp pain in the abdomen.

I saw her at 7 A. M. and found several women holding her on the bed. She was suffering great pain and could not answer any questions. Abdomen was enlarged, tender and tympanitic; I gave her half grain morph sulphate hpodermatically, and made a vaginal examination. Found a hard mass filling up pelvis completely; cervix hard, but otherwise normal. Sent her to Protestant Hospital, and after a hasty preparation for a laparotomy, an incision was made in the median line, and a fibroid of considerable size was found. It was adherent to the bladder, rectum, omentum, several loops of small intestines and to pelvic walls. A band of tissue was found constricting the small intestines to a dangerous degree. Left ovary cystic and tube, very much distended and filled with pus, was pushed out of pelvis by fibroid, and adherent to abdominal wall and intestines. Supra-vaginal hysterectomy and removal of left ovary and tube. Recovery.

This case is interesting because this woman had no pain prior to attack a few hours before operation, and had never had any disturbance of the menstrual function nor any symptoms characteristics of pus tube or fibroid.

460 *Freemason Street.*

PULSE-TENSION, ARTERIO-SCLEROSIS AND NEPHRITIS, IN SEVERAL ASPECTS.*

By WILLIAM S. GORDON, M D., Richmond, Va.,

Professor of Practice of Medicine and of Clinical Medicine, University College of Medicine, Richmond, Va.

The title of this paper indicates that a lengthy consideration of the normal or morbid conditions mentioned is not proposed. The design is to call attention to a few facts concerning the relation which the conditions bear to each other.

Hyper-tension of the pulse and arterior-sclerosis are, of course, two different things, for, in acute nephritis, the pulse tension may be excessive without structural change in the arterial coats; but arterio-sclerosis is almost invariably accompanied with hypertension. The muscular coat of the artery being weak, the vessel dilates, becomes tortuous and sooner or later reveals ulcerative changes or calcareous deposits. As a result of these changes, the blood current grows sluggish, and the heart walls enlarge in order to atone for the deficiency in the tubes. Hence we find the two main factors in hypertension—increased cardiac action and peripheral resistance. On the other hand, if acute nephritis can produce hyper-tension, it is reasonable to infer that chronic nephritis can also do the same thing; and if the histo-mechanical theory of arterio sclerosis be true, it is easily understood that the changes in the vessels may be secondary to continued diseases of the kidney. The histo-mechanical theory attributes the vessel changes to long continued or abnormally forcible action of the blood current upon its containers.

The majority of clinicians and pathologists teach that increased growth of connective tissue is largely owing to systemic poisons, such as lead, uric acid, syphilitic toxins, and other chemical or microbic agents. It cannot be denied that cirrhosis of the liver is frequently caused either directly or indirectly by alcoholic stimulants, and it must be acknowledged that chronic interstitial nephritis can have the same cause. Why, then, is it not logic to assume that arterio-fibrosis can be brought about in a similar manner? Yet it is claimed by some high authorities that inebriates are no more liable to arterio-sclerosis than total abstainers. How are the conflicting statements to be reconciled? Simply by putting them together, believing the whole, and drawing correct conclusions.

It is probable that all aged persons manifest more or less or arterio-fibrosis or selerosis, which is a natural result of the incessant pressure of the blood current upon the vessels and the altered conditions of the blood itself. In these cases, the kidneys and heart may be comparatively sound, exhibiting only those degenerations incident to longevity, or being influenced by the arterial changes proportionately to the extent of these changes. It is the wear and tear of long existence. On the contrary, there are occasionally well marked cases of arterial degenerations in the young, who suffer partly from predisposition or inheritance. But the large majority of cases of arterio-selerosis associated with cardiac or renal lesions, or occurring in the comparatively young, are, doubtless, due to conditions which change the normal composition of the blood, increase its pressure, or do both at the same time.

Granting that some alcohol habitues do not have arterio-selerosis, and that the histo-mechanical theory explains certain other cases, it is none the less true that every practising physician knows that the long continued use of alcohol is so often accompanied with nephritis, arterio-sclerosis and hyper-tension in middle age or even in the young that the morbid states must be regarded as the effects of the alcoholic cause. Removing the stimulants and correcting the diet will almost certainly effect a change for the better or restore the patient to health, provided he submits to treatment in time. The results of remedial measures often knock theories in the head. The existence, however, of toxins not yet discovered, but responsible for interstitial over-growth, is highly probable.

If the above observations be true, it is easily understood that chronic nephritis can precede arterio-sclerosis, or that the latter may precede the former, or that both may have a simultaneous origin from a common cause. When both conditions arise at the same time, they are due, in my opinion, to a systemic and most probably to a toxic agent, even if mechanical influences be operative. Whether the arteries or the kidneys are to suffer first depends largely upon constitutional peculiarities or associated causes. In such cases hyper-ten-

*Read before Southside (Va.) Medical Association, during its meeting at Petersburg, Va., December 12, 1905.

sion of the pulse is a later manifestation, due partly to the effort of the heart to equalize the circulation or to increase its flow through the systemic or renal blood vessels. Long-standing cardiac hypertrophy leads to dilatation, murmurs of relative insufficiency, and pulmonary, hepatic and renal passive hyperæmia. This is the end of the pathological chain when its formation is not prevented by one or more of the complications of diseased arteries or kidneys.

A dilated right heart, however, may be present while the pulse tension remains high. This condition is of great interest, for it has a practical bearing upon the kind and the combination of drugs which are required to overcome the difficulties in the way. When the right heart is dilated, dilatation of the left heart has often preceded, but the right heart may give way, disproportionately, before the left, and while the latter is enabled to propel a certain amout of blood into the systemic arteries with more than normal force. This fact and the resistance of the arteries themselves easily account for the hypertension which, at the first blush, we might be disinclined to suspect. In cases of this character the indications are to rest, nourish, and stimulate the right ventricle, and at the same time decrease the arterial tension. The first problem is solved with digitalis or its substitutes, and strychnine; the second with the nitrites. Both problems are solved simultaneously by the administration of the remedies in combination, and by such hygienic measures as apply to both of the morbid states.

It will be observed that the therapeutic deductions have been applied to the worse end of the chain. What about the best end, if such a term be admissible? It is true that the sphygmomanometer may afford us the first indication of what is wrong, and the value of this instrument in ascertaining the degree of blood-pressure, with its bearing upon accurate diagnosis, is unquestionable; but often time can be gained by an early recognition of those incipient conditions of which increased blood-pressure is a later manifestation. Patients with apparently trivial ailments may not be aware of them, or else fail to consult the physician when conscious of their maladies. The best doctor is he who first applies his powers of observation, analysis and synthesis to the correct interpretation of primary lesions, and who, as a consequence, is the most successful in the treatment of his cases.

The recognition of the structure first affected or most involved, when several morbid conditions are associated, is important; for although secondary results often become primary causes and must receive due attention on acount of their reactive influence, still the experienced therapeutist endeavors to remove the main and primary cause of the different lesions manifested. Pulmonary oedema, for instance, resulting from cardiac dilatation caused by advanced arterio-sclerosis must be promptly relieved, if possible; but it should not be forgotten that the equalizing of the circulation in the arteries and the toning up of the heart are essential to the obtaining of permanent relief for the lungs. Moreover, the fact should be always borne in mind that the chief primary cause is sometimes the least evident. A patient may be treated unsuccessfully for an enlarged liver when myocardial degeneration is the starting point of his ill health; or suppose disease of the kidney may resist all remedial measures until digitalis enables the heart to propel its blood forward and thus reduce the engorged veins in passive hyperaemia.

Referring again to the sphygmomanometer, I do not wish to unduly exalt the usefulness of the instrument, but I do wish to emphasize the truth that it frequently confirms diagnosis made by other methods, that it occasionally affords the best means of diagnosis, and that its usefulness is by no means limited to nephritis and diseases of the circulatory system. With its aid I have been enabled to satisfy myself of cerebral pressure, and to make a more judicious selection of drugs in various diseases than could have been made without it. The little column of mercury does for blood-pressure what another column does for temperature. It furnishes at times a reliable guide to venesection, teaching us that a small, thin, frequent pulse may be over-tense, and that a large, full, and possibly slow pulse may be one of abnormally low tension. Let us welcome, use, develop, and apply every instrument and every means of diagnosis, for too often we are unavoidably forced to work by candle light while wishing for the rays of the mid-day sun.

With regard to the kidney, it behooves us to be careful about making a diagnosis of acute or chronic nephritis only by the presence of albumin and casts in the urine. Uric acid and

calcium oxalate crystals are capable of painting a gloomy renal picture for the physician. Get rid of the painter, and the picture vanishes. I have seen urine reveal a large amount of albumin and large hyaline and granular casts, all these evidences promptly disappearing under remedies addressed to the heart, and reappearing when the heart again failed to do its duty. In interstitial nephritis the morbid changes are often slowly progressive or possibly at times stationary, and there is no reason for doubting that different portions of the kidney are involved at different times. Grave uraemic complications may occur, yet the patient may recover from convulsions and mania and live in comparative comfort for many years. Acute conditions engrafted upon chronic ones often subside, leaving the patient in a fair state of health. And it is well to remember that an overburdened liver means a sympathizing kidney. Observe this fact in an attack of so-called biliousness. Free action on the liver with cholagogues is always appreciated by the kidney, and a good dose of calomel, podophyllin, or other kindred drug will rarely fail to make the little sewers arise and shine.

The usefulness of drugs in arterio-sclerosis is, to say the least, questionable. Iodine in one form or another and bichloride of mercury are in good repute by some clinicians as retarders of interstitial overgrowth. If they do so, the benefit is in all likelihood due to their influence upon the digestive functions and to the elimination of lead, uric acid, and other injurious products. It is well to use the drugs, but it is better to invoke the aid of Hygeia, who never directs her followers to the drug shop.

6 *West Grace Street.*

Bubonic Plague. Cause, Dissemination, Forms and Clinical Symptoms. Serum Theraphy.*

By THOMAS R MARSHALL, M. D., Mani'a, P. I.,
Chief Health Inspector for the Philippine Islands. Member of the Board of Health for the Philippine Islands and City of Manila.

Probably no discovery in the realm of bacteriology has been more important, or more far reaching in its effect, than the discovery of the cause of plague by Kitasato and Yersin, in 1894. Prior to this year the disease had remained enveloped in darkness, in spite of the long and continued search for the true cause, on the part of investigators in the various parts of the world. When we consider, that plague is probably the oldest disease recorded in history, and that for ages, thousands of human lives are annually sacrificed to it; commerce is destroyed, and even countries of modern civilization are infected or threatened, we realize the magnitude of the blessing thus conferred upon humanity, by science, for following the discovery of the cause, the method of propagation and means of preventing the spread became matters of scientific certainty.

The cause of plague is a bacillus having the appearance of a small short rod, with rounded ends, (it varies under certain conditions) of the non-suore bearing variety. It is characterized by the faculty with which it enters the human organism, and the property of its rapid multiplication. It is found in large numbers in the expressed juice from the bubo, and in grave cases in the blood. While so virulent, its resisting power to chemical disinfectants is feeble, succumbing promptly, for example, to a one per cent. solution of carbolic acid. In the cultivation of the bacterium of plague on agar or gelatin, there appears small rounded dew-drop like colonies, with a darker, somewhat raised, slightly yellowish center and a perfectly homogeneous marginal zone. If this growth is examined in stained cover glass preparations, they are seen as short rods with rounded ends, exhibiting polar or peripheral staining, which, however, is not so well marked, as it is in a smear made directly from post-mortem material.

The stains from the cultures show the bacilli as individuals, as diplo-bacilli and as short chains. In older cultures, particularly in salt agar cultures, club-shaped, large round or irregular involution forms are seen. If cultures are rased in bouillon instead of solid media, there is formed a growth extending from the surface downward in the form of bands, or as they are called "stalactites." This is very characteristic for a growth in bouillon. In cultvation, its virulence decreases rapidly, but it is easily strengthened anew. If broth containing B. Pestis is subjected for an hour to a temperature of 50 C. all organisms are killed. The serum of a patient convalescent from plague

*Read before 36th Annual Session of Medical Society of Virginia, at Norfolk, Va., October 26, 1905.

may produce the phenomena of agglutination. This agglutinating power, however, is not manifested before the seventh day of the illness and continues to increase until the second or third week of convalescence.

Under special conditions the bacillus can retain its virulence for a long time. This appears to be well demonstrated in cases of infection transmitted by infected clothing.

In cases in which the virulence of the organism has been greatly diminished, the association of other microbes, particularly streptococci, with the bacillus, appears to arouse its activity. Knowledge of this fact may be important, because Yersin claims to have found the plague bacillus in a non-virulent state, living as a simple saprophyte, at a depth o 4 c. m. in the soil of places where an epidemic was raging, and also sometimes after it was over. This fact strengthens the belief that the bacillus can easily recover its pathogenic activity under certain conditions; as when placed in a medium exceptionably favorable to its development, or, on association with certain other microbes.

It has been claimed that desication rapidly kills the organisms. This appears to be questionable. It is evident, however, that the organisms looses to some extent at least its virulence by drying, and that to retain its virulence fully, it requires the action of both heat and moisture. The presence of organic matter, animal or vegetable, in a state of decomposition seems to furnish most favorable nidus for its growth, which will account for its more or less porlonged existence in oriental countries and prolonged existence in oriental countries and the comparative rarity of its appearance in Europe, since the existence of improved hygienic conditions. This does not mean, however, that filth and crowded conditions are alone responsible for the disease, for certain experiments have shown, that in virulent cultivations placed in dark and damp houses, rapid proliferation of fungus and often saprophytes, strangles the bacillus in two days, and inoculation produces no results.

The bacillus of plague is pathogenic, not only for man, but also for various other animals, as rats, cats, pigs, sheep, oxen, etc., it is not so to an equal extent for all; besides, the infection of an animal, by pathogenic products from another of a distinct species, does not always give results, and when it does, there appears in virtue of the transmission, a considerable difference in the intensity of the transmitted disease. This makes it appear that sometimes a different microbe is in question. Although the rat is regarded as the most important factor in the propagation of plague, the infection of the animal with a pathological product from man, is not always very virulent in the first individual inoculated. If a second animal is infected from the first, the virulence augments, and in the third experiment, it may actually reach the normal intensity of the disease of the species in question. It appears then, that organisms must adapt themselves to each new species.

On the other hand, by inoculation from one to another of the same species, the bacilli are obtained of a fixed virulence, according to the species operated on, so that inoculation causes the death of a guinea pig in three days, a mouse in two. If a guinea pig is inoculated with the bacillus which kills the mouse in two days, the animal may not die until five or six days. A second guinea pig infected with the bacilli from the first des in a less time. At the end of a series of inoculations, bacilli are obtained which kill a guinea pig in three days. These bacilli, however, are not all as virulent as they were for the mouse. It is necessary to have recourse to new inoculation of the species to kill the animal in two days, as at the beginning. The difference in susceptibility of different species has been proven by numerous observations and experiments.

In order that plague infection may be disseminated, there must be means by which the organism can be harbored and conveyed, and various experiments have been directed towards determining the length of time that nfected material can remain active. The organism of plague is contained in the juice and pus of buboes, abcesses, wounds, and sometimes in the products of expectoration; more rarely in the stools and urine of patients. It is sometimes found in the blood. It effects entrance especially by wounds, excoriations or crevices, and small lesions, which pass unrecognized. It may be transported by parasites, fleas, etc., and especially by rats and mice. Rats are often sick with the disease before men are attacked and in certain epidemics, a great mortality among rats has preceded, by several days, the first cases among human beings. The germ of plague may be transmitted by the most diverse

objects, as clothing, body linen, bedding, lint, earth, wool, carpets, rags, mats, hair, untanned hides, etc. It is claimed by some that food and drink may serve also as the intermediary of contagion. The transmission may be effected by the respiration of dust in which the germ of plague may be contained. In the pulmonary form, the transmission is usually effected from person to person by the sputum of patients which contain the bacilli. Transmission may also be effected to a distance by means of the intermediaries already cited—clothing, body linen, bedding, etc., by convalescents, by patients with mild attacks, (ambulant form) and by rats. Experiments have shown that material, such as lint, earth, etc., has remained active for eight days, and sputum from patients affected with pneumonic form, kept in vessels plugged with cotton wool, was no longer virulent in sixteen days. In ordinary drinking water, the baccilli die in three days; in sterilized bilge water, three days; in direct sun light, three to four hours; in ordinary room temperature, the bacilli are killed by drying in four days.

The methods by which the infection enters the human body are three in number, viz: by inoculation (through an external wound or abrasion); by respiration; and by introduction into the stomach. The Japanese investigator, Aoyama, contracted the disease by inoculation, incurred during a post mortem, and one of his assistants died of the disease, contracted in the same manner. Mr. Muller became infected and died of plague during an investgatoin of the disease, in Vienna, and a somewhat similar case of infection is reported as having occurred at the University of Michigan. An attendant at the Board of Health morgue, Manila, died of the disease, contracted while handling bodies, dead of plague; investigation showed in this case an abrasion, through which the man was infected, he having failed to carry out instructions as to precautionary measures. According to Lowson, skin to skin infection is impossible, unless the one to be infected has some wound and the infector's skin has been soiled by the contents of buboes, blood or feces.

The individual may contract the disease by inhaling the dust from infected houses, also by imbibing fluids or eating infected foods; by prolonged and intimate contact with the plague stricken, as in the case of a nurse carrying a child ill with the disease; also by the handling of formites—clothing, bedding, and other infected material, and by eating with soiled or unwashed hands. Infection from bodies found in the street, in houses, or awaiting burial may occur, if the clothes have been soiled by discharges.

The conditions favoring plague dissemination are similar to those favoring typhus fever, viz: crowd poisoning, bad ventilation and drainage, impure water supply, famine or imperfect nourishment and inattention to sanitary requirements. It is probable that human habitations and the ground may become so thoroughly infected, as to establish endemicity. The bacilli may infect food and water; clothing and other personal effects, bedding, etc., may be infected through discharges; also the bacillus may be carried in dust arising through the cleansing of dwelling houses, which plague patients have occupied.

Very important elements in the spread of plague in houses and localities, are rats and other animals. It has been found that rats, mice, snakes, beetles, bugs, flees, dogs and jackals, are infected during an epidemic. It is significant, that the epidemics do not attack the purely herbivorous animals, such as horses, oxen, sheep, goats and rabbits. Rats die in large numbers, and generally this phenomenon is observed in advance of the appearance of plague among human beings. The cause of this infection is still a subject of discussion. The soil becomes infected, and a very common belief in oriental countris is that the rats contract the disease from miasmatic emanations from the soil; this however, has never been scientifically demonstrated. Lowson explains that the mortality among rats, preceding an outbreak of plague, is due to the fact, that as rats are small and their respiratory organs close to the floor of the houses, they are more liable to inspire plague infected dust than are human beings.

In considering the transmission of plague over long distances, which usually follows the beaten routes of commercial intercourse, there are two factors which present themselves; the disease is conveyed, either in merchandise, or by persons in the incubative period of the disease. The period of incubation of plague has been variously stated as being from two to twelve days. Careful observations made in

plague detention camps in Kerachee district, in India, show, that after nine days, the contact, or suspect can be discharged, without fear of demonstrating the disease, unless from subsequent infection.

The forms of plague are: Plague with visible buboes, or bubonic plague; plague without visible buboes, or plague septicaemic in character from the beginning; pneumonic plague and intestinal plague; the latter is rare. Of these forms the bubonic is the most common. The point of entrance of infection can be frequently determined through wounds, pricks, bites of insects, etc., usually on the feet, legs, arms, and hands. At times, small red spots mark the point of infection, which becomes successively a vesicle and a pustule. Frequently, in the bubonic form, a series of vesicles mark the passage of the infection along a lymphatic tract or channel.

Bubonic plague begins by fever, (frequently preceded by a chill) of a greater or lesser intensity, often reaching 41 or 42 C., there is marked prostration, nausea and vomiting and pains in the head and limbs. The rapid appearance of granular enlargement, either in the groin, the axilla, or the neck—the involved plands present a surrounding area of œdema—the swelling is painful, if it remains diffuse, the general condition becomes more and more grave, with delirium, and progressive enfeeblement of the heart's action. Death supervenes rapidly, because the plague bacillus has passed into the blood; the disease has become septicæmic. In mild cases, the swelling is limited and an abscess if formed. Suppuration of the glands is ordinarly followed by a marked amelioration and patients whose glands suppurate may recover. It may happen, however, that the plague abscess may be the origin of secondary infection with multiple and prolonged suppuration, which may lead to cachexia. The appearance of buboes may be preceded by that of pustules, around which the skin becomes violaceous and finally ulcerates, (plague ulcers). Some patients present swelling and suppuration of the glands without general constitutional symptoms, who are nevertheless, plague stricken. This benign or ambulant form ought to be particularly guarded against, as it is often unrecognized and persons stricken with it may easily propagate the disease.

The serum from the swollen glands form pustules; the pus from buboes contain the plague bacilli and bacteriological examinatior gives a rapid and accurate dagnoss. These fluids should therefore, always be collected for examination.

Sometmes no enlarged granular swellings are noted, or there may be a slight increase of volume of lymphatic glands, in spite of which the fever, delirium, and other symptoms of plague poisoning, may be very intense. The disease is then septicæmic from the beginning and usually proves fatal within a few hours.

Pneumonic plague begins most frequently by a chill, with vertigo, injection of conjuctiva, particularly on the side of the lung involved (this appears somewhat characteristic), nausea, and pains in the head and limbs. The temperature is elevated. The general symptoms precede the pulmonary signs, which may not present themselves for three or four days after the beginning of the disease. The pulmonary symptoms presented are, pain in the chest; dullness, more or less accentuated; crepitant and sub-crepitant rales; frequent or sometimes incessant cough. The sputa, according to circumstances, are either abundant, fluid, serus, often foamy, and tinged red by blood, or visced and prune juice colored. Free spitting of blood may supervene. The vertigo of the commencing attack may disappear and consciousness be retained, elevated temperature, rapid pulse, tongue at first moist, then dry, and covered with a coating; cough and incessant expectoration; dyspnoea; delirium; petechial hemorrhages from mucous surfaces; enfeeblement of the heart's action; cyanosis and death from the fourth to the eighth day—rarely more delayed.

Differential diagnosis—pneumonic plague is distinguished from ordinary pneumonia, by the lack of harmony which exists at the beginning, between the severity of the general condition and the condition of the lungs as shown by physical signs. Pneumonic plague may be confounded with pneumonia with rapid course of influenza. There is but one precise means of making a diagnosis, viz., to make a bacteriological examination of the sputum, which contains numerous plague bacilli. It should be remembered that the plague bacilli do not exist in the sputum in pure cultures, but are always associated with staphylococci, streptococci, and diplococci. It must be borne in mind also,

that plague bacilli are completely decolorized by Gram's method.

It is needless to reproduce the long list of drugs which have been used in connection with the treatment of bubonic plague. None of these are accredited with practical value, other than when used symptomatically. Experience has shown that the only agent capable of modifying the course of plague is serum. It is well here to draw a sharply defined line between serum-therapy and serum-prophylaxis of plague. There is a wide difference between prophylactic or preventive serum, and antitoxic or curative. Any serum which is a curative against plague is preventive, but the reverse does not hold good. A serum perfectly prophylactic, may be powerless to cure, when once the disease has declared itself.

For the cure of plague, there is at present but one known remedy, and that is the curative or antitoxic serum. Of the several varieties used, that made after the method of Shiga has given the best results in our hands. It is prepared in the Government Serum Laboratory, Manila, in the following manner: A fresh culture is obtained from the guinea pig. The culture-media is ordinary agar-agar in test tubes. After inoculating the tubes, they are allowed to remain in the incubator for forty-eight hours, at a temperature of about 32 C. A horse is then inoculated with 0.075 gms. of the sterile bacilli, and one week later with 0.150 gms., continuing weekly, this proportionate increase until the animal receives 3 grms at a dose. The interval between inoculations is then increased to tend days, but with the same then increased to ten days, but with the same proportionate increase in dosage, until it receives 5 gms. at each dose. The animal is then bled and the serum prepared in the usual manner, however, frequently tested to determine its strength and to make absolutely certain that it is sterile before sent out for use.

Of the several varieties of preventive or prophylactic serum, used in our work, that made also after the method of Shiga, has proven most satisfactory, and is now used exclusively. It is also prepared in the Government Laboratory, in the following manner: The bacilli are obtained in the same manner as above. They are then scraped off the agar and transferred to a sterile mortar, which has been accurately weighed, then weighed again after the addition of the bacilli. A known amount of sterile saline solution is then added to the bacilli and the mixture passed through a very fine meshed, sterile, wire strainer, to remove any agar which may be present. The solution is again weighed and the increase in weight, above that of the saline solution added, shows the amount of bacilli present, and acts as a control over the first calculation. Upon determining the amount of bacilli present, the flask is then placed in a water bath and the water brought to a temperature of 60 C., and held at this temperature for thirty minutes. After completing this sterilization, a sufficient amount of carbolic acid and an 0.8% sodium chloride solution is added, so thath 1 c. c. shall contain 0.006 grams of the bacilli and 0.5% of the acid. Before using, cultures are made and one or more animals are inoculated, to determine absolutely that the prophylactic is sterile.

The results accomplished in Manilla from the use of preventive and curative plague serum, have been gratifying almost beyond expectation. More than 30,000 prophylactic inoculations have been accomplished during the past three years, and not one has resulted unfavorably. Formerly, practically all plague cases occurred among Chinese; now it is seldom that death of one of this race, is attributed to this disease. This can only be accounted for, by the protection thus given through primary and secondary inoculation.

The American Health Officer. The Duties of His Office—The Competency of His Ability—The Reverence of the People Towards Him—The Curbed Power of His Executive Authority—The Necessity of a National Health Organization, Etc.

By E. A TIMMONS, M. D., Columbia, Tenn.

The American people, as a whole, and more especially in certain localities, do not hold the American health officer with that high esteem that they should. They do not seem to realize the importance of his duties and the value of his work. They seem to think that his office is a matter of civil form, and that it is not a position for the public interest and welfare. There is a lack of education on the part of those peo-

ple, that is not only responsible for their indifference with reference to the duties of such an official, but is also the cause of their frequent most bitter feeling towards, and even an open fight at times against him. Sometimes, even the country press is so thoughtless as to take part with these resisting people, and that, too, in the midst of a prevailing and dangerous epidemic. Or, to say the least of it, the country press frequently will keep mute in the fight, when such publications should be using their influence in educating the people to assist the health officer in his beneficent work.

Without naming localities, health officials, newspapers, etc., the writer will take up the subject, as he has studied it, and will undertake to discuss it from several standpoints.

In the outset, however, the writer admits that the only time that he ever was connected with a health department of any kind, was during the Maury county small pox epidemic in the Fall of 1900. At that time he was associated with the State medical staff, until the Maury county quarantine was raised. During this official career, as well as before it and since, he has given considerable thought and study, for his own enlightenment, as well as for the good of the general public, to such various phases of the subject as he shall endeavor to discuss in this article.

THE DUTIES OF HIS OFFICE.

In general terms, the duties of a health officer are to guard and to protect the life and health of that part of the commonwealth, over which he has been appointed, from acute contagious and infectious diseases, until he is succeeded by another. He is a standing picket, as it were, against all possible, threatening and encroaching diseases, whether or not these diseases be of the epidemic or endemic type.

Now, we will see to his duties and how he should execute the same towards preventing and fighting all such diseases.

Almost any disease is liable to break out in its climatic territory, unless the sanitary surroundings are kept in a clean and healthful state. Filth is the breeder of disease. It, therefore, behooves the health officer, first (whether there is any disease in sight or not), to see that his entire health district is put and kept, in the most favorably sanitary condition possible. This is the first duty that he should execute for the healthful welfare of his community.

Concerning threatening diseases, the health officer will find that any additional indicated prophylactic will prove more efficicacious in confining such diseases without the limits of his radius, if he has, first executed his duty with regard to all sanitary indications to prevent the occurrence of all possible diseases. This is the second duty that the health officer has to perform.

Should any disease steal or break over the line, and, consequently, begin to encroach upon his territory, the health officer must now execute the necessary measures to stamp out that which he already has on hand. In addition to that, he must also continue to execute those measures, already mentioned, to prevent, if possible, the further springing up, or breaking forth, of the disease, as well as a prophylactic against other diseases. This is his third duty, and these are the three important factors that the health officer should note, namely, *possible, threatening* and *encroaching* dangerous diseases with his territory.

The next factor, that is none the less important for him to observe, is to know how to hedge against possible and threatening diseases and how to successfully combat encroaching and prevailing ones.

It should be remembered that cleanliness is the best prophylactic that is a sommon armamentarium against the sudden breaking forth and spreading of all contagious and infectious diseases. And cleanliness loses not its virtue, either, in retarding the rapid spread of all such spontaneous evils. When fatal disease springs up like mushrooms at night, or begins to spread like the wild flames of a forest fire, in addition to a strict sanitary cleanliness, a strict quarantine, properly enforced, is the next best prophylactic that is a common armament against the progress of all acute infectious and contagious diseases. The next remedy that is a common preventive to the further spread of all such diseases, is a thorough disinfection of the body of the convalesced patient as soon as his recuperation will admit of it, or, in case of his death, an immediate burial of his remains.

Cremation is the more scientific method for the disposal of such remains, but it is not a popular method to urge upon the laity, lest the persistent advocate of the method should lose

both influence and popularity with the masses. It is one of those necessary scientific ways of blotting out disease, that takes time for the people to recognize. And I predict that they will finally be educated to recognize the fact, that cremation would only do for the body in a few hours what nature will do any way for it in a few years. In addition to that, cremation blots out the possibility of contracting the diseases from that body, while nature does not remove the possibility.

Under the head of prophylactics, all garments, compartments, furniture, etc., to which the patient was exposed, or that were exposed to him, should also thoroughly be disinfected at the earliest possible moment. All his dejecta, old clothes and, in fact, everything that was about him, and that is of no value, should be burned without delay. Don't bury such, as some professional men would direct. This is no scientific way of disposing of such worthless articles. *Burn them!* If you bury them some dog or animal might scrateh them up, or the diseased germs might find their way out into some public, or private, watering place, and thus continue, or start a new infection of the disease. The buried corpse is enough without buried old clothes, etc., for the people to take chances on in that ease.

Again, no one should be allowed to visit patioents with acute contagious and infectious diseases, except the regular necessary attendants, until they have convalesced, and aer gotten, with their surroundings, in a perfectly aseptic condition. The health officer and all attendants, who wait on such patients, should not, by any means, expose themselves to others, until they have changed their waiting garments, have thoroughly disinfected themselves, and are clad in garments free from the exposure of those diseases. But the strict observance of all of the prophylactie and remedial indications, that I have enumerated, are frequently broken by the health officer himself, his attendants, as well as the grumbling and rebellious public.

The two previous paragraphs enlarge, somewhat, upon the health rules and regulations that can be enforced with great success in all kinds of epidemics and endemics. And it is the duty of the health officer to have them all executed as nearly as it is in his power so to do.

In addition to these rules and regulations, we have special valuable indications for certain individual diseases. For instance, there are vaccinations against small pox, antidiphtheritie serum against diphtheria, and other serums that are more or less valuable in other diseases, all of which the health officer should utilize in their special, indicated diseases, *but not to the exclusion* of those already named prophylactics that are a common armamentarium against all diseases. The health officer should keep himself thoroughly posted on all of these remedies. He should be ambitious to grasp readily all new scientific discoveries that are developed in this field for the general publie welfare, so as to be able to execute such discoveries, when necessary; and, thus to keep pace with the medical progress of the times. It is of vastly more importance that the health officer do this, (as he, in one sense of the word, has the entire health and life of the public at stake), than it is for an ordinary practitioner to do so. The latter only has a small part of the general publie to care for.

It may be well, in this connection, to dwell a little upon the proper hygienic methods by which all prisons should be conducted, as sueh come under the supervision of a health officer. The writer is not so thoroughly acquainted with the sanitary management of the prisons of the larger eities, as he is with such institutions of some of the smaller towns and counties. Although, knowng of the careless managements in the sanitary department of some of the small prisons, he does not wish to criticise so mueh, as to instruct from a scientific point of view.

His attention was first attracted to this phase of the subject by two tubercular ex-prisoners who came to him for treatment. Their history showed that they contracted tuberculosis within the same prison walls. The writer also knows of two other ex-prisoners who died of tuberculosis. And, from all accounts that he ean gather, these two victims contracted the disease behind the same bars where the first two got theirs. So here is one prison that is responsible for the origin of four tuberculous cases and their deaths, that we have evidence of—and the Lord only knows how many other such cases this one prison is responsible for. The writer has also heard of other badly conducted prisons being responsible for spreading fatal diseases; and he does not doubt the truthfulness of it. Espeeially are portable workhouse prisons frequently kept in a careless and

filthy condition. That, no doubt, is the origin of many dangerous and fatal diseases, as, here (in addition to the bad unsanitary condition), prisoners have to be kept crowded closely together for the lack of necessary room.

Now, there is no excuse for prisons to be kept in such a state of uncleanliness, except an uncalled-for indifference and gross negligence on the part of some one to look after and to enforce the necessary sanitary requirements, for the protection of the prisoners' health. There is nothing, to the writer's knowledge, in the code, or laws,, of any state prescribing any kind of a disease as a penalty for any kind of a crime. If there is such an existing law(?), the prisoner should be kept free of the disease, until he is convicted of the crime that calls for such a penalty, to say the least of it. And when the poor convicted victim is inoculated, it should be done in a scientific way, so as not to jeopardize the health of the innocent.

Such facts of mortality, as have been pointed out in some of the previous paragraphs, show that prisons, like all other public institutions, as well as private ones, should properly be disinfected as often as necessary and that's pretty often too.

In fact, for the safety of pubic health, all prisons should have different compartments, like wards in a hospital, so as to separate the healthy from the diseased. Too little attention is given to the erection of modern hygienic prisons. The State should require of the architect to plan structures that will prove as as safe to the prisoners' health, as they will prove in keeping the prisoners safely confined; and the State should arrange tc have all other necessary prerequisites to the prisoners' health carried out. Thus, all newly brought-in prisoners should be inspected by a health officer All the healthy prisoners should be assigned to such cells as are kept for the healthful, while all the diseased ones should be given those cells that are set apart for the disease that they have, or as near thereto as it is possible. Arrangements could be made easily for such an inspection, by having a large well ventilated compartment in which to confine all prisoners, until such an inspection could be made. All the prison cells should be arranged with proper ventilation that insures good health too. All ventilation should be arranged so as to render impossible any injurious drafts upon the inmates, as drafts are frequently responsible for lowering one's vitality, and thus preparing his constitution for disease.

When each prisoner vacates his cell, that cell should immediately be thoroughly scoured and disinfected before a new prisoner (though with the same disease as that affected the released prisoner) is assigned to it. The floor, and sides up five or six feet, of the common hallway to which all the prisoners have access at certain hours, should receive a thorough mopping daily. And all the prison cells should have a thorough scouring and disinfecting at least once every three months. All of the prisoners should be required to take a bath and to change their undergarments and top shirts every week; and they should be taught not to expectorate upon the floors and walls of the prison, but to use cuspidors which should be provided for them. This latter requirement would be rather hard to get some unruly prisoners to heed, but if the State would attach a fine to such violations, it would soon teach the unruly prisoners to observe the health rules. Where prisoners are unable to furnish their own necessary change of clothing, the necessary changes should be furnished by the State.

These rules of sanitation should apply to all prisoners, especially; and, as near as possible, to all kinds of prisons. The writer insists on such regulations for the reason, that whether a prisoner is a white man or a negro, whether he is convicted or not convicted, his person should be guarded and protected against disease not only for his own health, but also for the health of others. Any prisoner who has contracted a fatal malady, through the neglect of keeping the prison in a proper sanitary condition may prove, in the future, the medium through whom a thousand other persons, who never even saw the inside of a prison, took the disease and died, and yet, each one of those thousand, in turn, may prove the origin of such another thousand, and so on ad infinitum, as time rolls its ceaseless cycles on. With these facts before us, and in this day of enlightenment and medical progress, is it not well enough for us to begin to close up all gaps through which disease slips upon us, and thus endeavor to relegate our greaeest mortal enemy to the past; and is not prison sanitation one way to do it?

It is not a bad idea to mention here the importance also of enforcing a thorough sanitary

regulation with reference to all public buildings, whether they are owned by corporations or private individuals. Those closely connected with such institutions, or places of business, are the ones who need the protection of such a sanitation most. Their position naturally confines them to a sedentary life, which renders them very susceptible to many fatal diseases, especially consumption, etc.

Again, all public conveyances, from passenger trains, steamboats, electric cars, etc., on down to the common hack, should be under the sanitary rule. All bakeries, confectioneries, hotels, restaurants, lunch stands, dairies, butcher shops, canning factories, etc., should not escape the frequent inspection of the health officer. In fact, there are many things and places, too numerous to mention here, about which he should cast his sanitary eye frequently for the public health and welfare. Much of this may sound bosh now, but if it all were inaugurated upon the proper scientific basis, it would not be long before the public would begin to reap the good effects of such health enforcements, and then, they would exclaim, in truth, "Bosh!" at the suggestion of returning to the old habit.

It is a psychological fact that people, to a great extent, are moved by habits. Habits are hard to break, it is true, but if you succeed in breaking an old habit, and in getting the people started with a new and better habit, then, by comparison of the two, they will see, acknowledge and hold to the good habit. Thus far we have seen many duties discussed, that naturally fall under the authority of a health officer. Many other things could be said under this head, that are of interest, but the writer will now turn to the next phase of the subject, namely:

THE COMPETENCY OF HIS ABILITY.

From what has been said heretofore, we have seen that the office of health officer is more than a form of civil service, and that the health officer himself holds a very responsible position —one of great interest and value to the public welfare.

Now, with the public health to guard and to protect, and to do so efficiently, it requires of the health officer that he be a man of more than ordinary medical knowledge and talent. He must understand the nature, the origin, the transmission and the successful prophylactics and treatments of all the diseases that are especially likely to jeopardize the health and life of his community. Not only is it necessary for him to know these things, but he must be in possession of all prophylactic measures, and must know when and how to use such remedies, to blot out and to prevent the further spread of the disease. Since the spread of malarial and yellow fevers are due to the inoculation of each by certain species, or types, of the mosquito (Anopheles and the Stegomyia fasciata), he should study and execute such measures as will annihilate, or cut short, the crops of these infectious little pests, and he should instruct the public how to guard against being infected, by sleeping under mosquito bars, etc.

It is very material, too, that the health officer be competent to observe and watch the effects of all remedial agents that he uses so as to be able to commit intelligently his observations and experiences to other professional men, that they may profit by such results while he can do the same from their experience and observation in such cases. In fact, he should be able to write upon the subject. And not only that, but he should also be competent to meet in any professional convention, or meeting, and to discuss scientifically all such matters that pertain to his office and duties, and thus to represent ably all that for which he was appointed or elected.

Again, it is quite material that the health officer should not only feel it his duty to guard and to protect the health of that part of the commonwealth over which he has been appointed, but he should also feel an equal interest with regard to the health and happiness of all other communities and people. If all health officers would imbue this generous feeling, each official would be better strengthened to combat and to prevent disease in his own territory. Unfortunately, too many health officers are too selfish and even too careless about their own local duties, to be imbued with such a philantropic spirit. And so long as that indifference predominates over the mutual interest of the national commonwealth, just so long will the health department of our republic fail to attain that high standard of health protection and executive ability that the government should have. An effort should be made to bring about such a uniformity of duty and pur-

pose. For in this way, and this way alone, can the nation wage a successful campaign against all diseases that are jeopardizing the life and health of many of her people. And each American health official should feel an interest, and should take pride enough, in the nation's health and future happiness, to work towards this end; otherwise he is a very poor guard and protector for the public welfare.

THE REVERENCE OF THE PEOPLE TOWARDS HIM.

Having discussed the duty and competency of the American health officer, it will not be out of place to touch somewhat upon the duty that the people owe him. For, upon their relations towards him, depend, more or less, the success or failure of the officer. It seems that when a person has their health and life at heart, and is endeavoring to do all that is in his knowledge and power to protect both, the people would gladly be heart and soul in sympathy for supporting such an officer. But this is not the case every time. Not only do the people frequently rebel against their health officer's instructions and executions (even in the midst of a dangerous and fatal epidemic—the very time when they should keep most quiet), but it is not an unfrequent occurence for some physician (who is possibly seeking notoriety) to urge, or to take part with them in their rebellion. This is not only wrong, but it it very detrimental to the welfare of the entire community. When a health officer is selected, whether he is very studious and competent or not to fill his position, it is a very bad policy to fight him in his effort to blot out the disease. More harm is done to the commonwealth by such an envious procedure, than is done to the health officer himself. The time to fight an incompetent and an indifferent health officer, is when he offers himself for the position—not when he is trying to fight a disease. Those who have the power to appoint or to select a health officer, should first consider a man's competency, and second, select no other man than a thoroughly competent man to fill the place. And it should be remembered that no health officer can execute his duty, whether he is competent or not, when his local constituents are united in a fight against him, unless the Federal Government, for the protecton of other localities, comes to his assistance. But in the midst of all these difficulties and obstacles with which the American health officer meets, there are always some who appreciate the value of his services, and who give him their hearty support in times of most need; and upon the aid of these, and other such noble hearts, rests the burden to protect our people and our nation from the ravages of disease.

THE CURBED POWER OF HIS EXECUTIVE AUTHORITY.

The American health officer has not the power to execute all the duties that the writer herein mentioned. In the first place, the State does not give him authority, and in the second place, the State is rather slow about sustaining him in the execution of all the power that it gives him. Violations of his requirements are tried before juries; and jurors are frequently a part of the rebellions public! and, to save their conscientious lives, these jurors cannot see where the health officer should have the legal right to require of the public such drastic measures as vaccination and a quarantine; when violations are tried, violators frequently go free.

Again, during the recent struggles that the health officials have had with that dreaded and ravaging disease of the South, one of the leading publications of Louisiana had such little regard for public life, and less for public happiness, that it published an interview with Dr. Hartman with reference to the prophylactic qualities of his cocktailed concoction, wherein the doctor endeavored to lead the readers of that publication to believe that if they'd use Perima regularly, it would prevent their catching the yellow fever. It's bad enough to advertise patent nostrums for the cure of chronic diseases, but when it comes to advertising such articles as prophylactics against acute infectious and contagious diseases, it's nothing more nor less than dealing (aiding and abetting) in the jeopardization of human lives for the sake of money. Thousands of people, who would read of such a wonderful remedy (?) in the editorial columns of a reputable paper, would believe it; and not only would they believe it, but they'd take the nostrum for that very purpose. And then, in full faith of its proposed efficacy, they'd expose themselves to the disease, and thus, they would more than likely contract the disease and would keep it going—just in faith of such a published statement. What is this but jeopardizing human live for the sake of money? No remedy has any right to be advertised to the public as a prophylactic

against any serious disease, until that remedy has been scientifically tested and proven to be of such efficacious qualities, as to be safely risked for such diseases. The State should give power to the health officer to prosecute all parties who take advantage of a dangerous and fatal epidemic, and who advertise their cocktailed concoctions as a prophylactic against the disease to a half crazed and frightened people. And the penalty for such should be of the striped variety for the proprietors of both such advertised nostrums and the periodical publishing the same.

Collier's National Weekly and all other good patriotic publications, which have human health and human life at heart rather than the cold dollar, are to be commended in their fight against advertising the patent nostrums, and the medical profession should unite in encouraging these publications in their free hearted work. The writer more than once has been called to a family to treat some ill effects of an over-dose of some patent nostrum, and, not knowing the formula of the drug, so as to treat it more scientifically, he had to do so symptomatically. These are illustrations of the importance and necessity of all secret preparations having their formulæ upon each bottle or package. This is another authority that the State should give the health officer, i. e., that he should have the right to prosecute the proprietor and the salesman of any drug that is sold off the shelf without its formula being attached to the bottle or package, as such a requirement would be for the better safety of the public health and life.

The writer herein sets forth the list of health regulations that appear to him to be for the best interest of both the local and national commonwealth. There are many other things that he could mention, but these will suffice to give the reader a general outline of those methods that the writer has studied and believes to be of the best and safest policy. The writer has studied those various methods, so that they can be prompted and executed by law. At the same time, the people can be educated up to recognize the importance and value of such necessary measures for their own good. We should not forget that disease is a more venturesome foe, than any other nation would dare to be. There is always a possibility to get an arbitration for continued peace, e're nations collide. Disease does not wait to arbitrate before it strikes; neither does it hold up its ravages, after it has begun, to consider a treaty for its withdrawal. It would not stop two seconds to consider the prophylactic qualities of Dr. Hartman's Peruna, and it would only treat that Louisiana publication as one of its agents in preparing material for it to prey upon. Disease comes upon its victims like hungry wolves upon the sheep. There is but one way to deal with it, and that is to meet it in the most drastic scientific way possible—not only simply with an intention of modifying it, but with a view of stamping it out. And as disease does not wait for the public to be educated against it, it is not a safe policy for the Government to yield to the whims of that part of the public which is uneducated and rebellious along these lines. The Government should move against disease with a more firm readiness, than it would move against a foreign national foe.

That the government may be prepared to do this effectually, the writer has also studied, in connection with the American health officer.

THE NECESSITY OF A NATIONAL HEALTH ORGANIZATION.

The foregoing paraghaphs demonstrate the necessary duties, and the importance of a health officer, and the advantage of his being a learned and talented medical man. They also mention the antagonisms with which especially the local health officers so frequently meet on the part of their constituents. And they also mention many necessary duties over which the health officers have no authority whatsoever.

Now, the liability to disease is increased markedly with the density of the population. So that, as our population increases, the more important becomes the health officer as a beneficent official, and the more needed becomes a national health department as a necessary guard and protection against disease, as well as against the evil effects of patent nostrums, etc.

In view of the above facts, the writer has thought of the advantage in having a national health department arranged so as to have the entire nation under the care of one well organized department. It is true that such an organization would necessitate the dividing up of the republic into health territories, and these further into health districts, for the convenience of such a protection. There are many reasons why this kind of an organization should exist.

First. It would unite all the health officials into one harmonious body, with a mutual purpose in view, as well as local duties to perform.

Second. It would give power to the supreme health official to see that all of the grand health officials, of the territories, would enforce their authority towards requiring their district health officials to execute the necessary measures for the health not only of the people of each locality but also for those of the entire nation.

Third. With this kind of an organization established, the negligent district official could be reported to the grand official over that district, who would have the power to make the negligent officer do his duty, or have it done for him.

Fourth. In case both the district and grand official should prove careless and indifferent about the matter, these two officers could be reported to the supreme official, who would then have the power to have the necessary measures executed immediately for the safety of the people, and who would still have further power to deal with those stubborn and neglectful officers according to law.

Fifth. When disease springs up in one territory that is traceable to another, the people of the former division can make report, or complaint, either to the grand official of the latter territory or to the supreme official over all the territories. And, thus, a more careful and rigid action can immediately be gotten to prevent further diseased patients, or exposed refugees, from jeopardizing the safety of other districts and territories.

Sixth. With this kind of a health department, travellers and tourists, who are free from the exposure of dangerous diseases, would not be hindered in journeying through non-infected districts, as they are so frequently stopped and turned back by the odd rulings of many local health authorities now. For the regulations would be national ones, and he who would start with such a certificate, would be recognized as free from infection anywhere. He could journey unmolested through the Union, save in the midst of infected, quarantine districts. And in case he should happen to become exposed to any dangerous malady during his journey, right there he would be stopped, his certificate taken from him, kept there in quarantine until all danger would be over, when he would be granted a new certificate and allowed to resume his jorrney.

Here, the writer is reminded of a young lady who left his city a few weeks ago, by way of Memphis, Little Rock and Texarkana, for a point in Texas. Arriving in Texarkana, not having her health certificate, although it contained the local health officer's seal here, sworn to before a notary public, she was stopped and guarded back to Tennessee.

The writer does not criticise the strictness of the regulation, but the non-unifomity of local regulations. What did we folks up here in Middle Tennessee know about the local health authorities of Texarkana requiring all health certificates to be sworn to, until this young lady was turned back more than six hundred miles and informed us of the fact? It is but an illustrataion and a proof of the necessity of a uniform national department, to eliminate all such troubles and inconveniences. For such difficulties will arise so long as the health regulations continue as they are now.

Seventh. That kind of an organization would require of all applicants for such an official appointment, to stand a rigid and a competitive examination for the appointment. In this way, the scientific ability of the American health officer would soon be more highly standardized. And his competency to combat disease would be more powerful, than that of t he average American health officer of to-day.

Eighth. No preparation could be advertised to the public, as a sure preventive, etc., for fatal diseases, unless such a preparation should be a prophylactic of merit, established by the research, experience and proof of cientific men —not by quacks and money grafters. Thus the health and happiness of the nation would be more securely protected against the evils of patent nostrums.

Ninth. Such an organization would be backed by national law and national strength. And those who are so prone to fight the requirements of the health officer now, that are necessary for health protection, would not dare to antagonize his duties then. Neither could some moneyed man, who thinks that he should be an exception to the law, and that he should be entitled to more liberties than his less moneyed friends, lock the executive duties of the health authority with a civil injunction. The supreme health official would have more author-

ity to execute, than any State judge would have to annul and make void. The supreme health official would be President of a government of health, that the local civil government would have no authority over, so far as antagonizing the duties of the health department is concerned. The health department would be a national law for the good of the entire commonwealth.

Tenth. This kind of an organization would elicit the highest esteem of the American people and they soon would be educated to look upon it with pride, admiration and respect. And that ill feeling and animosity that are now so frequently waged against the modern health officer of America, would rapidly pass away.

NEW AND MOST EFFICACIOUS METHOD FOR REMOVING FAUCIAL TONSILS.*

By CLARENCE R. DUFOUR, Ph. D., M. D., Washington, D. C.
Physician in charge Eye Department, Eastern Dispensary; Instructor in Ophthalmology, and Otomology, Georgetown Medical College, etc., etc.

I invite your attention to the diagnosis, symptoms and effects upon the patient, and the best method for removing hypertrophied faucial and pharyngeal tonsils.

These hypertrophies are, to a great extent, first seen by the general physician. It is he who is to advise what is best to be done. Frequently he discovers them when examinng his patient for other conditions. The ill effect upon the system is such that the physician should ever be on the alert for them and advise their removal before permanent harm has been done.

The diagnosis of hypertrophied faucial tonsils is made upon inspecting the throat with mouth open and tongue pressed down. In this manner only, enlarged tonsils can be seen. Tonsils can, however, be diseased and exert their bad effect upon the system when not enlarged even when so small that they cannot be seen, —even when so small that they cannot be seen. unless the faucial pillars be pulled aside and the submerged tonsil lifted out of its bed. Thus we see that al diseased tonsils are not necessarily enlarged. These tonsils are usually degenerated, filled with necrotic matter and various disease germs, which are absorbed into the system through the vascular current and lymphatics, and produce a chain of symptoms which, as a rule, disappears when they have been thoroughly removed.

Many diseases, as rheumatism, tuberculosis, septic infection, stomach and intestinal diseases, etc., have been found to be due to diseased tonsils. Cervical adenitis is the pathologic condition mostly frequently caused by tonsillar infection. It may be a simple hyperplasia or tubercular lymphomata. It has been demonstrated that in tubercular adenitis the tonsil is the nidus of the infection. In tubercular patients it is found that the tonsils are tubercular, especially if the cervical glands are such. Infected sputum will infect the tonsils. The bacilli are found in the crypts; from thence they find their way into the inter-follicular tissues and through the lymphatics and blood current to other parts of the body. In 136 cases of pulmonary tuberculosis, the tonsils were involved in 94. In 1671 cases examined, there were 88 in which the tonsils were primarily tubercular; no tubercular conditon elsewhere. In the last class of cases, we see that 5.2 per cent. of the tonsils were primarily infected.

What I have said about the faucial tonsils being infected by tubercular bacilli, applies also to the pharyngeal tonsil or so called adenoids. In fact statistics show the pharyngeal tonsil to be tubercular in a larger per cent. than the faucial.

Primary tuberculosis of the faucial and pharyngeal tonsils is found at an early age; therefore they should be promptly removed, and all lymphoid tissue removed, should be examined microscopically.

Diseased tonsils cause those having them to be poorly nourished, undeveloped, to have a coated tongue, foul breath, earache, etc. If hypertrophied, they interfere with breathing. The most common and painful conditions caused by diseased tonsils are recurrent attacks of tonsillitis and peri-tonsillar abscesses. Some children are only able to attend school about half the proper time on account of the many and prolonged attacks of tonsillitis. Diphtheria is a more serious disease in those having diseased faucial tonsils. There will be the majority of these symptoms in enlarged pharyngeal tonsils. In these cases the speech will be thick; they snore, breathe with the mouth open; the arch of the mouth is narrowed, the superior maxillary bone grows narrow anteriorly, caus-

*Read before Medical Society of Northern Virginia, at Alexandria, Va.

ing the teeth to overlap. Recurrent attacks of earahce occur; nocturnal eneuresis and laryngitis stridulus are accompaniments of this disease. The effect upon development is bad. Children with these hypertrophies are shallow chested and below par physically. They are not up to the average size for their age. They are often mentally effected, are unable to keep up with their studies, and are frequently punished for being stupid and lazy. I have had a few cases of mild sepsis due to the absorption of septic matter into the system from the tonsils, which simulated malaria. It is only in the last few years that the proper significance is given to diseased tonsils.

In former years, and I am sorry to say that at the present time also, if the faucial tonsil was not enlarged, no attention was paid to it. If enlarged, a part of it was cut off with a tonsillotome, and a stump was left behind to become diseased, if not already so, and exert its ill effects upon the patient, who had been subjected to an operation, which can result in no benefit to him. I have had children brought to me who had adenoids and diseased tonsils, who had been treated for years with douches and sprays, during which time they were snorers, mouth breathers, were undeveloped, had recurrent attacks of earache, etc., yet an operation had never been suggested or advised.

In my opinion, the proper method to remove the faucial tonsils, whether enlarged or not, is to enucleate them; i. e., take out the entire tonsil. The tonsillotome I never use. It is clumsy, takes up too much room in the mouth, obscures the field and altogether is unfitted for the thorough removal of the tonsils. A submerged tonsil cannot be removed by it, not even a piece of it.

My method, in children, is to give an anæsthetic, insert a mouth gag, with proper instruments, loosen the tonsil from any attachments to the pillars; then, with a tenaculum or forceps pull the tonsil well out of its bed, slip tahe wire of a snare made for the purpose over it, well down to the base, then, with one stroke enucleate it. It is by far the best method and one less likely to cause much hemorrhage, as you cut through the base of the tonsil where there are few blood vessels. Let be beg of you never to be content to simply cut off a piece of tonsil with the tonsillotome—it is not good surgery. It would be like leaving part of the ap pendix when doing an appendectomy.

If there are adenoids to be removed at the same time with the faucial tonsils, remove the latter first, then the adenoids, as the blood will not obscure the field and prevent the proper removal of the faucial tonsils.

In six months to a year after this operation you will see the greatest change in your patient He will be larger and healthier in every respect. I have done the operation many times and always with the greatest benefit to the patient, physically.

The after treatment consists in spraying the throat with an antiseptic, keeping the patient in the house for several days, giving soft nourishing food. A laxative should be given the day after the operation, and the parents warned that the paitnet may vomit some blood which he had swallowed. The shock of the operation to the patient is slight, and recovery is rapid. If the operation is done in the hospital, the patient, as a rul,e can be taken home in a few hours.

1343 *L. Street.*

Book Notices.

Operative Surgery. By JOHN J. M'GRATH, M. D., Professor of Surgical Anatomy and Operative Surgery, New York Post Graduate Medical School, etc. Second Edition, thoroughly Revised. With 265 Illustrations, including many full page Plates in Colors and Half Tines. Philadelphia: F. A. Davis Co. 190o. Cloth. 8v. Pp. 628. Price $4.50 net.

It would be impossible in the short space of a notice to tell of the excellences of this book—valuable alike to student and practitioner. In approaching a subject, the surgical anatomy of the part is detailed in an easy style, which enables the surgeon to recall the relationship of the parts as he incises. In description of an operation, it is plain enough for the student to follow, nor is it wearisome to the experienced operator. Drawings and plates are almost everywhere introduced, showing the progressive steps of a surgical procedure. The book covers practically all the operations generally required in the surgical treatment of diseases or injuries of the body. In the present edition the sub-

jects of gastro-enterostomy and the surgical treatment of diseases of the stomach and intestines have been treated in minute detail. The sections on operative surgery of the pancreas, spleen, etc., are especially full—as compared with the former edition. A very thorough index is appended to the book, thus making reference to a given subject easy.

Physician's Pocket Account Book. By J. J. TAYLOR, M. D. Published by the Medical Council. Philadelphia, Pa. Pages 200. Size 7 x 4¼ inches.

We scarcely see the need of this book when doctors have their visiting lists and ordinary ledgers. The book is too large for the pocket, and too small for the office shelf. The printed form for details are unnecessary, as the memoranda of the doctor on prescription blanks will be more satisfactory, generally speaking—if the idea is to preserve notes of a case. The busy practitioner is not in need of this form of a book—unless perhaps in rare instances.

Editorial.

Tribute to Dr. Vernon G. Culpeper, of Portsmouth.

Since publishing notice of the death of Dr. Culpeper in October 27th issue of this journal, the following resolutions have been adopted:

The Virginia State Board of Health, having learned with deep regret of the death of Dr. Vernon G. Culpeper, of Portsmouth, a prominent and useful member of this Board, desire to place on record their appreciation of his constant and abiding interest in the work of the Board, and also their personal loss sustained in his death by the individual members of the Board.

Dr. Culpeper enjoyed a large and lucrative practice in his native city, which he justly earned and deserved; he was held in high esteem by a large clientele, as also by the profession of this city and State.

He was a gentleman of the old school, a companion of most genial and affable address. While quiet and reserved in manner, he yet possessed a loyal, true and gentle disposition, was attached to his friends and beloved by those who knew him. He was a model of urbanity, kind and gracious with reference to the views and opinions of others, yet firm and adherent to his own; sincere and true in the discharge of all his duties as a citizen, an official, and in the line of his chosen profession, and entirely worthy of the confidence and regard in which he was held by his associates and friends.

"The victory is not to him who dies merely, but to him who lived well, died nobly and who did large service to his times."

As a mark of esteem and tribute to his worth, be it

Resolved, That a copy of this paper be sent to his family, published in the *Bulletin of the Board of Health* and in the *Virginia Medical Semi-Monthly.*

Dr. George Tully Vaughan

Has resigned his high official position in the Government Service, as Assistant Surgeon General U. S. Public Health and Marine Hospital Service, in order to give his entire time to the practice of Surgery. He retains his position as Professor of Surgery in Georgetown University, and as surgeon to several hospitals in Washington city. His work on Practice of Surgery establishes his reputation as an eminent author. His vast opportunities to perfect himself for the practice of his special line of work have been availed of so that he might make himself specially suited to his future life work. It is indeed rare for one to resign so exalted an official position, which would have given him a life tenure on the Government, in order that he might devote himself to private practice. Our best wishes for his success are with him. His home address is 1718 I Street, Washington, D. C.

Typographical Correction.

The paper in our last issue on "Surgical Treatment of Nephritis" is by Dr. G. Paul La Roque—not La Rogue, as misprinted during "the printers' strike."

American Journal of Clinical Medicine

Is the changed name of the *Alkaloidal Clinic,* beginning January, 1906. While Drs. Abbott and Waugh remain editors in chief, Dr. William J. Robinson, of New York, will conduct the department of Dermatology and Genito-Urinary Diseases; Dr. Emory Lanphear, of St.

Louis, will have charge of Surgery, Obstetrics and Gynecology, etc. The journal will be improved in many ways—giving its readers all that is best in the literature of this medical world; all that is most helpful and practical. The journal will stand for the honest doctor and the honest pharmacist; their interests are mutual. All attempts to estrange them will be decried.

Errors in Advertisements

No one knows the bother of a "printers' strike" as much as editors. One is on now in Richmond, and has been for over three months. The "strike" accomplishes nothing since the printing houses are fast supplying themselves with parties which enables them to keep an "open shop." But until the new printers get the run of matters, some awful blunders occur. For instance, in the November 24th issue,

The Purdue Frederick Company's advertisement was on "Summer Heat" which is manifestly out of place for this season of the year. The "copy" should have read: "In any condition of impaired health characterized by a tendency to general exhaustion, the patient who takes Gray's Glycerine Tonic regularly, will eat more," etc.

..*The Denver Chemical Mfg. Co.,* in the same issue, and again in the issue of December 8th, the error occurs of stating that there are three merchantable sizes of containers of "Antiphlogistine," when, in fact, *there are four;* namely, small, medium, large and hospital sizes.

The Glyco-Thymoline advertisement was mis placed on the inside instead of the outside margin of its page. This preparation of the Kress & Owen Company is popular for catarrhall conditions of nose, throat, rectal and utero-vaginal membranes, etc.

We specially regret the errors with reference to these highly popular preparations.

Examination of Eyes and Ears of School Children.

The medical profession has even a higher aim than that of curing disease—the prevention of disease is an urgent duty of the doctor.

During the session of 1903 at New Orleans, of the American Medical Association, the following was adopted:

"Whereas, The value of perfect sight and hearing is not fully appreciated by educators, and neglect of the delicate organs of vision and hearing often leads to disease of these struc, tures, therefore,

"Resolved, That it is the sense of the American Medical Association that measures be taken by boards of health, boards of education and school authorities, and, where possible, legislation be secured, looking to the examination of the eyes and ears of all school children, that disease in its incipiency may be discovered and corrected."

The day is fast coming when the profession must assert itself in legislation. We do not mean throwing itself in the dirty ebb and flow of filthy politics, but it must take a high stand, and instruct the people of their communities as to urgent needs of preserving health of the citizens in all walks of life. By education of the children in health matters, the adult becomes informed, and in the course of a few years questions of public health will become an important matter in the legislative field. No more important matter could be more profitably approached just now than by various local boards of health and boards of education taking up the subject of examination of the eyes and ears of school children, and thus saving to the Commonwealths many afflicted citizens, for whom common humanity demands provision.

History of Yellow Fever throughout the World

Is the title of a statistical, historical epitome of literature on yellow fever fro m1493 to 1905, inclusive, son to be issued by George Augustine. Assistant Secretary, Louisiana State Medical Society, etc., New Orleans. Sold by subscription only—$3.50 *net.* This modern work will treat of every phase of the disease from the latest scientific point of view. Hence a corps of expert yellow fever investigators has been enlisted, taking up each medical phase of the subject. This enlistment of eminent medical authorities in this special field asures an excellence of material and an accuracy of detail that cannot be found elsewhere. As the edition will be limited, and as the book is sold by subscription only, it is important that each doctor wanting this book should subscribe *at once.*

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 19. Whole No. 235. RICHMOND, VA., JANUARY 12, 1906. $2.00 a Year. 10 Cents a Copy.

Original Communications.

VOLVULUS TESTIS.*

By ROBERT C. BRYAN, M. D., Richmond, Va.,

Professor Descriptive Anatomy and Genito Urinary Surgery University College of Medicine, Richmond, Va., Visiting Surgeon to the Virginia Hospital, and Surgeon to the American Locomotive Co., Richmond, Va.

Volvulus Testis may be defined as a twisting of the testicles about its spermatic axis. As predisposing etiological factors may be mentioned primarily and essentially "floating testicle" or an abnormal redundancy of the organ in the cavity of the tunica vaginalis, there being a complete visceral attachment of this layer, with the formation of a mesentery. This preternatural mobility is aggravated by a loose, atonic scrotum, malposition, inversion and cryptorchismus, rupture of gubernaculum testis, and at the age of puberty when the vascular supply is at times particularly engorged. The *exciting causes* are essentially the rolling around of the testis, and is pathologically supposed in every instance to be caused by the action of the cremaster muscle, which in turn is brought about by blows, strains, heavy lifting, gravity further favoring the torsion of the organ.

Pathology:—The *direction* of the torsion is from without inward, and the *degree* varies, from a slight twisting to several turns, the majority of cases operated upon showing a degree of torsion of about 1 1-2 turns. The *site* of the twist is in that free portion of the cord which is covered by the tunica vaginalis and suspends the epididymis and testicle, and lies about half an inch below the external abnormal ring.

Incision into the tunica vaginalis reveals condition dependent on the degree and duration of the torsion, and for that reason I have arbitrarily divided Volvulus Testis into two classes:

1. The Acute Recurring.
2. Volvulus Necrotica or Gangrenosa.

The progressive and pathologically increasing degrees of torsion between these two are necessarily widely varying. The *macroscopic* appearance of the acute recurring, *below* the constriction, has been compared by Barker, to a bloated leech. The veins are intensely congested, the cord and epidydimis are greatly swollen and much out of proportion to the also engorged tense testicle. The tumor is of a dark blue or purplish color, and the visceral layer glazed and dull. *Above* the site of the kink, the parts are normal, pulsation of the artery, according to Nicoladoni is indistinct or absent, though its lumen is pervious, the cord easily outlined there is no pain or palpation here, and the veins appear shrunken and collapsed. The cavity of the tunica vaginalis contains serum, which is blood stained, and probably a few blood clots, and bands of lymph thrown out here and there are more or less densely organized, binding the visceral to the parietal layer.

Misroscopically:—Examination shows great blood infiltration and degenerative changes in the affected structure, with a general infiltration of serum, white and red blood corpuscles into the substance of the gland.

It is not easy to understand how the tense, unyielding tunica albuginea can become so infiltrated with, and distended by, serum and blood. The *pathology* of *volvulus gangrenosa* is necessarily an advanced stage of the former, plus the addition of pyogenic organisms; for without these germs the transuded serum and blood would ultimately become organized and atrophy of the organ result — as has been shown by Nash, that even slight attacks of torsion with its frequent congestion and stasis tend to produce a certain amount of fibrosis of the testicle and epididymis with is ultimate contracture and shrinkage. Nash also reports a case of severe volvulus in which de-torsion was prac-

*Read before the Medical Society of Virginia during its Thirty Sixth Annual Session in Norfolk, Va., October 24-27, 1905.

ticed an hour and a quarter after onset, but did not prevent a certain amount of atrophying which was reported later. In *volvulus gangrenosa* the organ has sloughed off up to the point of constriction, the free dangling ends of the spermatic cord being felt in the cavity of the tunica vaginalis, surrounded by the broken down elements of the testicle, exuded blood and serum, lymph strands and clots and innumerable pyogenic organisms.

Symptoms:—May be divided into those of *infants* and of *adults*. In the *infant,* the mother relates a history of fretfulness, vomiting and constipation, which, however, yields to laxatives. There is abdominal flexion of the thigh on the affected side, a swelling is noted in the inguinal canal at the external ring or in the scrotum—it is rounded in shape, varies in size from a hazel nut to a hen's egg, and is excessively sensitive and painful on palpation, the abdominal walls are hard and rigid. The tumor gives no impulse on coughing or crying, and the testicle is either absent from the scrotum, or, the swelling obscures it. The skin over the tumor is reddened, there may be some œdema, and at times, an indistinct lobulation can be poorly defined, which is, however, continuous, with the cord above, and dullness is, on percussion, always present. In the *adult*— the patient applies for relief, usually during an attack, and attributes the condition to a strained attitude or no specific cause. The onset of the pain is ultra-acute, sickening, nauseating, referred to the testicle and about the hypogastrium and kidney regions. Vomiting is usually present, occurring early and is persistent, though rarely stercoraceous, and with it more or less collapse is to be found. Constipation is the usual rule. The temperature is elevated—100 to 101° F. and the pulse correspondingly rapid and weak. *On inspection*,— the thigh is flexed upon the abdomen. There is a tumor present at, or about the external abdominal ring, the skin over the tumor reddened and shading away into the surrounding œdematous tissues.

On palpation the tumor is ultra-painful and sickening to the patient. It is irregular in outline, the epididymis may be mapped out anterior to the testicle. The point of constriction is easily defined, as a hard tended area above the globus major and continuous above with the cord, which is normal, superior to that point. The position of the organ is noted to be abnormal. The epididymis is anterior, or the organ lies horizontal. instead of perpendicular, in the vaginal cavity, or it is pulled up tight against the pubic spine limited above only by the external abdominal ring. Again on percussion—the tumor is dull or flat, and auscultation is negative. The attacks vary much in severity and regularity, may come on at intervals of weeks or more usually months, giving rise to the first classification—*the acute recurring volvulus;* and here it may be mentioned that Perry cites a case in which there had been an attack every two or three months for fourteen years. The writer had under observation a young man thirty years of age, in whom there had been three attacks in as many weeks. Each onset occurred in the early morning hours, awakening the patient with a sharp, nauseating, lancinating, testicular pain. There was history of no previous and no ultimate attack, spontaneous version occurring as soon as the patient changed his position in bed, in each instance. In volvulus gangrenosa the symptoms are the same up to the time of the death of the parts. The patient, if seen then, complains of no pain, the tumor is present and prominent though soft and fluctuating the skin reddened or bluish, there is no flexion of the thigh upon the abdomen, on palpation the tumor cannot be outlined, it has broken down and disintegrated, the free ends of the cord may be located in the upper part of the cavity of the tunica vaginalis, the inguinal canal is not filled out, the temperature is elevated —101° to 102 F. and the pulse corelevant There is no marked prostration, the patient feels much more comfortable than during the stage of acute torsion, and seeks surgical relief only on account of the inconvenience of the tumor and slight constitutional disturbances.

Diagnosis:—This may be comparatively *easy or most difficult—easy* in the cases which give a history of previous torsion and spontaneous recovery; difficult in those cases supplemented by venereal history, such as recurring epidydimo-orchitis or the varying and complicated pathological forms of inguinal hernia. The mode of onset is the particular diagnostic point in torsion, it is ultra-acute and sickening in character, nauseating, and of the well known testicular form, *followed* shortly by the swelling and tumor. In hernia there is the swelling first which is then *followed* by the pain. The diagnosis may be exceedingly difficult

when a condition of hernia is known to exist along with an ectopic testicle, and it may be impossible to make a diagnosis if it be co-existent with a Richter's hernia.

In torsion as opposed to scrotal hernia, there is no fullness in the inguinal canal, which is bound to occur in the latter condition. In hernia, whether inflamed, incarcerated or strangulated, the vomiting becomes rapidly worse, more distressing and finally stercoraceous, enema negative and bowels obdurate, shock and prostration marked, the inguinal canal bellied out, and the outline of the tumor is pyriform or irregularly so, thus differing from that of volvulus, in which the form of the epididymis and testicle can nearly always be made out on palpation. Further, in hernia percussion may elicit a tympanitic note which is impossible in volvulus gangrenosa. Again, the normal testicle may be palpated posteriorly to and in normal relation with the newly acquired tumor which is continuous with that of the inguinal canal. In ectopic testicle the corresponding half of the scrotum is found empty; and here it may be mentioned there is no physiological or pathological reason to believe—most textbooks to the contrary, notwithstanding— that in crypt-orchismus the testicle is more liable to inflammation than in the normal state, other than its position, which may favor injury or traumata by reason of its bony background. From epididymitis, orchitis and epididymo-orchitis gonorrhoica, the history is of the greatest importance, and thorough urethral, vesical and rectal examination should differentiate the two conditions.

It is with hernia in its varying types and pathological lesions, and with acute specific inflammation of the testicle that volvulus is usually confounded. Careful consideration of the history, previous attacks, point of constriction, an ultra-acute-matinal course, appearance and fullness of the canal and scrotum, are points which may assist in the differentiation. Other conditions which may simulate torsion other than strangulated and inflamed epiplocele and enterocele, are:

1. Hæmatocele testis.
2. Hæmatocele vaginalis.
3. Gonorrheal orchitis.
4. Gonorrheal epididymitis.
5. Gonorrheal epididymo-orchitis.
6. Inflamed hydrocele.
7. Acute hydrocele.
8. Ruptured hydrocele.
9. Traumatic orchitis.
10. Traumatic epididmitis.
11. The spontaneous epididymitis of Delosme.
12. Mumps.
13. Inflamed appendix in inguinal canal.
14. Embolism of spermatic artery.
15. Ruptured varicocele.
16. Ruptured cyst of the cord.
17. Traumatic lymphadinitis.
18. Phlebitis of spermatic veins.
19. Bruised irreducible hernia.
20. Sudden protrusion of a retained testicle through the internal ring.
21. Sudden protrusion of ectopic testicle through the external ring.
22. Sudden protrusion by muscular effort of an enlarged inguinal gland through the fibres of the conjoined tendon with its subsequent strangulation, as the author once had the opportunity of seeing.

Treatment:—Is directed toward the relief of the condition and may be *non-operative* or *radical*. The *non-operative* resolves into detorsion by external manipulation, which should at first be tried in a direction opposite to the twisting of the volvulus, or from within outward; if, however, this causes greater pain and gives no relief, the opposite direction may be tried. Volvuli are rarely twisted from within outwards. This detorsion by manipulation is comparatively easy when the testicle is descended, and the lymph bands not too densely organized, and most difficult or impossible when the organ is retained in the inguinal canal. Immediate relief and comfort follows the untwisting, and rest is now enjoined—with the application of a water bag, and elevation of the hips, favoring venous return; restitutio ad integram is soon perfected. If gentle detorsion is impossible, a free incision is made into the cavity of the tunica vaginalis on the anterior surface of the scrotum, when the direction of the twist is immediately recognized, adhesions broken up, detorsions carried out, and the cavity of the tunica vaginalis freed of its collected serum, blood and clots. The fibrous coat of the testicle on its convex anterior border is now split and sewn to the margin of the incision, thereby preventing

a recurrence, and the wound stitched and dressed.

The case of *volvulus gangrenosa,* which the writer wishes to report, is as follows:

W. M. J., white, 63, married, mechanic. *Previous history*—diseases of childhood, otherwise negative. *Venereal history*:—at the age of 20 contracted gonorrhea, treated by physician no posterior urethritis or history of an epididymitis, course uneventful, recovery in a few months. About ten years ago his notice was first attracted to himself by an attack of severe pain in the right testicle, inguinal and lumbar regions, which occurred always in the early morning hours often awakening him from his sleep, and which were relieved immediately by jumping out of bed. The attacks were irregular in intervals, he having two or three in a month and then no more for several months. He had noticed that the right testicle was smaller than the left, but had attributed this to early indiscretions. He could give no explanation of the pain, but thought probably that sleeping on the left hand side had some thing to do with provoking an attack, the pain would rapidly subside after jumping from bed. The slight swelling disappeared, and, except for a moderate tenderness the patient complained of nothing and would, on certain occasions, be able to pursue his work on the same day of the attack. At other times the severity of the attack would be much greater, there was intolerable pain, protracted nausea, and depression, and he was unable to resume his duties for two or three days following. He had noticed in each instance the ultra-acute onset of the attack, and also its immediate disappearance after a greater or lesser length of time. He had never noticed that crossing the right leg over the left would induce an onset; he had never worn a suspensory, but had been advised to wear a truss, the condition being diagnosed as hernia. On Saturday, October 29, 1904, the patient was awakened at 4:00 A. M. by the now well recognized, severe and intolerable pain in the right testicle and inguinal region, the first attack he had had in about eight weeks, he immediately got out of bed and resorted to the usual methods for the relief of the condition, such as bending to one side and then to the other, crossing his legs, manipulating the scrotum, etc., but experienced no relief. A water bag was then applied and Dover's powder taken internally, but getting no relief, and the pain still continuing, at 7:00 A. M. he called a physician. The patient was a small anemic man, in intense pain with abdominal flexion of right thigh, vomiting at irregular intervals, but at no time stercoraceous, temperature 99 F. and pulse 120. On *inspection* there was a tumor, most prominent in the upper pole of the right scrotal sack, irregular in outline, about the size of a hen's egg, with its greater diameter situated transversely.

The skin over the mass was reddened, unduly so, probably on account of local applications; there was no fullness in the inguinal canal. No exudation from the internal meatus, and the dartos of the right side seemed to be more closely applied than that of the left. The abdomen was retracted, there was no tympanites, and the patient was lying on the right side. On *palpation* the tumor's consistency was tense and firm, irregular in outline, its greater diameter lying transversely, and anteriorly a prominence was noted, judged to be the epididymis, more superiorly about, or just below, the external abdominal ring, a tense, hard, round area was noted, exquisitely sensitive, continuous with the normal cord above and the tumor below. Satisfactory palpation and outlining were impossible, the surrounding bony prominences were easily defined, the inguinal canal was not bellied out, rectal examination was negative, and the left half of the scrotum presented every normal appearance. Attempted detorsion was refused, so the patient's hips were elevated, ice bags applied, and opiates given by mouth.

Oct. 30th.—The pain slightly less, the tumor seemingly larger, general condition about the same.

Oct. 31st.—Temperature 100 1-2 F., did not complain of so much pain, skin over tumor more reddened, slight fluctuation noted, supposed to be fluid in cavity of tunica vaginalis.

Nov. 2nd.—But little pain, tumor about the same size, temperature 101 F., pulse 110, patient still refusing operative procedures.

Nov. 5th.—No pain, there is no longer any abdominal flexion of thighs, bowels move freely, temperature 99 1-2 F., patient fairly comfortable, the tumor more rounded, elastic, not tense or hard and of the consistency of a hydrocele.

Nov. 7th.—An incision in the tunica vaginalis gives a copious outflowing of gangrenous,

sloughing material, of about two or three ounces in quantity, the free dangling ends of the spermatic cord were easily felt in the upper pole of the sack. The testicle had undergone dissolution, the parietal layer of the tunica vaginalis showed dense adhesions here and there. There was seemingly no invasion into the inguinal canal, and the original site of the constriction could not be located. A microscopic examination showed the remnants of a disintegrated testicle, innumerable pyogenis organisms and pus cells. The wound healed by granulation, and on Nov. 20th the patient was discharged from the hospital with a small sinus marking the site of the incision.

Jan. 1st, 1905.—The patient has been at work for one month, there is marked shrinkage of the right scrotal sack, the ends of the cord may be felt at the brim of the pelvis, there have been no constitutional disturbances and the patient seemingly enjoys the best of health.

SOME OF THE DIFFICULTIES OF DIAGNOSIS AND OPERATION IN DISEASES OF THE BILIARY TRACT.*

By W. P. CARR, D. D., Washington, D. C.
Professor of Clinical Surgery, George Washington University.

Several papers have recently appeared in the various medical journals urging early diagnosis and operations for gall stones and other affections of the biliary passages.

None of them, however, give very definite or reliable instructions for making the early diagnosis.

As a matter of fact, gall stones give rise to no symptoms, and cannot be detected until they either pass into the bile ducts or cause inflammation of the gall bladder; and in many cases it is doubtful whether the stones are the cause or the result of the cholecystitis. When gall stones pass into the ducts the diagnosis is usually easy, as they give rise to attacks of biliary colic—the symptoms of which are well known and sufficiently diagnostic. Unfortunately, however, many patients come to us with histories so unreliable as to be useless or worse.

To be of any value a history of biliary colic must be given by a reliable physician who has actually seen the patient in one or more attacks, or by some person of known intelligence and honesty. Otherwise, the diagnosis had better be deferred until reliable observations can be made.

When cholecystitis is present in early cases with no obstruction of the bile ducts, there are but two symptoms of diagnostic value, and usually no physical signs at all. The two symptoms are pain and tenderness in the region of the gall bladder. Tenderness on pressure is of more value than pain. But well marked pain and tenderness in the region of the gall bladder makes a diagnosis of cholecystitis or cholelithiasis reasonably certain if we exclude disease of the stomach, pancreas, liver, pleura, kidney and appendix, and superficial inflammation of the abdominal wall or ribs. The early diagnosis is to be made largely, therefore, by careful examinations and exclusion of disease of other organs, some value being given to the rareness or frequency of the disease in case of doubt. Diseases of the stomach that cause pain and tenderness inthe right hypochondrium are ulcer, cancer, pyloric obstruction, painful catarrhs and colic or gastralgia. Careful examination of the stomach and of the stomach contents after a test meal should exclude all these affections except simple colic and gastralgia.

In colic, the pain is not persistent and the tenderness ceases when the pain is relieved. Gastralgia is also intermittent and more likely to be mistaken for biliary colic than for cholecystitis. In gastralgia, pressure often gives relief instead of pain.

When, as sometimes happens, the pain and tenderness of an inflamed gall bladder is situated lower than usual, movable kidney, renal calculus or other painful disease of the kidney may be suspected, but careful palpation and examination of the urine should exclude an affection of this organ.

The pain and tenderness in appendicitis is sometimes located so high and the tenderness from gall stones so low that these diseases may be confounded. Gall stones and chronic appendicitis frequently co-exist. I have seen several cases where the tender point was located about half way between the appendix and the gall bladder, and in one of these cases I found gall stones, appendicitis and movable kidney. It may be impossible in such cases to make a positive diagnosis, but this is not of great importance as the treatment is operative in either case. In all such cases, however, when the abdomen is

*Read before Medical Society of Virginia during its Thirty-sixth Annual Session, held at Norfolk, Va., October 24-27, 1905.

opened both gall bladder and appendix should be examined.

Pleurisy may usually be eliminated by examination of the chest, and inflammations of the ribs or abdominal wall are usually accompanied by local redness or oedema.

The only disease of the liver likely to cause pain in this region is abscess. This is accompanied by fever and greater tenderness than is usually found in cholecystitis. Cysts and tumors of the liver do not usually cause pain until large enough to be palpated.

Chronic pancreatitis is frequently due to gall stones and it may not be possible to distinguish between disease of the gall bladder and disease of the pancreas. But here again the distinction before operating is not important.

In short, it may be said that it is important to distinguish disease of the gall bladder from disease of the stomach, kidney, pleura or abdominal parieties and this can usually be done. But from certain diseases of the pancreas, liver or appendix it may be impossible to make a differential diagnosis before operating. In these cases fortunately the distinction is not important, provided the operation is prepared to meet whatever condition may exist.

The greatest difficulty in diagnosis comes from the co-existence of disease in two or more of the organs above mentioned.

Cholecystitis and pancreatitis are frequently associated, as are cholelithiasis with chronic appendicitis or cancer of the gall bladder.

Gastro-intestinal catarrh is a frequent accompaniment of all diseases in the region of the gall bladder and appendix and may add greatly to the difficulty of diagnosis.

One case of suspected gall stone that I had under observation at intervals for several years is of interest in this connection. This was a lady about fifty-five years old who for several years had suffered from severe attacks of pain in the right hypochondrial region. These attacks came at intervals varying from one to six months, and lasted from a few days to several weeks. They were acompanied by great prostration, nausea and vomiting. She had been given large doses of morphia and inhalations of chloroform for the relief of the pain. When I first saw her, she had been given two or three grains of morphia hypodermically and inhaled about a pint of chloroform daily for three or four days.

Chloroform was stopped and morphia cut down and she soon recovered from the acute attack. She then complained greatly of soreness and boring pain in the right hypochondriac region. I had her examined by a stomach specialist who pronounced her trouble achylia gastrica.

She improved very much under his treatment and went home thinking herself well on the road to recovery. In a few months the attack recurred worse than ever. I became convinced that she had gall stones and after much difficulty persuaded her to go to a hospital for operation.

I then discovered for the first time that she had been taking morphia every day for ten years and for the last two or three years never less than five grains a day hypodermically. This fact had been carefully concealed from me and from her other physicians by herself and by her large and apparently intelligent and honest family, and I should probably never have discovered it had not one of her sisters attempted to give her hypodermic injections in the hospital. After much difficulty, I succeeded in getting her to stop the morphia. She promptly recovered and has had no pain for nearly a year.

I have no doubt that she had real pain, but it was caused by morphia.

In uncomplicated cases, cholelithiasis or cholecystitis may usually be recognized by careful examination and exclusion of other diseases. But when one or more of the diseases to be excluded co-exist with the gall bladder affection, then the diagnosis becomes difficult or impossible. And these diseases frequently are associated with disease of the gall bladder.

Jaundice does not occur unless there is obstruction of one of the hepatic ducts or of the common duct, and it is not to be looked for as an early symptom. It is present in only about 10 per cent. of all cases of gall stone.

It is apparent, therefore, that an early diagnosis of gall bladder disease is to be made only by very careful examination and that in cases complicated by gastro-intestinal disorders, obesity, pancreatitis etc., it may be impossible to make it with certainty.

When jaundice is present in any marked degree, bile will be found in the urine and this distinguishes it at once from any form of hæmatogenous jaundice. But in advanced cancer of the biliary region both hæmatoge-

nous and hepatogenous jaundice may be present.

Jaundice of hepatic origin coupled with pain and tenderness in the right hypochondrium point conclusively to obstruction of the common bile duct, but it may be impossible to say whether the obstruction is due to stone or to cancer or to benign tumors or to chronic pancreatitis or to simple flexure or swelling of the duct.

Unfortunately, even after opening the abdomen, it is not always possible to tell the cause of the obstruction. The greatest difficulty that I have encountered in operating upon the biliary tract is, first, the positive determination of the cause of obstruction, and, secondly, making sure that the cause is removed and the common duct patulous.

I will briefly relate a few cases that illustrate this difficulty better than I can do it in any other way.

Case 1. Powerfully built white man about 35 years of age. History of typhoid fever, convalescence, recurrence of fever, which had lasted two months when I saw him. Tenderness and distension in region of gall bladder. Upon opening the abdomen, gall bladder was found distended with a quart of dark bile. Cystic duct patulous. Common duct obstructed, but no stone or other cause of obstruction could be found. The gall bladder was drained and the patient made a good and permanent recovery. I believe that in this case cholycystitis of typhoid origin caused swelling of the common duct and that the gall bladder as it distended caused a sharp flexion of the common duct and an obstruction that was permanent until relieved by draining distended bladder. But at the time of operation I was unable to find any cause. The pressure in the gall bladder was too great to be held by simple swelling.

Case II. Well developed, previously healthy white man about 40 years old. History almost identical with case I. Typhoid fever, convalescence, recurrence of fever, pain and tenderness in right hypochondrium. Apparently the same condition found on operating. Gall bladder distended with a quart of dark bile under great pressure. Cystic duct patulous. Common duct evidently obstructed, but no cause could be found. Gall bladder drained as in the previous case. Bile continued to flow freely from wound for several weeks. No evidence of bile in the stools. At this time the wound was re-opened and careful search made for obstruction. Slight thickening of the head of the pancreas and an enlarged lymph gland beside the duct were all that could be found. I attempted to probe the common duct with a flexible lead probe, but was unable to pass it into the duodenum. (I have since attempted repeatedly to pass such a probe upon the cavader, but never successfully). Cholycyst-enterostomy was done with a small Murphy button. The patient improved for two weeks; bile appeared in the stools and the wound closed. He grew weaker, however, and died three weeks after the second operation. At the autopsy, thickening of the head of the pancreas was found obstructing the duct just as it entered the duodenum. The pancreas and bile duct were examined by Dr. James Carroll, who thought it a syphilitic cirrhosis of the pancreas. There was also found what appeared to be a gumma on the upper surface of the liver, though there was no history or other evidence of syphilis.

Case III. Well developed white man about 40 years old. Suspected abscess of liver. Gall bladder found enormously distended with bile and pus. No abscess of liver found. After opening gall bladder bile flowed freely into it, showing cystic duct to be opened. No stone or other obstruction of common duct could be detected. The common duct, however, was obstructed as bile continued to flow through the wound at a tremendous rate for ten weeks. The patients fever subsided after the operation, but he grew daily weaker and died about ten weeks after operation. Autopsy showed a small cancer of the head of the pancreas. This was not distinguishable at the time of operation.

These three cases were all well developed men about the same age. All had distended gall bladders and in none of them could I determine the cause of obstruction at the time of operation, nor could I determine whether the common duct was open or not. Yet the cause of obstruction was different in each case.

Case IV. White woman about 50 years old. History of attacks of biliary colic at intervals for several years. When I saw her, she was extremely weak and emaciated and deeply jaundiced, being a dark mahogany color. The liver extended below the umbilicus and felt hard and the edge irregular. The disturbed

gall bladder could be distinctly seen through the emaciated abdominal wall looking like an orange under the skin. My diagnosis was cancer of the liver in an advanced stage. She complained bitterly of itching and I concluded to drain the gall bladder to relieve her of the jaundice and consequent itching. When the gall bladder was opened a stream of coffee colored fluid spouted out, two feet high, showing the great pressure it was under. At least a quart of this fluid poured out, followed by two or three of milky white fluid and then bile began to flow copiously. To my surprise, the liver began to shrink and soften as the bile poured out, and before I had finished operating, it had gone down to nearly its normal size. There was no cancer. Here again I searched carefully for obstruction of the common duct, but could find none. There was a partial obstruction, however, as was shown later. Bile continued to flow from the wound for two months and then at a diminished rate for three months more. Some bile appeared in the stools. The woman improved remarkably in strength, her jaundice disappeared; she returned home and did her own housework, cooking and washing for three months, though bile continued to flow through the wound which was now no larger than a pin hole. Finally, to prevent this annoying discharge, I took her back to the hospital and performed a cholycyst-enterostomy with a Murphy button. She made a good recovery and went home in good health and spirits. But about a month later a small opening appeared in the scar and bile began to flow freely again. Passing a probe into this opening, I detected the Murphy button still in the gall bladder. Under cocaine anæsthesia I enlarged the opening and removed the button which had not become loose and had become choked up with cholesterin crystals until it was impervious. Bile and fæcal matter discharged freely through the wound for sometime, but the woman continued doing her own work, changing her dressing several times a day. The wound finally closed and she is now in good condition. At the second operation I again endeavored to find the cause of obstruction but was unable to do so.

These cases are a strong argument against the removal of the gall bladder unless there are positive indications for its excision. In cases of obstructed common duct, where the obstruction cannot be detected and removed, the gall bladder becomes invaluable as a means of draining the bile into the intestine.

I am still unable to say what is the cause of obstruction in the last case. I am quite sure it is not stone as there was no stone in the gall bladder, and with a finger in the foramen of Winslow I was able to palpate the common duct down to the head of the pancreas. Cancer was not present, as evidenced by the patient's present good condition, and no other abnormal condition could be detected.

Many surgeons I know claim to be able to palpate the common bile duct and determine the presence or absence of stone in it. But the last 3-4 inch of the common duct with the ampulla of Vater is embedded behind the pancreas in most cases in such a way as to make it impossible to palpate it with any degree of certainty. And I have several times known excellent surgeons to overlook stone in this situation. One surgeon of large experience in this work who assured me a few months ago that he had no difficulty in detecting stone in the common duct recently operated upon a lady in Washington for gall stones. A few days after the operation several stones were passed through the wound. And, as soon as the wound closed, jaundice and symptoms of obstruction of the common duct re-appeared. Halstead has reported a number of extremely interesting cases in which he was unable to assure himself of the patency of the common duct. In one or more of these cases he opened the duodenum from, and probed the duct below in order to be sure that it was unobstructed. Other forms of obstruction may be more difficult to detect than stone.

I have made numerous experiments upon fresh cadavers at autopsy to determine the patency of the common bile duct, and I do not believe it is possible to be sure of it without opening the duct in the duodenum. And this in subjects that had no disease of the biliary tract.

I have found it usually impossible to pass any sort of probe through the gall bladder, cystic and common ducts into the duodenum. I have tried injecting fluid into the gall bladder, but this method is useless for two reasons. Fluid will pass from the cystic duct into the hepatic ducts and up into the liver quite freely and, on the other hand, will not pass through the common duct even when it is normal.

The lesson to be learned from these facts is that we cannot be certain of the patency of

the common bile duct. Excision of the gall bladder under such circumstances would be unfortunate and perhaps fatal unless drainage of the common duct were provided for at that time.

Even if the common duct is open at the time of the operation it may become obstructed at some future time in such a way that the obstruction cannot be removed, and the gall bladder will then be of great value for draining the bile into the intestine.

In my opinion, it is only when there is malignant disease of the gall bladder, or at least a suspicion of malignant disease that cholecystectomy is justifiable.

1418 *L. Street.*

QUINSY AND ITS SEQUELAE.*

By JOHN DUNN, M. A., M. D., Richmond, Va.,
Professor of Diseases of the Ear, Throat and Nose, and Associate Professor of Diseases of the Eye.

"The oldest documents which we possess relative to the practice of medicine are various treatises contained in the collection which bears the name of Hippocrates." This Prince of Physicians tells us that "quinsy takes place when a copious and viscid defluxion from the head, in the season of winter or spring, flows into the jugular vein, and when from their large size they attract larger defluxion, and when owing to the defluxion being of a cold and viscid nature it becomes enfarcted, obstructing the passages of the respiration and of the blood, coagulates the surrounding blood and renders it motionless and stationary, it being naturally cold and disposed to obstructions.

"Hence, they are seized with convulsive suffocation, the tongue turning livid, assuming a rounded shape and being bent owing to the veins which are seated below the tongue.

"These veins then become filled and their roots extending into the tongue, which is of a loose and spongy texture, it, owing to its dryness, receiving forcibly the juice from the veins, changes from broad and becomes round; from a soft consistency grows hard so that the patient would speedily become suffocated."

Two thousand years later, the physician to three kings, the great Ambroise Paré, who in the dedicatory epistle of his chirurgery to "Henry III the Most Christian King of France and Poland," says with commendable modesty, "God is my witness and all good men know that I have now labored fifty years with all care and pains in the illustration and amplification of chirurgery and that I have so certainly touched the mark whereat I aimed that antiquity may seem to have nothing wherein it may exceed us beside the glory of invention nor posterity anything left but a certain small hope to add some things, as it is easy to add to former inventions."

The surgeon, who thus claims to have reached knowledge's sublimest heights, tells us that "the squinancy or squincy is a swelling of the jaws which hinders the entrance of the ambient air into the weazon, and the vapours and the spirit from passage forth, and the meat also from being swallowed. There are three differenced thereof. The first torments the patient with great pain, no swelling being outwardly apparent by reason of the Morbifick humor lyes hid behind the almonds or glandules at the *vertebrae* of the neck, so that it cannot be perceived, unless you hold down the tongue with a spatula or the *speculum oris,* for so you may see the redness and there lying hid. The patient cannot draw his breath, nor swallow down meat, nor drink; his tongue (like a grayhound's after a course) hangs out of his mouth; and he holds his mouth open that he may the more easily draw his breath; to conclude, his voyce is, as it were, drowned in his jaws and nose; he cannot lye upon his back, but lying, is forced to sit, so as to breathe more freely and because the passage is stopt the drink flies out of his nose; the eyes are fiery and swollen, and standing out of their orb. Those which are thus affected are often sodainly soffocated, a foam rising about their mouths."

Three hundred years later we find in the Standard Dictionary, quinsy defined as inflammation of the tonsils, especially when suppurative, and in this definition, the Standard is upheld by both Morell Mackenzie and Lennox Brown the latter of whom says "the term quinsy implies acute inflammation limited to, or, at least originating in the (tonsil) glands themselves."

The modern American text-book on diseases of the Nose and Throat considers quinsy to be inflammation of the faucial peritonsillar loose tissue with abscess formation. This latter qualification seems to be necessary to justify the exis-

*Read before the Richmond Acadmey of Medicine and Surgery, November 14, 1905.

tence of the much used expression "threatened quinsy." Peritonsillar inflammation with abscess formation, for such I shall assume to be the topic called for on this evening's programme, is an affection so common that every practitioner of medicine sees it in his life's work numbers of times.

When one considers the proximity of that mass of exposed lymphatic tissue known as the faucial tonsil, considers its liability to infectious disease, the ease with which during the earlier years of life, it becomes hyperthrophied the system's never yielding fight to annihilate this hypertrophy, the wonder is not that peritonsillar inflammation is not an uncommon affection, but that the large proportion of mankind cannot give a personal account of the pain it causes.

Nature's ability to protect an anatomical area in the presence of chronic or repeated acute inflammation in an adjacent area is to me one of the many evidences that the hand that made us is divine. When, however, this protctive barrier has once been broken down and a fresh area invaded by inflammation, ever thereafter the new area has a tendency to become inflamed whenever the original area does, and often without waiting for such an incentive. Witness, for example, how many times nasal mucosities may occur without the inflammation spreading to the nose's adnexed mucous areas, the frontal sinuses, the sphenoidals, the maxillary antra, the middle ear, etc.; but let, just once, the inflammatory process spread into any one of these areas, and see how relatively easily it afterwards becomes inflamed in the presence of a rhinitis.

As in the case of the original spreading of the mucosities from the nasal into the frontal, maxillary or other adnexed mucous cavities, the cause is often to be sought largely in mechanical obstructive conditions; the same may be true in the case of the peritonsillar inflammation.

Tonsillitis, of both the follicular and interstitial variety, is common. Occasionally, the tonsillar inflammation is of such a character and occurs in the presence of such conditions that the anatomical line of resistance is broken through, and the inflammation spreads from the former to the latter. A pathway is thus formed which makes easy recurrence of quinsy possible. In some cases, this separating barrier is broken through by abscess formation in the outermost parts of the tonsil; at times, by the severity of the tonsillar inflammation.

When once the resisting power of the peritonsillar structures has been lessened the infectious agent for the quinsy may be furnished from a distant source without invoking the tonsillar pathway; as, for instance, when it forms merely a part of the picture of some general disease, as, for example, typhoid fever, pneumonia, tuberculosis, etc.

In a large proportion, more or less large, of cases, it will probably be found true that the tendency to recurrent quinsy has more than mere local significance and indicates a depraved general condition of the system in the production of which inheritance has played no small part. Sometimes, the question arises, Is quinsy contagious? Is there a special micro-organism which finds in the peritonsillar loose tissue the conditions most favorable for its development? I can recall in particular, two occasions in connection with which these questions came up for an answer. I shall mention one —the other was practically identical:

I was called to see Master A., who was complaining of his throat. I found besides an inflamed tonsil, peritonsillar inflammation which developed into quinsy. While he was sick, his brother developed quinsy; the house-boy had quinsy, and finally, the mother had peritonsillar inflammation with immense swelling of the cervical glands. The only other child at home, had, at this time, a severe chill and high fever, which, however, passed off without giving rise to any focal disturbance. Why should the infectious agent in four of these five cases seek the peritonsillar structures? Perhaps, in all five cases the micro-organism was the influenza bacillus. This would answer the question as to contagiousness. We must suppose in each of the four cases, the pre-existence of conditions favorable for the development of quinsy, and our other question is answered.

In the vast majority of cases, however, peritonsillar inflammation is secondary to diseased conditions of the tonsil, sometimes to acute inflammation in a healthy tonsil, but far more frequently to acute involvement of tonsillar tissue chronically diseased, thus justifying the English contention that peritonsillar inflammation "originates in the tonsil itself." And the effect of removal of the diseased tonsillar mass in the

prevention of the recurrence of quinsy suggests further that this is true.

The clinical picture of quinsy varies with the case and the stage of the disease. Two cases which I recall at this moment represent the extremes

Doctor, says Mr. A., I am going to have quinsy. I want to see if you can prevent it. In answer to the question how he is suffering, he replies, "The right side of my throat is sore, it hurts me to swallow, and it is getting painful to open my mouth. I am generally uncomfortable. It always begins this way."

Examination shows a tonsil with interstitial inflammation. The tissue over the anterior pillar is congested; the tonsil is beginning to be pushed outward. Close inspection of the tonsil shows suspicious bulging in the region of its central portion. A small knife pushed into this part opens an abscess lying partly in the tonsillar structure, partly external to it. The abscess opened, the severer attack is aborted.

It may be said, this is only a case of tonsillar abscess. Granted. Yet the patient seemed intimately acquaintel with the horrors of quinsy and claimed the attacks always began this way.

On another occasion, I was informed by my servant that "a gentleman that seemed mighty bad off" was waiting for me in the reception room. On entering, I found stretched out at full length on the lounge, a highly impressionable, long legged, anæmic, tuberculous looking youth. "Well," said I, "what's the matter?" A friend with him said, "He can't speak, Doctor. He has not spoken for three or four days. He hasn't taken anything, even a drop of water, for the same length of time. They have told him at home that he has got the lockjaw." The lockjaw part of the history proved true enough, for the patient was apparently unable to separate his teeth one-eighth of an inch. He would make no attempt to speak. I managed to get some of the history of the case from his companion, and after some persuasion, was enabled to see, although imperfectly, the region of the soft palate. A huge abscess occupied the supratonsillar space. This was opened and the lockjaw, in a few moments, disappeared. In this case, there was no definitely inflamed tonsil.

Sometimes, quinsy is ushered in with a chill. Sometimes, no definite history of a chill can be obtained. As a rule, it is preceded by a sore throat, which, as stated above, is represented by one of the forms of tonsillitis. Then comes pain in the affected side of the throat, pain on swallowing, pain in the ear, difficulty in opening the mouth owing to the proximity of the angle of the jaw to the inflamed area; there is a marked increase in the secretion of mucus in the pharynx; the tongue becomes furred; the voice is, as Ambrose Paré says, "drowned in the jaws and nose."

The average patient suffers greatly. The unwillingness of the patient to open his mouth increases with the swelling. I have never seen this reach such a degree that with a little persuasion, I could not get the teeth far enough apart to see the palatal region sufficiently to open the abscess.

As the inflammation increases, so does the redness and swelling. The tonsil is pushed toward the middle line. The cervical glands may become enlarged. Often, the uvula becomes markedly œdematous. There may or may not exist some marked tonsillitis. In one case, pus formation takes place slowly and the accompanying inflammation causes pain. In another, it takes place rapidly and causes relatively little suffering. As a rule, the abscess ruptures from the fourth to the eighth day, and afterwards, the symptoms rapidly subside.

Of the complications and sequelæ of quinsy, of late years little has found its way into the medical writings at my command. From my own experience, I have nothing to report. Occasionally, we hear of suffocation following rupture during sleep, of an immense quinsy abscess. Some few cases of disastrous bleeding from the abscess cavity, due, in all probability, to the erosion of some artery's sheath, have been reported. From time to time, a general phlegmonous condition involving the lower pharyngeal and laryngeal structures occurs. These conditions are, however, rare and has, each, its own distinguishing symptoms. Judging from the writings of the older medical authors, severe phlegmonous inflammations of the pharyngo-laryngeal regions — and all classed by them under the general head of quinsy—seem to have been common or, if not common, at least so fearful in their manifestations as to make an indellible impression upon the medical attendant and to call forth from his pen the most forcible and lurid descriptions of which it was capable.

314 East Franklin Street.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE XIV.

Ulceration and Ulcers — Importance — Frequency — Causes — Varieties — Diagnosis — Prognosis — Treatment — Fistula and Sinus.

Ulceration is molecular death of tissue, or a softening and disintegration of tissue, cell by cell. The result of superficial ulceration is the formation of an ulcer or an open sore, characterized by little or no intrinsic tendency to heal. All ulcers are caused and maintained by pathogenic microbes. They are the result of destructive inflammation and continue to exist until the primary cause has been removed or rendered harmless. Ulceration and regeneration are both present in an ulcer. If the destruction of cells exceeds the production of cells then the ulcer grows larger in size; if the two are about equal the ulcer remains stationary; if destruction ceases and repair con tinues, the ulcer grows smaller and finally heals.

Ulcers are extremely frequent and while apparently insignificant lesions produce much suffering and disability. As will be shown they may be due to different causes. There is no one remedy which will prove efficacious in their treatment and their cure frequently taxes the diagnostic ability and resources of the surgeon. Ulcers are pre-eminently a disease of the poor. When a rich man injures his limb he at once takes the needed rest and applies appropriate treatment. When a poor man it threatened with an ulcer he can not afford to quit work, but continues his occupation. His leg gets worse, but he maintains an upright position until finally the pain compels him to seek relief. Just in proportion to his reluctance to be treated is his demand for a speedy cure. The conscientious practitioner when confronted by such a case will be sorry if his knowledge is inadequate to give the best attainable results.

Classification of Ulcers. Ulcers are divided into superficial and deep, acute and chronic. *A superficial ulcer* is one that involves only the upper layer of the skin; *a deep ulcer* is one that extends through the skin and invades the subcutaneous areolar tissue. *An acute ulcer* is one that results from active destructive changes such as gangrenous inflammation. It develops quickly, spreads rapidly and is attended by marked local and general disturbances. *A chronic ulcer* is one that results from chronic inflammation such as tuberculosis. It develops slowly, progresses insidiously, and does not cause much suffering.

Anatomy of an Ulcer. For the purpose of description, an ulcer is said to have a floor, a margin, an underlying or surrounding tissue and a certain shape or size. The floor or base of an ulcer is the depressed central part of the sore. It is usually flat but may be concave. It is studded with granulations which may be sparse, or thickly set; may be small, pink and firm, or large pale and flabby. The margin or edge of an ulcer is that portion of its surface extending between its floor and the surrounding skin. It may be sloping, vertical or excavated. The underlying or surrounding tissue of an ulcer consists of the cutaneous or areolar structures lying in immediate contact with it. It is usually hard, dense and even cartilaginous from extension of inflammation and aggregation of leucocytes. The shape of an ulcer varies. It is usually round or oval. It may be serpentine or so irregular as to defy description. The size of an ulcer also varies, not only in different cases but in the same ulcer at different times. It may be only the size of the head of a pin, but may involve the entire circumference of a limb.

Causes of Ulceration. As previously stated, all ulcers are due to destructive changes incident to microbic infection. The character of the germ and the resistence of tissue vary widely with constitutional and local conditions, which must therefore be briefly considered.

1. *Constitution.* Certain systemic conditons predispose to the formation of an ulcer by impairing the patient's resistance to infection. If they can be corrected, an ulcer can be permanently healed. If they are incurable, all that can be accomplished is palliation of the local condition. Ulcers develop during the course of certain infectious diseases, such as syphilis, tuberculosis and leprosy. Others occur from general disturbances of nutrition, such as starvation, exposure and debilitating diseases.

2. *Local.* Certain mechanical injuries such

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

as a blow, or bruise, a burn, or scald may produce a wound which undergoing infection will refuse to heal and become converted into an ulcer. Certain disturbances of circulation, such as ischemia from pressure as in a bedsore, or passive hyperemia from obstruction as in a varicose vein may lead to ulceration. Certain defects in trophic nerve influence may so disturb local nutrition as to cause an ulcer, as in "mal perforant" or perforative ulcer of the foot. Finally, malignant growths such as carcinoma may break down and be the seat of chronic ulceration.

Varieties of Ulcer. Ulcers are divided into different groups and designated by names which indicate either their cause, as varicose ulcers, or their clinical behavior as phagadenic ulcers.

1. *The Inflamed or Traumatic Ulcer.* This type is essentially an open wound which has become infected and, owing to destructive inflammation, undergoes ulceration. The granulations are numerous, small, florid, and bleed easily. The surface is covered with a thick yellow pus which is readily wiped off. Pain is not great but the part has a just appreciation of injury. Granulations usually cease to form when the level of the skin is reached, and epidermization begins as soon as ulceration ceases. The indications for treatment are those for ulcers in general.

2. *The Indolent, Weak or Callous Ulcer.* This type is usually the result of inefficient treatment of the traumatic sore, when from any cause regeneration has been delayed and debility has taken the place of sufficient activity. The granulations are larger, paler and fewer. They contain less blood and are more insensitive. The discharge is thin and serous. The margins are hard and elevated. The surrounding tissues are swollen and discolored from passive congestion. Treatment consists in scarifying and dissecting out the indurated margins, and then applying the treatment for ulcers in general.

3. *The Exuberant or Fungous Ulcer.* Just as a traumatic ulcer may degenerate into an indolent ulcer owing to too little reparative energy, so it may become converted into an exuberant or fungous ulcer owing to the exercise of a too active effort at repair. An exuberant or fungous ulcer is one in which granulations form so rapidly that the cells can not be converted into mature tissue. As a result the granulations overshoot the surrounding skin and present the picture spoken of by the laity as "proud flesh." Epidermization can not take place until the exuberant granulations are reduced to the level of the skin. The special indication for treatment is to cut down the granulations either mechanically with a knife or chemically with an escharotic. In practical experience nothing so reduces the pride of "proud flesh" as the judicious use of nitrate of silver.

4. *The Irritable or Erethistic Ulcer.* This type of ulcer is characterized by pain which is always considerable and usually excessive. An indolent ulcer does not appreciate an injury; a traumatic ulcer merely acknowledges it; an irritable ulcer resents it. Irritable or erethistic ulcers are sometimes seen on the ankle but usually occur in the rectal region, e. g., fissure in ano. They are usually superficial and involve only the upper layers of the skin or mucosa. They are usually deeper at some point on their floor than at other points. They contain few granulations, are angry dark red in color and covered with grayish film. Their edges are thin, serrated and everted. Discharge is thin, acrid and bloody. Indications for treatment other than those for ulcers in general are rest of the part and excision or destruction by cauterization.

5. *Phagadenic or Gangrenous Ulcer.* This is a type of ulcer due to infection with germs of great virulency characterized by rapid molecular disintegration of tissues and increase in size of ulcerative area. As an example may be cited the chancroid. The phagadenic ulcer is usually irregular in shape. The margins are abrupt and somewhat ragged. The surface is destitute of granulations, of uneven depth and brownish color. The skin around it is red and swollen. The discharge is thin, acrid and bloody. Special indications for treatment are disinfection and cauterization with nitric acid or the actual cautery.

6. *The Varicose Ulcer.* This is a type of ulcer usually found on the leg, due to infection and ulceration of tissue predisposed to degenerative processes by lowered vitality from passive hyperemia. The pathological changes consist in destruction of the valves in the veins from the weight of the long column of blood, dilatation of the vessels and the production of varicosity. Interference with the flow of venous blood causes an edematous swelling of the limb. Infection follows either from without by injury or from within by local phlebitis. Then

comes inflammation, ulceration and the formation of a sore. These ulcers have the characteristics described under the head of indolent, weak or callous ulcers. The essential element in successful treatment is the correction of the passive hyperemia in the limb. This may be effected in some cases by strapping or the use of elastic constriction; in other cases by the prolonged elevation of the limb. The quickest and most permanent cure will follow the multiple ligation of the main venous trunks, the excision of the ulcer and skin grafting.

7. *The Trophic Ulcers.* This type of ulcer is due to some unexplained interference with the trophic nerve influence in the part which leads to its infection and ulceration; as an example may be cited the perforating ulcer of the foot. Owing to the lack of knowledge of the etiology or pathology, treatment is usually symptomatic. Recently stretching of the nerve trunks leading to the part has been tried with apparently beneficial effect.

8. *The Specific Ulcer.* This type of ulcer is due either to certain constitutional diseases such as syphilis, tuberculosis, actinomycocis, leprosy, scurvy etc., or to local trouble, such as the malignant disease, carcinoma and sarcoma. Specific ulcers will be discussed in the lectures on the different diseases which cause them.

Diagnosis of Ulcers. The diagnosis of the cause of ulceration is essential to successful treatment. In some cases it is easy, in others difficult, and in some instances impossible. The clinical history of the patient should be carefully reviewed, the area itself critically examined and if necessary microscopical examination or inoculation experiments made of discharges, or fragments of tissue.

Prognosis of Ulcers. The prognosis of an ulcer depends upon the type of ulceration and the possibility of removing its cause. It is also influenced by the general health of the patient, his pecuniary ability to take the necessary treatment, and the ability of the attending surgeon. „

Treatment of Ulcers. The indications for treatment which apply to all ulcers are to remove the cause, to give the affected part rest, to eliminate infection and to apply appropriate dressings.

1. *Remove the Cause.* If the ulcer be due to mechanical irritation such as the edge of a rough tooth or the corner of an improperly padded splint, the cause should be removed. If the ulcer be due to passive hyperemia from varicose veins the edema should be removed by elevating the limb, and prevented from recurring by multiple ligations of the veins. If the ulcer be due to syphilis or scurvy the cause should be combatted by appropriate constitutional remedies.

2. *Mechanical and Functional Rest.* The part the seat of ulceration must be given rest. If the ulcer be on the cornea light must be excluded; if the ulcer be in the stomach, food by the mouth must be temporarily withheld and the patient sustained by rectal alimentation. If the ulcer be on the leg, locomotion must be prohibited. If the ulcer be on the sphincterani the muscle must be paralyzed by divulsion.

3. *Eliminate Infection.* As ulceration is always due to infection and usually attended by suppuration a through preliminary disinfection should be practiced before the application of any of the dressings to be afterwards described. This disinfection should consist of the sterilization, not only of the infected area, but of the entire part on which it is located. This should be accomplished by the usual methods of shaving, scrubbing with hot water and green soap and the use of antiseptic solutions.

4. *Apply Appropriate Dressings.* 1. Moist Dressings. After the preliminary cleaning of the wound and adjacent surfaces, the first treatment usually tried is the moist dressing. The method of application consists in saturating a pad of absorbent cotton with the fluid selected, applying it to the raw surface and preventing rapid evaporation by covering it with a layer of oil silk. The cotton should be wet as often as it becomes dry, and should be changed as often as it becomes soiled. The solution employed should not be a strong antiseptic as it would kill cells as well as germs, but it should have an inhibitory action on microbic life. The three that will be found most satisfactory are chloral hydrate solution (chloral hydrate ʒi, water Oij); Thiersch's solution (salicylic acid ʒss, boric acid ʒiij, water Oij); and acetate of aluminum solution (alum ʒvj, acetate of lead ʒixss, water Oij). They may be used either hot or cold and should be employed in conjunction with rest and elevation. Many a rebellious and swollen leg ulcer comes to the surgeon scarred with caustics, gritty with antiseptic powders or filthy with greasy ointments; but not one that does not yield when the patient

is put to bed, the limb elevated, and the part treated as above described.

2. Dry Dressings. The treatment of granulating surfaces by dusting them with antiseptic powders has been made undeservedly popular by the advertisements of firms that have proprietary preparations to sell. The powders most frequently employed are iodoform, aristol, dermatol, bismuth, boric acid and oxide of zinc.

In some cases they do good, but in most instances they do harm. Chemically they destroy germs and lessen suppuration; mechanically they destroy embryonal cells and retard healing. When first applied to a wound decided improvement is seen, but continued use is followed by irritation due to absorption of moisture and the formation of crystalline concretions that act as foreign bodies, or broad incrustations that prevent the escape of pus and other wound secretions.

3. Oleaginous Dressings. The use of salves and ointments in the treatment of superficial wounds has fallen into unmerited disfavor. Because before the day of antiseptic surgery they were abused is no reason why they should now no longer be used. Some preparations become rancid and should be avoided; others remain sterile and may safely be employed. Vaseline, lanoline, and castor oil, plain or medicated, will give better results in some cases than any other application. They exert a feeble antiseptic action thus lessening suppuration; they exclude the air thus relieving pain; and they prevent the adhesion of over-lying dressings thus saving the embryonal cells from mechanical injury. In extensive burns there is nothing better in the early stages than a five per cent mixture of ichthyol and vaseline, and in sluggish granulations, especially of a tuberculous character, good will result from the application of a combination of one per cent carbolic acid, five per cent balsam Peru, and 94 per cent castor oil.

4. Nutritive Dressings. Considerable benefit will sometimes be derived in the treatment of a granulating wound by the use of a dressing that supplies food directly to the formative cells and their offspring. Proliferation is often arrested by starvation, and feeding is the logical remedy. The agent employed should be aseptic, non-irritating, and should contain nutritive material in an easily absorable form. The preparation that most nearly meets these requirements is Valentine's Meat Juice. It is sterile, contains no alcohol, is rich in food-stuff, and possesses the proper percentage of sodium chloride. It should be diluted with three-fourths water warmed to the temperature of the body, and applied on cotton in the form of a moist dressing. It does a great deal of good for a short while, but then loses its effect. As soon as pale granulations become pink and healthy it has fulfilled its function, and should give place to some other dressing.

5. Alterative Dressings. Cells, like individuals, sometimes without assignable reason develop disturbances of nutrition requiring alterative treatment. In the management of a granulating wound there is often call for local medication. Experience alone can teach the surgeon the agent to employ and the time and method of its application. Nitrate of silver, mercurial ointment, chloride of zinc, and sulphate of copper are all useful and time honored remedies. Among newer preparations must be mentioned proto-nuclein. I have several times seen indolent or foul granulating areas that had defied a half-dozen other lines of treatment improve under its use as if by magic.

6. Protective Dressings. In direct contrast to granulating surfaces that need stimulating or alterative treatment are those that are doing well and only require protection. When the wound is healthy and healing progressing satisfactory, nothing is more mischievous than meddlesome interference. All that should be done is to avoid infection by cleanliness, and to avoid injury to the newly formed cells by mechanical protection. Cleanliness is secured by changing the dressings as frequenty as they become soiled and bathing the wound with normal salt solution. Protection is best accomplished by interposing some impervious material between the granulations and the meshes of the overlying gauze, into which they would otherwise become entangled. In my experience the best results follow the use of strips of rubber tissue placed latticewise so as to afford drainage. Rubber tissue is cheap and easily gotten. It can be sterilized by soaking in a solution of bichloride, from which it must be freed before using by washing in sterile water.

7. Proliferating Dressings. When the destruction of skin is so extensive that the normal reparative power is insufficient to cover the granulating area with epithelial cells, recourse must be had to skin grafting. It has long been known that bits of cuticle properly planted on

flesh wounds or healthy granulating surfaces would become adherent and grow, thus protecting underlying structures and act as independent foci of epidermization for adjacent tissue. The application of this fact with epithelial cells secured from different sources and applied by various methods has enabled the surgeon to heal wounds, quickly and certainly, which otherwise would be slow to close, or perhaps become permenant ulcers.

FISTULA.

Fistula. A fistula is an abnormal opening between the skin or mucosa and a normal cavity. As examples, an opening between the skin and stomach is called a gastric fistula; an opening between the skin and bladder, a vesical fistula; an opening between the skin and rectum, a rectal fistula, and an opening between the mucosa of the vagina and the bladder, a vesico-vaginal fistula. Fistulæ are caused congenitally by defects in development; pathologically by sloughing from pressure, and surgically by operative procedures. The treatment of fistulae consists in freshening the margins of the opening and uniting them by sutures.

SINUS.

Sinus. A sinus is an abnormal opening between the skin or mucosa and an abnormal cavity. An opening leading from the skin to a cavity formed by a tubercular abscess in soft tissue or to an osteomyelitic cavity in the center of a bone is a sinus.

A sinus can not be treated *per se*. The only way to cure it is to deal with the cavity which it drains. With the obliteration of the abnormal cavity the sinus will usually close spontaneously.

QUINSY. ITS DIAGNOSIS AND TREATMENT.*

By CLIFTON M. MILLER, M. D., Richmond, Va.,
Professor of Anatomy and Instructer in Diseases of the Eye and Ear, Medical College of Virginia; Laryngologist and Rhinologist to Memorial Hospital, etc.

The subject for to-night's discussion is one which, though of great importance to the physician, is still usually so well recognized that a paper on its diagnosis and treatment before this body seems like a useless work.

The diagnosis of quinsy may often be made as soon as the patient presents himself in the consulting room and speaks or atempts to speak. Head is held rigidly upon the neck face usually turned to the affected side and showing marked signs of suffering, with speech thick and muffled, having something of a nasal tone. Upon examination, we find tongue covered with a white, gummy coating, breath fetid, and the rigidity of the jaws so marked that it is frequently an impossibility to insert even the thinest bladed tongue depressor for the purpose of getting a view of the pharynx. The patient, in giving the history of his trouble, does so with facial contortions indicative of the acute pain which the pharyngeal movements, associated with any attempt at speech, cause him. There is, in many cases, a history of initial chill, with a slight sore throat, gradually increasing and aggravated by talking and swallowing; solids are first dispensed with because of the impossibility of swallowing them; then fluids, both on account of the pain they cause and the fact that they return through the nose.

There is a free secreton of a thick, tenacious mucus, which, on account of the difficulty experienced in clearing it from the pharynx, is permitted to dribble from the open mouth.

Inspection of the pharynx shows an intense, general redness and hyperemia with the uvula very frequently edematous and pushed over toward the side opposite to the seat of phlegmon, though the point will often hook over and be in contact with the inflamed area. A bulging of one side of the soft palate with its tonsils will indicate the location of the trouble, for this condition is very seldonm bilateral. Carefully protecting the finger from being bitten, we may palpate the bulging area when a fluctuation can be detected in case there is pus present. There is pain at the angle of the jaw and considerable painful adentitis in this region.

Quinsy is to be differentiated from lateropharyngeal phlegmon by the swollen, boggy neck and the detection of pus behind and outside of the tonsil, in the latter, when combined internal and evternal, palpation is used. Malignant diease may be confounded with this condition, but its slower growth without febrile symptoms, and the greater hardness of the tissues and absence of pus on incisoin should be sufficient to allow a differentiation without the excision of a piece for microscopic examination which will at once detect the malignancy.

*Read before the Richmond Academy of Medicine and Surgery, November 14, 1905.

Aneurism might cause some confusion, but its pulsation under the examining finger will clear away this doubt.

The history and absence of acute symptoms in case of gumma should exclude this.

The treatment of peritonsillar abscess may be divided into the preventive, abortive, and curative, or evacuation of abscess actually formed.

The preventive treatment consists of the relief of any constitutional dyscrasia, particularly rheumatism and anemia, and the removal of enlarged tonsils and those having inflammatory adhesions binding them to the pillars.

To my own mind, the first essential of abortive treatment is incision into the peritonsillar tissue to reduce the local congestion and relieve tension; this procedure so often gives immediate release from pain and discomfort that it has become to me a *sine qua non* of early treatment. Following incision, for the purpose of preventing abscess formation, rest in bed and a free saline purge should be prescribed with the internal administration of guaiac together with the use of the ice bag externally. In some cases the use of gargles is so painful that they do more harm than good; but should the patient be able to use them without causing too much suffering they sometimes cause much comfort and hasten recovery. Hot salt water is about as good as any other gargle and it should be used at a temperature just short of scalding the throat. Almost any of the antiseptic solutions, Dobell's, glycothymoline or any one of half a dozen others if properly diluted and used hot, will be of marked benefit.

If the patient is not seen until three days after the beginning of the attack, abscess is almost certain to have formed, and though it may not be evident upon such examination as we are able to make, yet we should search for it. The treatment here is that of abscess in any other part of the body: evacuate the pus and drain. The place of incision will depend upon the location of the abscess which, in my own experience, most frequently tends to point in the soft palate about one-half inch external to the base of the uvula. This is in accord with experience of Coakely and Grayson. Richards, of Fall River, recommends incision into the supratonsillar fossa, and G. A. Leland has revived the old method of making incision with an angular bistoury into the tonsil itself, then enlarging this incision with the finger and evacuating the pus. I have never found it necessary to adopt either of these methods and consider the latter rather heroic unless specifically indicated.

My own incision of choice in an anterior pointing abscess is the usual one beginnng on a level with the base of the uvula and one-half inch external to it, and going downward and slightly inward for about one-half inch. The incision should be made with a straight blade knife, there being one made for this purpose, with a blade of about one-half inch on its cutting edge; a sharp pointed bistoury with all of its cutting edge except one-half at point, carefully covered by wrapping with cotton or adhesive plaster, will answer the purpose quite as well. The large vessels are pushed so far out ward and backward by the collection of pus that there is but little danger of wounding them, yet the incison should not be of any greater depth than the cutting edge of the knife already described.

Pus will frequently gush out immediately upon the making of the incision, but should this not be the case and further search is to be made for it, do not make such exploration with the bistoury, but introduce a narrow bladed angular dressing forceps into the incison already made. This can, with safety, be pushed out in the soft tissues till the abscess cavity is entered, then opening the blades and withdrawing them while open, a sufficient vent for complete drainage is left. After opening the abscess cavity, gentle pressure on the neighboring soft tissues may be made to insure complete emptying, followed by washing out with some antiseptic solution, of which acid carbolic, 1 to 100, will usually prove efficacious.

The use of mechanical aid to drainage will be but seldom necessary, but if it should be, a small guaze wick to be left in for twenty-four hours will, except in rare cases, be all that is required. At the end of twenty-four hours, mop out the abscess cavity with hydrogen peroxide, and then use 20 per cent. solution of argyrol freely in it. This treatment for a few days will, as a rule, see your patient entirely well.

Immediately after incision, the use of hot gargles, if they can be borne, and a big hot poultice to the side of the neck are exceedingly grateful to the patient and hasten his recovery.

Should the abscess point behind the tonsil, it must be incised at this point with an angular

knife. Sometimes pus is merely imprisoned between the tonsil and its anterior pillar, in which case the pulling forward of the pillar will evacuate the abscess and result in cure without further intervention.

The tonsil pushed inward and away from its pillar by a peritonsillar abscess offers us a great cessary to cure the condition, and by it we intemptation to remove it. This, in my opinion, is an unjustifiable procedure, since it is not necrease the suffering of a patient who already has about as much as he can endure; and uncontrollable hemorrhage from the engorged vessels may follow such procedure.

414 *East Grace Street.*

GOITRE.*

By RAMON D. GARCIN, A. B., M. D., Richmond, Va.

Authorities are singularly brief in their writings on the medical treatment of goitre, as can be very readily seen by any one who cares to take the time to look it up—showing that as yet, we simply stand upon the threshold of knowledge as regards this disease, or series of diseases, and hope that as the physiology of the gland is understood, the pathology of the same may be worked out.

The physiology of the thyroid is, as yet, very little understood. It is a practically ductless gland and comparatively recent investigation has shown that it has a secretion; and the relation of this secretion to the whole system is a very important one. Beyond this, nothing very definite, so far as the human is concerned, is well established. When puberty begins, with the changes incident to the beginning of menstruation, the gland usually enlarges—but this is rarely a permanent condition—disappearing after a variable time.

Osler (sixth edition, Sept. 1905, p. 763), *defines* goitre as "hypertrophy of the thyroid gland occurring sporadically or endemically." Sporadic goitre is not uncommon and is confined almost exclusively to women. The following varieties are distinguished: (a) Parenchymatous, in which the enlargement is general, and the follicles, usually newly formed, contain a gelatinous colloid material. (b) Vascular, in which the enlargement is chiefly due to dilatation of the blood vessels without the new formation of glandular tissue. (c) Cystic goitre, in which the enlarged gland is occupied by large cysts, the walls of which undergo calcification. Endemic goitre is rare in the United States and Canada. In Switzerland and parts of the European countries, it is very prevalent, occurring alone or with cretinism.

Symptoms vary with the size of the enlargement. The goitre may attract attention, certainly at first, only by its size which first causes the patient to notice that it exists. In one of my cases of parenchymatous goitre, occurring in my service at the Masonic Home of Virginia, the pressure symptom was the first to attract attention and cause the patient to seek advice.

Diagnosis is very easy and made from the symptoms.

Prognosis, in my experience, which is limited practically to the parenchymatous forms, is uniformly good, but in a minority of cases there is a tendency to recur, due though, I think, to a too early discontinuance of treatment.

Treatment. Under this head, I shall briefly report a few cases:

Case I. Bessie M., white, age 16, case of parenchymatous goitre. History of having had enlargement for several months. Sought advice because of pressure; tumor size of a small lemon. Treatment consisted in five grain doses of extract of thyroid gland (Armour's) three times daily, with tincture of iodine locally. The persistence of this treatment over a period of six weeks caused a disappearance of the tumor, which returned after three or four months. A return to the treatment, pushed to twenty to twenty-five grains daily of thyroid extract, after a reasonable length of time, produced complete recovery and no recurrence for two years.

Cases II and III. White, ages, 14 and 15; history in each case practically the same as in Case I, although the tumor was nothing like so large. The same treatment persisted in for several months was most successful, and no relapse in either case.

The treatment as outlined in the preceding cases, has given me the best results; and, if the patient does not improve under it after a reasonable length of time, surgical intervention should be considered as indicated.

Exophthalmic Goitre. (Graves', Basedow's, or Parry's Disease). Dr. W. H. Thompson's lit-

*Read before the Richmond Academy of Medicine and Surgery, November 28, 1905.

tle work on Graves' Disease is one of the latest and certainly to the writer the most satisfactory work on the subject. He says: "In no disease are the external features more obvious or striking than in a typical case of exophthalmic goitre. Aside from the prominent tumor and deformity of the neck, the peculiar appearance of the eyes alone would suffice to attract attention. It was but natural, therefore, that the malady should acquire a name from the two obtrusive symptoms."

Definition (Osler, sixth edition). "As disease characterized by exophthalmos, enlargement of the thyroid, and functional disturbance of the vascular system. It is very possibly caused by disturbed function of the thyroid gland."

Etiology. "The disease is more frequent in women than in men" (Osler), which certainly coincides with my limited experience, as all of the cases I have seen occurred in women. It is usually a disease of early adult life. Osler says "the disease is regarded by some as a pure neurosis. Others believe that it is caused by a central lesion in the medulla oblongata. Of late years, the view has been urged, particularly by Moebius and by Greenfield that exophthalmic goitre is primarily a disease of the thyroid gland, the antithesis to myxœdema.

Symptoms. (Butler, Diag. Int. Med., 2nd ed., Sept., 1905). "Four cardinal symptoms characterize this disease: enlargement of the thyroid gland, exophthalmos, tachycardia and tremor. These do not always develop in the same order, but ultimately, all are well marked." Enlargement of the thyroid, "As in simple goitre, one or both sides may be affected, although the size of the growth is not so extreme."

Exophthalmos.—"Synchronously, as a rule, with the thyroid enlargement, one or both eyes become more prominent, etc." Tachycardia.—"The heart action progressively increases in rapidity, although intermittence is rare; 140 to 160 beats per minute, or even higher, are not infrequently observed. Tremor is a well marked cardinal symptom, fine, general, involuntary and appearing early."

Other symptoms are present early or late, such as gastrointestinal complications, and, as I have observed certainly in one case seen in consultation at the request of the late Dr. W. H. Lyne, slight temperature, the thermometer in this special case reading from one-half to one degree of temperature above normal every morning for some days and even weeks. There are disturbances of the urinary apparatus at times; and glycosuria and albuminuria are noted in individual cases.

Diagnosis is not difficult and can be easily made when the classical symptoms mentioned are present; but at the onset of an attack, it is not as easy as the book says it is, certainly, not to the writer.

Prognosis, as a rule, is fairly good as to ultimate recovery; but convalescence is slow and tedious.

Treatment. Rest, preferably in bed. I have had the best results with the thyroid extract and some form of the iodides, especially the iodide of sodium. Some indicated drug to quiet the heart action in special cases; suitable attention to diet, hygiene, etc., are of service. A host of drugs has been recommended by special writers on the subject.

Osler advises surgical treatment if the medical does not improve some after three months, a statement which is a very broad one—one with which, at the risk of offending, probably very egotistic, I certainly do not agree, as treatment should be persisted in for many months before the surgeon has the final decision, which is certainly, the conservative way of dealing with the disease.

In conclusion, I desire to say that I have quoted freely from the writings of Osler, Butler and Thompson.

2618 *East Broad Street.*

A PECULIAR FORM OF TRAUMATIC (CHEMICAL) CONJUNCTIVITIS.

By A. M. HUTTON, M. D., Navarre, Mich.

Some miners employed in sinking a shaft near here encountered numerous streams of sulphur water. Though a careful analysis of the water has not been made, it is sufficient for me to state that it gives rise to an acute conjunctivitis. The pain is most excruciating, and can be relieved only by the use of cocaine, and even cocaine is useless unless preceded by adrenalin chloride.

My practice has been to use adrenalin chloride, 1-2000, and to follow this with cocaine, 2 per cent. solution, and then to give the patient a boracic-acid and cocaine solution to be used until all symptoms have disappeared.

The point in favor of adrenalin chloride is this: Cocaine will *not* relieve this condition, unless preseded by adrenalin chloride.

Book Notices.

Baby Incubators. By JOHN ZAHORSKY, A. B., M. D., Clinical Professor of Pediatrics, Medical Department, Washington University, St. Louis. St. Louis, Mo. Courier of Medicine Co. 1905. Cloth 8vo. Pp. 136.

This is a clinical study of the premature infant, with especial reference to incubator institutions conducted for show purposes." It consists of a series of articles in the *St. Louis Courier of Medicine* for 1905. It gives in detail the measures to be adopted to bring the immature infant to the stage of robustness and health, by use of incubators, and describes minutely what is to be done and how to do it. While the book is both instructive and entertaining, and points out how many lives may be saved, we doubt that, in this age of scuffle and shuffle, there will be many patrons of the incubator institutions or methods. Public or State provisions must be made for the support of such institutions, for otherwise the poor cannot patronize them, and the rich are not apt to do it. Yet, any one interested in the subject, will find a great deal in this monograph to stimulate his efforts in the cause of humanity.

The Blues (Splanchnic Neurasthenia)—Causes and Cures. By ALBERT ABRAMS, A. M., M. D., Consulting Physician, Denver National Hospital for Consumptives, etc. Illustrated. Second Edition, Enlarged. New York. E. B. Treat & Co. 1905. Cloth 12 mo. Pp. 254.

This book has come to stay. It deals with a condition often met with in the rounds of the practitioner. It has long been believed that most cases of neurasthenia suffered from portal congestion; hence the use of purgatives, etc. But these have not been found to act as theory would suggest. Dr. Abrams took another turn, and adopted a course of massage of the abdominal organs, the application of sinusoidal currents to the abdomen, etc., and discovered a cure in the very vast majority of cases. The line of treatment suggested by the author has not yet become common practice; but if the half of what he says as to the results is borne out by experience, then he has become in truth a great benefactor to the human race. His statements are worth the trial of the methods he proposes; If they do no good, they will do no harm. It is a book that practitioners should purchase and attentively read, and then apply the line of treatment suggested.

Hygiene and Public Health. By B. ARTHUR WHITELEGGE, C. B., M. D., Chief Sanitary Officer of West Riding of Yorkshire Rivers Board, etc., and GEORGE NEWMAN, M. D., F. R. S. E., Medical Officer of Health of Metropolitan Borough of Finsbury, etc. New (Tenth) Edition, Revised, Enlarged and in Great Part Rewritten. Illustrated. Chicago. W. T. Keener & Co. 1905. Cloth 12mo. Pp. 636. Price $1.75 net.

One is interrupted in his fascinating, instructive reading of this handbook by running across abbreviations which require time to understand. Thus, "M. O. H." refers to Medical Officer of Health; "L. G. B."to Local Government Board, etc. Beyond such annoyances, the book itself is one of the very best for instruction purposes that is published. It deals in a plain, practical way with practically all questions relating to hygiene and public health that are essential for the student or the citizen. The means for the prevention of infectious diseases especially will prove of special interest to the medical man, while matters referring to buildings, sewage, drainage, etc., are of like interest to architects, builders, civil engineers, etc. Our lack of space prohibits a detailed notice of this book; but those willing to depend upon our judgment about such matters, will not regret their purchase and careful reading of every chapter. Instructions refer especially to English laws, but they show what is needed in this country.

Clinical Methods. By ROBERT HUTCHISON, M. D., F. R. C. P., Assistant Physician to London Hospital, etc., and HARRY RAINY, M. A., F. R. C. P., Examiner in Medicine and Clinical Medicine, St. Andrews University, etc. With upwards of 150 Illustrations and 9 Colored Plates. Ninth Edition. Cloth. 12mo. Pp. 636. Price $2.50 net.

This is worthily called "a guide to the practical study of medicine"—suitable alike to the wants of teacher, student and the practitioner. This edition is well revised up to date. The chapter on Clinical Bacteriology has been, for the most part, re-written. As a guide book for the application of appropriate *methods* for clinipurposes, it would be hard to find its equal. While by no means intended as an exhaustive

work, we believe the book would have been more generally useful to practitioners had more suggestions been made as to the kind of diseases to be especially looked for after the special findings of the laboratory of physical examinations, etc. In other words, had the authors taken up the results of the pathological, bacteriological and other like examinations, and suggested more fully the special classes of diseases to be looked for, they would have made this the ideal book on *Clinical Methods.*

Analyses, Selections, Etc.

Collargolum for Bladder Therapy and Skiagraphy,

Drs. Voelcker and Lichtenberg note (*Munch Med. Wochenschrift,* August 15, 1905), that the ordinary means of examination give but little information as to the shape of the bladder. Two and a half per cent. solutions of collargolum, however, do not irritate the vesical mucosa; on the contrary, marked improvement occurs in some cases of chronic cystitis after collargolum injections. They have made extensive use of this accidental discovery, as its injection causes no pain whatever, and now employ it exclusively in cystitis in place of other antiseptics, such as silver nitrate, which is notoriously painful. In chronic cystitis from prostatic hypertrophy, for instance, they inject three and a half ounces of a one per cent. collargolum solution, which may be left in the bladder as long as desired, or even permanently. Besides, with collargolum solutions in the bladder, excellent skiagraphs were obtained, giving valuable information in prostatic hypertrophy, vesical prolapse in the female, and other displacements and deformities of the organ.

Probilin Pills for Gall Bladder Affections.

Late Major and Brigade Surgeon U. S. A., C. Frank Brnno, of Buffalo, N. Y., says that, acting on the advice of Dr. John H. Musser, of Philadelphia, he prescribed "Probilin Pills" for patients with gall bladder affections. The results obtained from their use have been absoutely marvellous. Every case in which they have been used—more than 25—shows marked improvement, with not one single failnre.

Locomotor Ataxia Successfully Treated by the Ultra-violet Rays.

Dr. J. Monroe Lieberman of New York reports in *The Archives of Physiological Therapy* for October, a series of 36 cases of locomotor ataxia treated by the ultra-violet rays with the result that four have been apparently entirely cured, twelve benefitted to the extent that coordination is restored, pain abolished and the ability to use their upper and lower limbs without assistance established.

In 18 cases of the series there is an apparent arrest of the progress of the disease. Two died during treatment. One from erysipelas, the other from lobar pneumonia.

This method is to "dehæmatize" the area to be treated, by cataphoresis with adrenalin chloide (1-1000 sol.) so that the violet rays may penetrate beyond the skin, since the light is absorbed by skin with a normal blood supply. The light is applied to the cervical, lumbar and sacral regions in rotation for 10-30 minutes, three times per week. The static current is applied daily and a warm "half bath" with light massage given before retiring.

Lieberman concludes that while not every case can be cured by this treatment, his success justifies him in holding out hope in cases not too inveterate nor too complicated.

Editorial

The Virginia State Board of Medical Examiners.

The next session of this Board of Examination of Applicants for license to practice in Virginia, will be held in Richmond June 19, 20, 21 and 22, 1906.

The following changes were made during the December, 1905, session in regarl to sections and number of questions, which will comply with the requirements of the Confederation of Reciprocating, Examining and Licensing Boards:

Section.	No. of Questions.
1. Anatomy and Embryology	10
2. Chemistry 6, Toxicology 2, Medical Jurisprudence 3	11

3. Histology 2, Physiology 6, Hygiene 3 ...11
4. Materia Medica 6, Therapeutics 6.... 12
5. Pathology 6, Bacteriology 3, Neurology 3 12
6. Laryngology, Rhinology, Ophthalmology, Otology 10
7. Practice, Diagnosis and Etiology..... 12
8. Obstretrics 5, Gynecology 5, Pediatrics 2. 12
9. Surgery 10

Total.....100

Reports from examiners of papers presented at the December session are coming in so slowly that the Secretary is delayed in compiling the final report for publication, which will probably appear in the first February issue of this journal.

Doctors' Charge Against Brother Doctors.

We were recently shown the bill of a Memphis doctor against a regular Ohio doctor for ordinary services rendered the latter's dependent son while in that city. It does not seem that any unusual attention was required by the case, that all of the visits were in the daytime, during the ordinary rounds of the attending physician; nor was the slightest deduction made from the usual professional fees of that city. We do not deny the legal right of the Memphis doctor to do as he did—even writing a sort of "dunning" letter to the boy's father in Ohio.

While such things may be lawful, they are not expedient. Evidently the Memphis doctor has failed to appreciate the sentiments of the code of ethics of the profession, or the questions of professional reciprocity under given circumstances. Had special expense of travel been required, or had the case required unusual attention, such as a series of night visits, after bed hours, etc., there might have been some excuse. But we are not aware of the custom anywhere else that full professional fees are charged against brother practitioners for ordinary services rendered the child or the wife of a practising physician. It would not, however, be out of place under such circumstances for the physician whose dependent member of his family was the beneficiary of such services to tender some honorarium at a proper season in recognition of such services by another. Of course, it is understood that our remarks apply to those cases where imposition is not undertaken nor practiced.

Epileptic Colony for Virginia.

At a meeting of the General Board of Directors of the four State hospitals of Virginia, held during November, 1905, the proposition originally made eleven years ago by the able and progressive Superintendent of Central State Hospital, Dr. Wm. F. Drewry, was unanimously endorsed, with enthusiasm, looking to the establishment of a much needed State institution on the industrial colony plan for epileptics. If the bill passes the Legislature, the epileptics will be removed from the three State hospitals for whites, and then the effort will be made to further develop the Industrial Colony for Epileptics, taking as many indigent epileptics as possibe from the various counties, cities, etc. For many years, it has been time and again pointed out that neither the simple epileptic nor the insane is apt to be benefitted by their association, as has been so long unavoidable in the State care of these unfortunates. The General Board also appointed Dr. Drewry, with three of its own members, a committee to attend the National Epileptic Association held in New York during the first week of December, 1905, to collect all the data possible bearing on the care and treatment of epileptics.

We presume it is unnecessary to appeal to the profession of Virginia to do all in their power to further the interests of this great humane undertaking.

Chicago Public Schools Closed to Children With Tuberculosis.

As the outgrowth of the discussion of recent years, the Chicago public school authorities, during December, 1905, took a very radical step. Tuberculosis was held to be as infectious as smallpox, scarlet fever or diphtheria. The public school authorities, therefore, adopted without dissent, a resolution calling for the draft of a rule providing for exclusion from the public schools all victims of tuberculosis. A plan for the examination of all "suspicious" pupils was provided, with a view of determining whether or not they should be denied seats in the school room. By such radical measures, and of course with the observance in general, it is hoped first to prevent the spread of tuberculosis in public schools, and then to stamp the disease out of Chicago.

The Southwest Virginia and East Tennessee Medical Societies

Meet in joint session at Bristol, Va.-Tenn., January 17-18, 1906. Twenty-six papers are listed on the preliminary program, which fact alone gives, we believe, some indication of a meeting full of promise for a large and enthusiastic attendance. Drs. E. T. Brady and Peyton Green are respectively President and Secretary of the Virginia Society, while Drs. C. J. Broyles and W. M. Copenhaven hold like offices in the Tennessee Society. The Committee of Arrangements is composed of Drs. W. B. St. John, W. K. Vance, and G. M. Peanler. The meetings of the Southwest Virginia Medical Society have always heretofore proved to be of considerable interest and value—certainly to those who attend from a distance—and a joint session of two such progressive Societies could not very well be less so.

Non-Combination of University of Virginia and Medical College of Virginia.

For some months past, earnest efforts have been made by the friends of the Medical College of Virginia to formulate a plan by which that institution might become a part of the Medical Department of the University of Virginia. That such consolidation at any time in the near future will be secured is now regarded as past hope. The joint committees of the two institutions have found that a much larger sum of money will be needed to carry out the plans of consolidation and co-operation than it is reasonable to expect can be secured within the next few years.

Repeal of License Tax on Doctors.

Now that the Virginia General Assembly is in session, every doctor in Virginia certainly should so impress his legislators of the wrong that is done the medical profession by the requirement of license taxes as to secure the repeal of the existing law on the subject. Dr. J. B. DeShazo, Ridgeway, Virginia, is chairman of the Committee of the Medical Society of Virginia on the subject; and his indefatiguable work for the profession of Virginia in the direction indicated entitles him to its highest honors. He has been aided by an able and influential corps of committee-men. We earnestly urge all doctors who have not read the December, 1905, issue of *The Legislator,* edited by Dr. DeShazo, to do so at once in order that they may the more intelligently inform their representatives in the Virginia Legislature. The profession seems to be so unanimous in favor of an act of the Legislature to repeal that part of the law which charges license taxes against legitimate practitioners that we have heard of only one doctor in the entire State who opposes the proposed repeal; and his reasons are so distinctly personal that they should not carry any weight in the decision of this matter.

Committee on Invitations of Medical Society of Virginia.

The President, Dr. Lomax Gwathmey, Norfolk, finding under the laws of the Society, that it is his prerogative to appoint said committee for the year, has set aside the three elected by the Society at Norfolk to serve as such committee, and has appointed in their stead Drs. Frank H. Hancock, Pinners, Norfolk, Wm. F. Drewry, Petersburg, and R. M. Slaughter, Theological Seminary.

The Practitioners' Visiting List 1906,

Heretofore known as *Medical News Visiting List,* is ready for the practitioner. It is an invaluabe jocket sized book containing the record portion of ruled blank pages adapted for noting all details of practice and professional business. It is issued in four styles: "Weekly," dated for 30 patients; "Monthly," undated for 120 patients monthly; "Perpetual," undated for 30 patients weekly, and for "60 patients" weekly per year. The text portion, suited to all sorts of emergencies of the practitioner, has been thoroughly revised and brought up to date. Messrs. Lea Brothers & Co., Philadelphia, Pa., are publishers. Price, $1.25; Thumb-letter index, 25 cents extra. The "List" is bound in flexible leather, with flap and pocket, pencil and rubber, and calendar for 1906 and 1907.

Lectures on Auto-Intoxication in Disease, or Self-Poisoning of the Individual. By Ch. Bouchard, Professor of Pathology and Therapeutics; Physician to the Hospitals, Paris, etc. Translated, with a Preface and New Chapters by Thomas Oliver, M. A., M. D., F. R. C. P., Professor of Physiology, University of Durham, etc. Second Revised Edition. Crown Octavo, 342 pages, Extra Cloth. Price, $2.00, net. F. A. Davis Company, Publishers, Philadelphia.

These Lectures contain a storehouse full of information of every day interest. The jist of

the book may be gathered from the quotation of the Translator:—"Putrefactive processes in the intestinal canal, and the development of physiological and pathological alkaloids play an important part in many disease processes." "Scarcely a month passes without deaths being reported and traceable to a meal of tainted meat," or milk, or the like. The cooking of meats destroy the micro-organisms, but, after cooling, ferments have been found to carry on the work of decomposition, and which ferments may prove dangerous to health." It is with such subjects that these Lectures deal, and give to the book an interest for every practitioner, health officer, etc., which leads to a thorough reading—from introduction to the end of the last chapter. The interpolations by the Translator, always enclosed in brackets, add greatly to the value of the book and brings the subject quite well up to date. It is a book which, indeed, the intelligent layman may profitably read, and thus help to popularize developed facts as to the broad question of auto-intoxication.

Obituary Record.

Dr. William S. Forbes

Died at his home in Philadelphia, Pa., December 16, 1905, aged about 76 years. He was born at Falmouth, Va., but about the beginning of the Confederate War, he moved North. In 1866 he graduated as Doctor of Medicine. Later, he was elected Professor of Surgical Anatomy. During the session of the Medical Society of Virginia, while visiting the same, he was elected as a Non-Resident Honorary Fellow, but never attended any future session.

Dr. Benjamin Blackford

Died at home at Staunton, Va., December 13, 1905, after an illness of only four days of pneumonia. His wife died two weeks previously from the same disease. Dr. Blackford was born in Shenandoah Co., Va., 1834. He graduated in Medicine from Jefferson Medical College 1855, and then served two years as resident physician in Blockley Hospital. Soon afterwards, he located at Lynchburg, Va., and was associated with his father in practice. He became a surgeon in the Confederate States Army. After the War, he resumed practice at Lynchburg. He was one of the founders of the Medical Society of Virginia, 1870. In 1887, he was elected president of that body, and in 1888 he was chosen as a Resident Honorary Fellow of the same. His interest in this organization never flagged. He contributed some papers to its *Transactions,* and also to this journal. In 1891, he was elected Superintendent of the Western (Va.) State Hospital for Insane, which position he creditably filled till his death. He was a good worker for professional interests in Virginia, and his memory will long be cherished by those who knew him most intimately. His remains were buried in the family lot in the Lynchburg Cemetery. Six sons survive.

Dr. Thomas Lawrence Painter

Was born at Cripple Creek, in Wythe county, Va., the 28th day of July, 1841. His boyhood days were spent on his father's farm and when the war broke out between the States he enlisted in the Southern Cause with the first volunteers and served through the four year's war.

He entered the Medical College of Virginia in 1866 and was graduated from there in 1868. He began the practice of medicine at Tazewell, Va., then Jeffersonville, and after one year he moved to Liberty Hill, Tazewell county, where he at once entered a large and lucrative practice.

Possibly a year later he married Ellie, daughter of Wm. M. Gillespie. In those days doctors were few and far between, and his field covered a radius of many miles and entered four or five counties. For thirty years he was an active and cheerful worker, carrying rays of sunshine and hope into many homes. He was a gentleman by breeding and rearing; an affectionate and loyal husband; a kind, patient and sympathetic father, and a genial and attractive friend or companion.

He kept an open house always, and in his home and around his fireside were seen to perfection those graces that will forever mark the old type of the Virginia gentleman. In his contact with the members of his profession he was ethical and conservative always, and the last year of his life he served his fellows as president of the Tazewell Medical Society.

He died at Tazewell, Virginia, November 9th, 1905, of acute Bright's disease.

The above was submitted to the Society by Dr. R. B. Gillespie, and ordered published by the Tazewell Medical Society.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 20.
Whole No. 236.

RICHMOND, VA., JANUARY 26, 1906.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

THE MANAGEMENT OF NORMAL LABOR FOR THE PREVENTION OF PUERPERAL INFECTIONS.*

By HERBERT OLD, M. D., Norfolk, Va.

"Septic infection was once called puerperal fever, and was supposed to be a specific disease, but it is now known to be nothing more or less than wound infection, some portion of the birth canal being inoculated with septic matter. The birth canal after labor is a great wound cavity easy to inoculate with septic material, but difficult or impossible to disinfect." (Edgar).

Practically all cases of puerperal infection are caused by the introduction into the genital canal from without of certain micro-organisms. The means by which infection is introduced are the examining finger, the operating hand, instruments, bed clothes, the atmospheric air, sponges, the hands of the midwife or nurse. Infection by polluted air in the lying-in chamber has occurred undoubtedly, but it is very rare.

The *predisposing causes* are: Anything which lowers the resisting powers of the tissues, as slight lacerations and abrasions of the genital tract; shock and exhaustion following prolonged or difficult labor; anemia, especially that which follows excessive hemorrhage; general debility from lack of exercise; bad hygenic surroundings; constipation; toxemia of pregnancy; and heart disease.

The *preventive treatment* consists of:

(1) General hygenic measures.

(2) Asepsis of patient, physician, nurse, and accessories.

(3) Limitation of internal examinations.

(4) Avoiding the use of douches as a routine measure.

*Read before the Seaboard Medical Association, at Newport News, Va., on December 7, 1905.

(1) Hygienic Measures.—Good blood is the best of germicides; hence the importance of the physician making his patient notify him as soon as she becomes pregnant, so that he can instruct her as to the necessity of a daily out-of-door walk or drive, which must be persisted in up to the day of labor; the necessity of substantial and additional nourishment, which should consist of milk and crackers or bouillon and crackers at bed time and in the early morning on first awakening, and between meals if desired; the necessity of freedom from worry and care, some of which can be eliminated by warning her not to receive friends who will tell her of Mrs. A.'s death following childbirth, of maternal impressions, etc. The physician at his earliest convenience should examine the patient's heart, lungs, breasts, nipples, and urine; if she is a primipara or gives the history of a previous abnormal labor, he should take the measurements of the pelvis, not only that he may gain necessary information as regards the proper management of the case, but that he may reassure the patient, convince her of his interest in her condition, and relieve her of much anxiety. Torpidity of the liver, anemia, and constipation should be corrected. The lying-in-chamber should be examining as to being sufficiently commodious and sunny; it should be removed as far as possible from toilets, sinks, and plumbing, should be easily ventilated, and heated by an open fire. The urine should be examined every two weeks until the seventh month, and once a week for the last three months; the first urine examination, and once a month thereafter, should consist of the amount passed in twenty-four bours, the amount of urea, and a microscopical view of the sediment, in addition to the ordinary one made. The patient should be told to notify the physician of any persistent headache, severe pains in the stomach, dizziness, spots before the eyes, and swelling of the face or extremities. During the eighth month another general examination should be made in

order to find out by external methods the presentation and position of the fetus and in order to get some reliable data as regards the expected day of labor. At this time the patient should be made to apply to the nipples twice a day with camel hair brush, a solution of menthol, gr. xv to alcohol (50%) oz. ij. She is given patterns from which to make 3 abdominal binders, 3 breast binders, and 3 perineal binders. She is instructed to put aside 6 clean towels, 2 sheets, and to make 48 vulva pads (absorbent cotton and gauze), which are to be put up in packages of six; these latter, together with the abdominal binders, towels and sheets, are to be sterilized. She is told to get a nail brush, green soap, a bottle of antiseptic tablets, 4 ounces of boric acid, one pound of absorbent cotton, 3 one-yard packages of sterilized gauze, a bed pan, a douche bag, and some chloroform. She is told to pass her water lying on the bed pan at least once a day, so as to accustom herself to the same.

(2) Asepsis.—*The patient.* When labor commences she is to be given a low enema of soap suds and water, and after the bowels move she is to bathe in the tub, using soap freely, and put on a clean night gown (preferably a short one), clean stockings, slippers, and a wrapper.

The nurse or attendant. She should follow out absolutely the written instructions of the physician, be free from contact wih any acute infectious disease, and be forbidden to give douches or practice any internal manipulations while cleansing the external genitals. She should be instructed to wash the vulva by irrigation from above downward, the parts cleansed from within outward, and the region around the anus swabbed last. One large pitcher of sterilized cold water should be prepared at the beginning of labor, covered and set aside for the use of cooling hot solutions. She should arrange the bed room, see that there is plenty of hot water being prepared, and that some ice and milk is in the house. All cotton sponges used around and in the vagina should be sterilized or soaked in bichloride soution (1-2000) for at least 30 minutes.

The physician. A physician who is dressing suppurating wounds, attending cases of erysipelas, scarlet fever, diphtheria or other cases of acute infectious disease, should take special precautions if he has to attend an obstetrical case. He should take a full bath, shampoo his head and beard, change his clothing, disinfect his hands and forearms according to the chloride of lime and soda carbonate or the permanganate of potash and oxalic acid method, make no internal examinations not imperatively necessary, and have the hands encased in sterile rubber gloves. The ordinary hand and forearm disinfection consists of scrubbing with synol soap and hot water for fully five minutes, using two basins of water, rinsing in hot water, scrubbing in alcohol, 50%, and immersion for one minute in bichloride of mercury solution (1-1000). In all cases the physician should wear a sterile gown.

Accessories. All instruments should be scrubbed with green soap and water, and boiled for at least five minutes; it is preferable to use them directly from the boiler. Rubber catheters and similar appliances should be scrubbed with green soap and water and then boiled for at least ten minutes. All water used for immersing instruments, washing the external genitals, and giving douches should first be boiled.

(3) Internal Examinations.—The precautions in regard to internal examinations are the most important of all and it is surprising how few examinations are necessary if the physician has trained himself to recognize the position of the fetus by external methods. This can best be accomplished before labor has set in (and I usually prefer the latter part of the eighth month. However, at least one internal examination is necessary, unless the presenting part is distending the perineum, because it is important to know the progress of the dilation, if the membranes are intact, and if there is a presentation or prolapse of the cord. The physician should see that the external genitals, thighs and abdomen have been properly cleansed and he himself with green soap and water and bichloride solution (1-3000) should cleanse the vulva canal, namely the clitoris, vestibule, and labia minora. It is a well known fact that many pathogenic germs lurk in the vulva canal, and they can readily be conveyed into the vagina by the examining finger; in addition, the labia minora should be well separated by the fingers of one hand so that the examining fingers of the other hand can come into immediate contact with the mucus membranes of the vagina. One should also be careful to cleanse the parts from above downward so that the sponge will reach the parts around the anus last. After delivery

of the fetus, it is especially important to avoid all unnecessary manipulations, as the genital tract is at this time very susceptible to infection by pathogenic bacteria and saprophytes. When the second stage of labor has advanced sufficiently to necessitate the patient remaining in bed, the external genitals are again thoroughly cleansed, a sterile pad placed over the vulva, and the patient is covered with a sterile sheet. When the head begins to distend the perineum, chloroform is freely given, as I believe a large number of lacerations are due to incomplete anesthetization. After the birth of the head the nurse stops the chloroform and seizes the fundus with one hand, so as to be able to follow the uterus while the body is being expelled. A clean pad is now placed over the vulva. After the child has received the necessary attention, any laceration is stitched while waiting for the expulsion of the placenta. If there is no laceration, I usually hold the fundus myself, and thirty minutes after the birth of the child, if necessary, I employ the Credé method of expelling the placenta. If there seems to be some obstruction to the placenta slipping down into the vagina, I give the patient some chloroform in order to relax the contracted cervix, again use the Credé method, and the placenta is readily expelled. I believe that an adherent placenta at full term is very rare, and one ought to try every method before resorting to a manual extraction; and if this latter becomes necessary, sterile rubber gloves should be used. The placenta is received in a shallow dish with a piece of sterile gauze separating its edge from the vulva; the membranes are not twisted, as there is some danger of tearing them, but are spread out over the forefinger of the left hand, and are tested and then extracted from without inward by the fingers of the right hand. After the placenta and membranes have been expelled, they are carefully examined by catching hold of the cord at its insertion in the placenta and spreading out the membranes on the forearm. After the completion of the third stage the patient is given fluid extract ergot, drachm j, in two ounces of water by mouth; the fundus is held for the first twenty or thirty minutes by myself, during which time the nurse cleanses the patient, puts a clean pad over the vulva, a clean gown on the patient, covers her with a sterile sheet, and arranges the bed and room. As soon as the periods of contraction are longer than those of relaxation, I turn over the fundus to the nurse, who is to hold it until at least one hour has elapsed since the end of the third stage. At the end of this time, if retraction has taken place, the abdominal and breast binders are applied, and the patient is allowed to get her needed rest.

Puerperium. I write out the following instructions for the nurse or attendant: Allow the patient to have six or eight hours of absolute rest, admit no relations nor friends, and do not allow the baby to be in the same bed with the mother save when nursing. The patient is to lie on her back for the first five hours, and no pillow is to be allowed for this length of time. On the second day and after, the patient should be turned first on one side and then on the other, being lifted by the nurse and supported with pillows. On the fifth day and after, she is to lie on her face for ten minutes, once, twice and three times a day. If the patient is thirsty give her half a glass of water or warm milk (unless she is nauseated, in which event give her sips of hot water). The vulva should be irrigated with bichloride solution (1-3000) from above downward, and a clean pad put on, whenever the pad becomes saturated with blood, whenever the patient passes her urine, and whenever she has a stool. After the first two or three days the pads should be changed every four hours during the day, and every six hours during the night. The hands of the nurse are to be washed with soap and hot water and a nail brush, rinsed in hot water and immersed in bichloride solution (1-2000) for one minute, before changing the pads, before attending to the breasts and nipples, and before dressing the baby's cord. The patient should be sponged with tepid water or water and alcohol every day, followed by friction with a towel, as she perspires freely. Fluid diet and crackers for the first two days, then soft diet for the next three days. A cathartic is given on the third day before breakfast, followed by an enema in the afternoon, if necessary. The bed pan should be scalded thoroughly after each evacuation. The nipples should be cleansed before and after each nursing with boric acid solution (one drachm to glass of water), and the baby's mouth is to be washed out with the same solution before and after each nursing; between nursings the nipples are sprinkled with boric acid powder, covered

with several layers of sterilized gauze, and the breast binder is snugly pinned. If the nipples become sensitive, use a shield before any abrasions occur, and the mentho-alcohol solution is a good wash to use. The baby should be allowed to nurse every six hours the first day, and every four hours the second day, but only for a few minutes at a time. After the true milk comes, the baby should nurse every two hours during the day and every four hours at night. If the breast binder is kept snug between nursing, and the amount of liquids limited on the third, fourth and fifth days, much over-distension of the breasts will be avoided. Six hours after labor, try to get the patient to pass her urine, and if she has accustomed herself to the use of the bed pan during the last few weeks of pregnancy, much trouble will be avoided. If she cannot pass her urine while lying down, you can allow her to get up on her hands and knees. The physician shoud always visit the case within eight or twelve hours after labor, in order to give further orders as regards catheterization, etc. For after pains, see that the uterus is well contracted and give codein, gr. $\frac{1}{4}$ every two to three hours for four doses. For tardy involution, the fundus should be kneaded for ten minutes three times a day; fluid extract ergot, gtt. 15, three times a day; and a hot vaginal douche at 115° F. once a day, after the tenth day of puerperium. I keep the patient in bed fourteen days; allow her up in a chair and on a lounge during the third week; allow her the liberty of the floor during the fourth week; allow her to come down stairs at the end of the month; and warn her about over-exerting herself for the next two weeks. The physician should see the patient every day for the first five days, every other day until the fourteenth day, and two or three times during the third and fourth weeks. The perineal binder is worn by the patient as soon as she gets out of bed, and she continues to wear the same for three months.

(4) Vaginal Douches.—The normal vagina contains no pathogenic bacteria; its secretion has strong germicidal powers, proven by the fact that is is able to destroy pure cultures of the most virulent and ordinary pus forming micro-organisms in from eleven to twenty hours, whereas after an antiseptic douche it would take from nineteen to thirty-six hours to accomplish the same result. The streptococci that may be present are not virulent and behave as saprophytes upon healthy tissues; but they can become infectious when the resistance of the tissues with which they are in contact is diminished. Bearing these facts in mind, it is apparent that merely douching the vagina will not disinfect it, but in fact does harm. If there is a pathological leucorrhoea during pregnancy, the vagina should be scrubbed with green soap and water, douched with bichloride of mercury solution (1-2000), a little sterile water being employed at the end of the douche to wash out any residual sublimate solution that might harm the infant's eyes. After labor, as long as the lochia is normal, no douching is necessary, and it is preferable that the physician himself should give the douche, unless he has a reliable nurse. Glass douche tubes only should be employed. If the finger or any instrument has been inserted in the uterus, and in case of a macerated fetus, a vaginal douche of lysol (1%), followed by an intra-uterine one should be given.

260 *Freeman Street.*

THE PATHOLOGICAL ASPECT OF PUERPERAL INFECTION.*

By E. C. S. TALIAFERRO, M. D., Norfolk, Va.
Pathologist and Bacteriologist to St. Vincent's Hospital.

While the conditions now classified under the term puerperal infection have occurred since women first bore children and will continue to occur until physicians and attendants realize that they themselves are for the most part directly responsible for almost every case of this grave malady, have been studied for many generations, yet it has not been looked upon in its true sense or thoroughly understood until the latter part of the last century.

Puerperal infection is no longer looked upon as a specific disease or as one due to the suppression of the lochia, but is classed under wound infection, some abraded surface of the birth canal being inoculated at the time of delivery with pathogenic microbes and these are carried from without in. This canal may be, as Edgar says, "regarded as one great wound cavity easy to incoulate with septic material but difficult or impossible to disinfect."

It is almost impossible to take up the patho-

*Read before the Seaboard Medical Association, Newport News, Va., on December 7, 1905.

logical findings or the morbid changes brought about as a result of puerperal infection without first considering the etiology and the mode of infection. To better understand this and to appreciate the safeguards which nature throws out for the protection of pregnant women, we must first consider the normal and abnormal flora of the vagina.

In 1887 Gonner found that the vagina of the pregnant woman contained many micro-organisms which were for the most part bacilli; they were non-motal and very difficult to cultivate; the cocci which were readily cultivated were also non-pathogenic. He therefore concluded that the healthy vagina was free from pathogenic bacteria. Bumm also failed to find pathogenic germs in the normal vagina. Krönig, after a study of some 200 cases, concluded that the vagina of pregnant women, with the exception of the gonococcus of the thrus-fungus, is free from pathogenic bacteria. The same author says that the streptococcus was not found in a single case. In fact, most bacteriological investigators are united in claiming that, with the above exceptions, the vagina is free from pathogenic bacteria, and that the only pyogenic organism that will live and develop in the vagina is the diplococcus of gonorrhea. The reason why pyogenic germs do not develop is due to the acid reaction of the vaginal secretion which is brought about by the action of vaginal bacilli. Krönig after inoculating the vagina with a pure culture of streptococci failed after the lapse of eleven hours to find any trace of these germs. He noticed, however, that if after depositing the microbes in the vagina, he gave an antiseptic douche of lysol, that the germs were found for a much longer period.

While the vaginal canal is free from pyogenic micro-organisms the vulval canal almost aways contains pyogenic microbes, and in many cases both streptococcus and staphyococcus have been found. Thus we see that the infective agents which produce puerperal infection do not exist in the healhy vagina. We must also conclude that auto-infection is impossible and that the infective agent must be carried from without in, and that this is usually done by the examining finger and at the time of delivery. There are many agents which, when introduced into the parturient canal from without are capable of producing a rise of temperature. These may be either the pyogenic micro-organisms or the saprophytes, but by puerperal infection we understand the inoculation of some portion of the birth canal with pathogenic bacteria, and it may be one or all of the following: Streptococcus, the staphylococcus-aurus, the colon bacillus, the gonococcus, the bacillus of pyocyaneus, the bacillus foetidus, the pneumococcus, and also the tetanus bacillus, and the bacillus of diphtheria, and, in fact, almost any germ which, when deposited upon living tissue, is capable of producing local inflammation. The streptococcus is the principal microbe and the one to be most dreaded. It was first found in puerperal infection in 1865 by Mayerhofer, and was cultivated in 1880 by Pasteur.

When any part of the birth canal and especially the uterine cavity, becomes infected with pyogenic bacteria, we have to do, not with a local condition as by some of the anerobic saprophytes, but with a systemic infection, as the pathogenic bacteria have the power of indefinitely producing themselves and invading any organ of the body. In an infection with streptococcus we find that when the entire genital tract is infected, the streptococcus is found in the mucous membrane only of the vagina, while in the uterus they not only penetrate the mucous membrane, but are found throughout the whole organ. In an infection due to the streptococcus the vaginal discharge is not of a disagreeable, ill-smelling odor, but to the contrary, and the inner surface of the uterus is found to be smooth and clean. On the other hand, when we have to do with a saprophytic condition, we have a local and not a systemic infection, and this is a most important difference. The saprophytes feed upon dead material such as blood clots, fragments of placenta, etc. They have no tendency to attack the surrounding tissue or the general circulation; they remain local, but produce a toxin which enters the circulation and causes ptomain poison. They do not of themselves produce infection, but intoxicaion but they do predispose to infection. In this condition we have a hot bed for infection, and while the vagina contains no pyogenic microbes the vulval canal does, and many cases of infection have taken place by inserting instruments either for examination or for currettement which have become contaminated by coming in contact with the vulva. In saprophytic conditions we have a most foul, ill-smelling, bloody discharge from

the uterus and the uterine cavity is not as in pyogenic infection, smooth and clean, but is just the reverse. It must also be borne in mind that a gonorrheal infection predisposes to a streptococcus infection.

The gonococcus and the colon bacillus do not penetrate the tissues as does the streptococcus but are usually found in the endometrium.

Method of Infection.—Infection occurs by some infectious material being brought in contact with some portion of the birth canal. This is usually done as Semmelweiss first said in 1861—"The examining finger, the operating hand instruments, bed clothes, sponges, and by the attendants." It has been pretty well proven now that almost every case of puerperal infection can be traced to the examining finger of the physician which at times is loaded with pathogenic microbes by having come in contact with suppurating wounds, the desquamated skin of scarlet fever, with the dried sputum of pneumonia and diphtheria, or with any infection with which a physician in general practice is likely to meet. No physician handling such cases should take a case of labor without first taking a good tub bath or spray, changing his clothes, and every time using sterile rubber gloves, and then making as few internal examinations as possible. A physician treating small-pox, scarlet fever, or puerperal infection, should not attend a case of confinement.

Auto-infection.—Does it occur? This depends upon how you look upon it. There are still a few good men who maintain that it does occur. I, myself, fail to see just how bacteria can develop *de novo*. There are certain cases which develop infection after we think we have done all in our power, but if we look back at our technique we are more than apt to find we have made some error; and these cases should not be classed as auto-infection. Sometimes it is possible for the infection to take place by sexual intercourse, and it is also true that the woman may inoculate herself before labor. Likewise, it is true that an infective process, not puerperal, may become active as a result of labor; this is true of latent gonorrhea.

There are certain other conditions which may cause an infection in the parturient woman, such as the breaking down of old adhesions, or there may have existed an old pyosalpinx in which, during labor, the pus-sac may rupture, and thus the adjacent tissue becomes infected. And old endometritis may have been present in which the germ was latent, but whn brought in contact with an abraded surface became active. This is not auto-infection.

There are certain conditions which predispose to puerperal infection, among which are prolonged labor in which many internal examinations have to be made, abrasion and laceration, a weak and debilitated condition of the woman, severe hemorrhage, and unhygienic surroundings; with these conditions present we should be most careful in our technique.

In the time given this paper, it will be impossible to take up all the morbid changes brought about as a result of puerperal infection. I shall, therefore, take up briefly some of the most important, and even before doing this, I want to say just a word or two in regard to fever. There is usually some slight post partum rise of temperature. This rise of temperature should not be looked upon as fever due to puerperal infection until we have eliminated every other cause. This rise may be due to intestinal intoxication, some reflex irritation, trouble about the breast, some inflammation of the throat, etc., or it may be malaria or some other form of fever. After everything else has been excluded, then the uterine discharge must be examined, and this must be done under the strictest antiseptic precautions, remembering how easily infection may be carried from the vulva.

The technique is quite simple. The cervix is exposed by the speculum, pulled down and wiped off with sterile gauze and a small sterile tube inserted. After obtaining a sufficient quantity of the lochia the tube should be sealed and taken to the laboratory. I find sealing wax good to seal the tube with.

Endometritis is the most common pathological finding in puerperal infection, as most cases commence as either a putrid or septic endometritis. It is possible for an endometritis to take place by direct extension of a vaginitis, metritis or phlebitis. We recognize two forms of endometritis, septic and putrid, and by some a third is added—mixed infection. In septic we have to do either with a superficial or with an ulcerative, and this is usually limited to the placental site by a zone of infiltration which prevents the further progress of the infection. Should this become general, we may have necrosis of the en-

tire endomttrium and an area of necrosis involving the deeper structures. There is generally a profuse purulent, bloody discharge with very little, if any, odor, but should the uterine cavity become infected with the colon bacilli, then we find a foul, ill-smelling, frothy discharge.

Putrid Endometritis. This is due to the entrance, at the time of delivery, of putrefactive germs. Bumm has shown that there is a most interesting and important difference between this condition and septic endometritis. In both cases the endometrium is invaded by the necrotic process brought about by numberless microorganisms, but in the putrid there is a protective zone of infiltration which prevents the germ from making further progress, while in septic endometritis this wall is not so well developed, or is entirely absent as it may have been cut away by a sharp curette.

Metritis. The infection may take place by one or all of three routes—by extension through the muscles, by extension through the lymphatics, and by an infective phlebitis. When the infection goes along the lymphatics, inflammation and pus formation are most apt to occur just beneath the peritoneal surface on account of the arrangement of the glands. This may be the starting point for an acute infection, for just in this variety of cases the infection passes rapidly through the lymphatics and into the main circulation, and abscesses will not only be found in the pelvic and peritoneal cavities, but in the lungs, pleura, joints, and infect almost any tissue in the body. This condition may also take place from phlebitis or a thrombosis of the uterine vein. The thrombus becomes infected and there is a disintegration of the thrombus; as a result, portions of it may be carried to any part of the body, and wherever emboli lodge, we have a new focus of infection.

Phlegmasia alba dolens.—There are two forms—the cellulitic and thrombo-phlebitic The latter is the more common, though both may occur at the same time. The infection may take place in two ways—either by primary thrombus or by direct extension of the process from the uterine phlebitis. Widal has suggested that the microbes are more prone to attack the femoral on account of the slow circulation, and this is especially so in the erect position.

57 *Granby Street.*

SURGICAL ASPECTS OF PUERPERAL INFECTIONS.*

By LOMAX GWATHMEY, M. D., Norfolk, Va.
President Medical Society of Virginia, etc.

The theme of this discourse was suggested by our President when I was asked to lead the subject for general discussion in surgery.

After careful consideration, it seemed to me a better subject could scarcely be found, or one more probably provocative of wide-spread discussion; for the very reason of our differing ideas and their lack of consolidation into a consistent whole.

In support of this train or reasoning—the divergent ideas expressed by several good medical men, since the contemplation of this subject in cases recently seen, have upheld the determination to bring before you the status of the questions involved as plainly and succinctly as possible. Besides the norma practice value cannot be over-estimated and the benefit of a proper formulation in the minds of the obstetrical attendant of the preventive measures, the pathology and the rational handling of these cases.

While the dissemination of the knowledge of surgical cleanliness has caused a wonderful decrease in puerperal infections, they are yet sufficiently frequent in private practice to warrant considerable adverse comment on our medical knowledge and skill; in fact, the percentage in hospitals disproportionately decreased and appears in marked contrast to the percentage in private practice—evidencing the practical results of applied surgical methods of cleanliness.

In considering the subject, its dimensions became too great for one paper's scope, and in order to cover the ground at all thoroughly, we found it necessary to divide the subject as indicated on the program, and even as it is, it will be necessary for me to cover more ground than the caption of this paper would seem to warrant. The papers of Drs. Old and Taliaferro are, therefore, taken with my one to form a symposium of the prevention, pathology and treatment of puerperal infections. It will be necessary for me to traverse some of the ground already covered by the other essayists, yet this emphasis cannot be too strongly made and in this instance "oft told tales" are not amiss.

Given a puerperal patient with a chill, a

*Read before the Seabord Medical Association, at Newport News, Va., on December 7, 1905.

slight rise of temperature and a rapid pulse, some vague feeling of distress, a flushed face, slight tympany, constipation, headache and perhaps pelvic or abdominal pain, it behooves the attendant to at once institute a search for the cause of these disturbances. Too often we are content to say "maybe it's malaria, due to constipation, the coming of the milk," or some other meaningless platitude, to cover our lack of industry in unearthing the true state of affairs. Perhaps the first question is, "Is the lochial discharge offensive?" Meeting with a negative response at once misleads and lends a false sense of security in the very worst types of infection, for the staphylococci and streptococci, per se, give no odor to the discharge.

Every method of investigation should be put in force and every organ gone over carefully to exclude, as far as possible, the infection from the birth canal. The positive symptoms are essentially: fever, any temperature above 100 1-2 or 101 and persisting; a rapid pulse, disproportionate in its rate to the accompanying fever; a sensitive or painful pelvis or lower abdomen, often absent or slightly in evidence; a uterus showing reluctant or incomplete involution and a diminished lochial flow, persistent until the varying types of infection may keep it so, or make it more profuse and fetid.

These symptoms, taken in conjunction with the absence of positive causative factors elsewhere, and where possible, combined with a bacteriological investigation of the uterine secretions, should at once imply the toxic evidence of invading bacteria, and suggest the proper line of treatment.

Beyond dispute, prophylaxis takes first rank as the great savior from infection. The discussion of auto-infection, except in extra uterine matters, is purely academic, and we are forced to the conclusion that practically all infective agents are carried to the birth canal from without, and in the vast majority of cases, at the time of confinement.

The proper conduct of labor on the part of the accoucheur, the institution of strict asepsis, the avoidance of ante- and post-partum examinations and douches, prompt repair of lacerations, etc., have all been so fully and ably presented that I need not dwell on them, except to add my hearty endorsement to all that has been said.

The value of treatment depends on many circumstances, the nature of the infection; the resisting ability of the patient; the early institution of relief measures; and of vastly more importance, the recognition of the nature of the infection, the employment of proper measures and the avoidance of harmful procedures.

The origin of many widely differing ideas depending largely on a lack of conception of the types of infective agents and the confusion arising therefrom, accounts for the consequent divergence in treatment by sera, medical and surgical means.

We must, therefore, recognize, for practical purposes, the usual infective agents as saphrophytes, streptococci and saphylococci, colon bacilli and gonococci. While most probably other anærobes and bacteria occasionally cause symptoms by their presence and activity, they are, as yet, unproven as frequent disturbing factors.

It is well to bear in mind the prevalence of mixed infections which are very common, and be not unduly content that a foul-smelling, frothy discharge is caused merely by the comparatively harmless saphrophytes or colon bacilli, for the latter apparently lend virulence to the action of the streptococci by their presence.

While on the subject, the action of the sera may as well be touched on. Unfortunately, the toxins of the streptococci and staphylococci have, like the toxin of tetanus, strong affinity for the cells, and unless the anti-toxin is given as a prophylactic or very early, it can have little or no effect. Again, he action seems dependent to some extent on having just the right strains of streptococci, which gave rise to the production of the polyvalant sera; these also have proved disappointing. We had hoped great things from these sera, but widely separated reports condemn their utility and dash our hopes to the ground, there being left to be said only "they apparently do no harm and may be used in otherwise hopeless states in the faint hope of doing good."

I wish to say just here that we are advancing no particularly new ideas, but merely crystallizing the consensus of modern therapy into a usable synopsis. That treatment differs in different localities and countries, is undoubtedly true, nevertheless, looked at statistically, we are forced to certain conclusions which, coinciding with our own fairly extensive experience, we present without hesitation. Too often the fault

of drawing deductions of a general nature from individual cases is made, and in no other subject than this is the practice more liable to be misleading, for we have all seen cases starting apparently with great violence as suddenly subside, no matter what manner of therapy, if any, were employed.

The treatment will therefore depend on the diagnosis, and we must start afresh and exhaust the proper routine methods of investigation; breasts, chest, abdomen, alimentary canal, kidneys and blood. Failing to discover a cause of morbidity in any or all of these, we proceed to investigate the birth canal; the perineum, (if repaired and stitches are inflamed, remove at once), the vagina, the uterus and adnexa. The investigation of this must be thorough and painstaking, and preparations for the administration of an anaesthetic made, if needed.

The size and condition of uterus and adnexa are made out as far as possible by bi-manual palpation, often a very unsatisfactory proceeding. The naterior lip of the uterus is next grasped with a double tenaculum and, when practicable, a specimen of the uterine contents is procurd for bacteriological examinations; the interior of the uterus is next explored with the finger for possible retained articles of placenta or membranes, and the state of the endometrium ascertained.

Should, in the judgment of the attendant, a curettage be indicated, it should then be done and with a large, blunt curette, or the finger preferably. In my experience, without anaesthesia this procedure is not eminently satisfactory. After curettage, a long, hot douche of saline, or plain steril water, or some very mild antiseptic, should be given, and then, in the vast majority of cases, never repeated. Recalling the pathology of endometritis and metritis, repeated douches of the uterus, whatever be the infecting agent, is not in order, and can do infinite harm from the mechanical injury of the tube and the chemical agent or bactericide employed. I have repeatedly seen serious results from repeated intra-uterine douches, and can conceive of no useful purpose they can serve. On one occasion, convulsions were provoked, and two or three times I have seen pronounced carbolic and bichloride poisoning, which threatened the life of the patients more than he elemnts they were meant to destroy.

In pure saphrophytic infections, vaginal douches will take care of the discharges, yet occasionally, when very profuse, the intra-uterine irrigations might be once or twice repeated.

To repeat, if the initial investigation is properly done and the mind of the operator entirely convinced of the thoroughness of his work and the empty state of the uterus, let the matter rest, you are only blowing on a smouldering fire to further interfere. It is for the satisfaction of correct knowledge that I urge anaesthesia for this investigation. Like the douche, the curette is capable of much damage, yet greater in degree, for it breaks down often the leucocytic wall of nature's defence and throws into the circulation the results of fresh foci of bacterial activity. Besides, the curette is actually dangerous in the average hands and under the circumstances it is employed; the right kind of a curette is not always available and a small, sharp instrument merely plows so many furrows to be quickly seeded by the rapidly multiplying germs, perhaps penetrates yet deeper to the formation of small abscesses, or yet further, tearing through the peritoneum, and carrying its deadly freight. It is much safer and quite as effective, averagely, to use the fingers for the emptying of the uterus. Who has not seen the temperature of a septic case come rapidly down after a curettage and the consequent blood letting, only to suffer disappointment as it surely rises again and the case goes on in the usual course of sepsis?

Often repeated curettements are done, and uniformly with the same result. It is not an uncommon occurrence for a patient making slow but steady progress to become actively sick and perhaps die as the result of unwise surgical judgment in the employment of curettage. Bumm reports a number of such cases coming under his own observation. While the inflammation is confined to the uterus, this is all that need be done locally, and our attention should be directed to the general care of the patient—rest in bed, good nursing, attention to the skin and alimentary canal, the ingestion of plenty of water (and should the stomach prove rebellious, have it given by rectum in saline enemata), sponging or bathing for the temperature—ice or heat to the lower abdomen (preferably ice)—turpentine stupes and high turpentine enemata, etc. Repeated doses of ergot are recommended where there is poor involution. Treat the case like one of typhoid fever and you will

not go astray. The mortality rate is, averagely, much better by this than by any other method yet employed, and it is not high.

Should the inflammation extend beyond the uterus, further surgical assistance may be needed. Extensions are usually noted by excessive pain in a confined area and when peritoneal, by increased tympany, vomiting, pain, frequent urination and great lower abdominal tenderness. When discovered, broad ligament and cul-de-sac accumulations of purulent fluid should be evacuated by opening into cul-de-sac from vagina. Even hard masses, incised like a cellulitis elsewhere, do well. The performance of the cul-de-sac operation is one of some moment, and if often imperfectly done. Under anaesthesia in a dorsal position, the vagina is retracted posteriorly, and the uterus steadied and drawn down by a double tenaculum in its posterior lip; then, with blunt or sharp scissors, long and curved on the flat, a semi-circular incision is made one quarter inch from and behind the cervix through the vaginal wall. As the cellular tissue is reached, the ball of the right index finger strips up to the peritoneum, which is incised, and then, spreading apart the scissor blades, the wound is enlarged. It is essential not to wound the rectum by keeping close to the cervix and yet not to dig into the soft cervix—hence the use of the gloveless finger. After further stretching to its fullest extent the wound by the forefingers of the two hands, the broad ligaments and adnexa are explored. Should a high abscess be discovered, it is well to use Trendelenberg mehod, and with a small pad wall off the general peritoneal cavity before opening. To drain the cul-de-sac, gauze pack is not sufficient, nor yet cigarette drains, their meshes fill with coagulated lymph, and in 24 hours their usefulness is gone. A large rubber tube and gauze packs to shut off the cellular tissue on the side will not allow of the damming back so often seen in gauze drainage. This tube is best securely attached by a large, loosely tied suture to the cervix and then left alone. It seems unwise to try to irrigate these tubes or to do ought but sponging off for cleanliness. The vaginal gauze can be changed as soiled.

By the end of a week, except in rare instances, all is accomplished by this means possible, and the tube may as well be removed, a small strip of iodoform gauze carried to the peritoneal opening and removed in 24 or 48 hours. After this, a douche can be used if indicated.

The subject of hysterectomy has been many times threshed over, and we have ourselves performed the operation for the relief of these cases—yet we feel constrained to admit that the operation has but a very limited field of usefulness here.

To be curative, the uterus would have to be removed before the cellular tissue, blood or other organs were involved, and to accomplish this, many uteri would be needlessly sacrificed. Besides, taken with the mortality rate of complete hysterectomy, it is doubtful if the mortality rate of the condition it was intended to relieve would be materially lessened, even if always undertaken in hospitals and by experienced operators. Later, when the progression of the disease is more marked, to remove the uterus would be useless and but add the danger of other large wounds, to say nothing of the danger of the operation itself, undertaken on a patient advanced in sepsis. If the uterus was the seat of multiple abscesses and was necrotic, it would be well to remove it, but such a condition, unaccompanied by contraindicating pyæmia of the patent, must be exceedingly rare. Otherwise, the cul-de-sac drainage, properly instituted, would accomplish about all that the hysterectomy could do, without the risk of its traumatism and shock.

There are a few latent infectons which are rendered active by labor. The gonococci in the vaginal crypts may become virulent. An indication of the nature of this infection is at times obtainable from an ophthalmia on the part of the infant. These infections nearly always subside of themselves, though often leaving subsequent work for the gynecologist. I have seen one remarkably acute tubercular process result from a normal labor, which had to be dealt with surgically for the relief of fearful distensions by fluid. Now and then an old ovarian or tubal inflammation may take on renewed activity and have to be dealt with as indicated. Only a short time since we removed an ovarian abscess post-partum, the size of an orange. These old abscesses are, however, mostly sterile, and though they often cause much pain by the deformities they create, they rarely result in acute inflammations.

244 *Freemason Street.*

SOME USES OF PELVIC MASSAGE.*

By JOSEPH TABER JOHNSON, A. M., M. D , Ph. D., Washington D. C., Professor of Gynecology, Medical Department Georgetown University, etc.

The question of "pelvic massage" was brought prominently before the public by Major Thure Brandt, of Stockholm, an officer in the Sweedish Army, about twenty-five years ago. Major Brandt was an instructor in health gymnastics in that city, and from the preservation of the health of the Sweedish officers, he gradually developed a system of Sweedish movements, and hygienic gymnastics for the cure of disease, among the officers suffering from torpid liver, constipation and hemorrhoids, and finally extended his practice to the female sex.

To abdominal massage and his system of hygienic gymnastics for the above mentioned ailments in both sexes, he also added and developed a system of pelvic massage for the cure of many of the diseases and misplacements of the female pelvic organs.

So great was his success in the treatment of these conditioins that his methods attracted much attention, and he had many pupils from Scandanavia, Germany and some from France.

He, and later his followers, claimed to be able to cure permanently many of the chronic pelvic inflammations, by abdominal-pelvic massage, especially those accompanied by exudates and adhesions, forcing the uterus and its appendages into mal positions. The two hands working together, sometimes in unison, and sometimes opposing each other, it was claimed would gradually and painlessly, after many seances of from ten minutes to half an hour each, succeed in attenuating adhesions down to the disappearing point, in causing the absorption of effusions of greater or less density, finally liberating the uterus from its abnormal environments, and the tubes and ovaries from their beds of adhesions.

The attractiveness of these claims brought many timid women with pelvic diseases to those who practiced this method of treatment, and much was made of the successes which followed. It was called the "bloodless method," and was placed directly and prominently in contrast with the technique and occasional bad results of pelvic surgery.

The point was constantly made that a surgical cure was frequently at the sacrifice of important organs, and even when the patient's life was threatened by the presence of abscesses or tumors, and saved by their successful removal, painful or disagreeable sequellæ which some time followed, had finally to be removed by pelvic massage.

In the translator's preface of Dr. Zeigenspeck's book on pelvic massage, the following is his opening sentence: "The medical world of to-day becomes more and more fully convinced of the fact that pelvic massage is to be classed among the most important therapeutic measures in gynecology, especially on account of the disappointment so frequently met with in the operative proceedings."

Zeigenspeck says, on page 12 of his book, after referring to the failure of many of the chieftains in medical science to recommend Brandt's treatment, that many of the lesser lights are using it with great success, and he constanty recommends it to his classes in the University. And after using it in over 1,000 cases with the greatest success, his conscience would revolt, were he to fail to recommend pelvic massage, in even a single instance, in which he had employed it in the past, as no method cured so quickly, and none had so few relapses.

He says of local treatment that it consists, with very few exceptions, in massage and stretching. He leaves out many of Brandt's hygienic gymnastics, and even changes the position of patient and manipulator from that illustrated in Brandt's book. "Massage serves to promote absorption of swellings and effusions and to relieve painful and swollen organs. Stretching is used in inflammatory processes where shrinking has set in, to lessen the adhesions which have formed in the pelvic connective tissue and to separate organs which have become adherent to each other by peritonitic exudations." "With the finger of one hand in the vagina we stretch the fixating cord, while with the other hand, the band is massaged from the abdominal wall."

Gilliam, on page 358 of his text book on gynecology, in discussing the treatment best calculated to promote the absorption of exudate and restore the pelvic circulation to its normal equilibrium, recommends pelvic massage as of undoubted efficiency in promoting absorption and liberating adhesions; but he says before this is resorted to, the absence of pus in the pelvis

*Original abstract of a paper by the author.

should be accurately determined less serious damage ensue.

Garrigues says, on page 199 of his gynecology, certain manipulations inside of the pelvis and through the abdominal walls constitute a valuable mode of treatment in many diseases of women, especially chronic metritis, cellulitis, peritonitic exudations, hematoma and oophoritis, etc., etc.

In this way exudations, infiltrations, hypertrophies and adhesions are made to disappear, weak ligaments and muscles strengthened, and displaced organs brought back and kept in their normal positions. He thinks the procedures are so painful that there is no danger of causing sexual excitement. He inserts one or two fingers into the vagina and keeps them pressed against the part to be massaged, while with the other hand he seizes it through the abdominal walls and rubs and squeezes it—for ten minutes three times a week.

He recommends against its use if there is blood or pus in the tubes. Again, on page 473, while discussing the treatment of bound down retro-displacements, after condemning Schultz's method of forcibly breaking up adhesions, usually under the influence of an anaesthetic, he says of massage (Brandt's method) not less efficacious and safer than Schultz's is Brandt's method, that obtains similar results by means of manipulations directed through the abdominal wall and the vagina. By this method the adhesions are stretched gradually and made to be absorbed by increase in vital processes. If, however, there is a pyosalpinx or other purulent collection in the pelvis the pus may be pressed into the peritoneal cavity and cause acute inflammation that may end fatally.

Baldy and Penrose think the results of pelvic massage in the treatment of chronic pelvic inflammation have not yet been very encouraging.

Coe devotes 13 pages of his book on clinical gynecology (184 to 197) to a description of the uses and abuses of pelvic massage. He highly approves of its use in the chronic stages of pelvic exudations, such as Brandt and Zeigenspeck described as parametritis and perimetritis chronica; and of the pelvic swellings and adhesions which bind or mat the pelvic organs together. He opposses its employment in all acute inflammations, infections and in pus collections.

Where the masseur possesses sufficient expert skill to make the necessary differential diagnosis he even goes so far as to recommend such pressing and stroking manipulations as will empty sterile fluid collections of the Fallopian tubes into the uterus.

Coe says that pelvic massage, when well carried out, is really one of the best means at our command for the treatment of uterine displacements caused by adhesions.

Especially is this true of bound down retroversions and retroflexions. He thinks pelvic massage useful in amenorrhœa and dysmenorrhœa where these conditions are dependent on faulty circulation, or upon obstructed venous circulation caused by displacements or effusions, or exudations pressing upon the pelvic vascular supply.

Dudley devotes an entire chapter to pelvic massage in his recent work on practical gynecology, introducing many of Brandt's descriptions and illustrations. He says that pelvic massage for chronic inflammation around the uterus, as developed by Thure Brandt, is one of the most effective of the non-operative local measures, and is indicated for the removal of inflammatory exudates, the stretching and breaking up of the adhesions, the restoration of function to contracted or over-stretched ligaments, and reposition of the displaced organs. Dudley recommends women massuers, as he says, for obvious reasons.

He also, as all the other authors I have quoted, speaks of massage only as one of the methods of non-operative treatment; and while he thinks very highly of it in appropriate cases, all recommend surgical procedures for the relief of acute, infectious, malignant, ectopic and pus cases.

Montgomery's reasoning is the same as the others. Under the head of Local Therapeutics in Gynecology, he says, page 109, of the Brandt system, "This procedure will be indicated in all sub-acute and chronic inflammations of the pelvic organs unassociated with pus formations, in displacements when fixed by inflammatory adhesions, in sub-involution and hypertrophy of the uterus, from chronic, interstitial inflammation, and in relaxation of the pelvic floor from increased weight of pelvic organs.

In describing the treatment of uterine displacement, he says, among other things, with purulent inflammation or pus collections in the tube excluded, the absorption and loosening of

the adhesions of the ovary, tube and uterus can be effected by pelvic massage.

My own experience in the use of this method has been mostly in the non-operative treatment of uterine displacements; and by non-operative is meant those cases presenting uncomfortable and disagreeable symptoms, and yet not sufficiently distressing to suggest surgical operations.

So far as my experience has gone, mere displacements themselves have given very little trouble. The natural position of the uterus in the pelvis being one of entire mobility, the symptoms complained of are caused mostly by co-existing complications.

These complicating conditions were caused by the effusions, exudations, adhesions and chronic inflammations mentioned by the authors above quoted. When yielding to the importunities of patients to try some non-surgical treatment, I suggested pelvic massage, partly to gain time, and in some cases, to demonstrate the uselessness of any surgical methods. After a few weeks of the treatment the surprise of the physician was greater than that of the patient when the complicating conditions disappeared, and with them went the symptoms also. All cases are not treated as successfully.

As above frequently stated, acute inflammations, infections, the presence of pus, malignancy and ectopic pregnancy, contra-indicate pelvic massage, but we do have many distressing retro-displacements unaccompanied by any of the above mentioned associated contra-indications, but complicated still by those other associated conditions which are not included among the contra-indications.

In those cases where one possesses the expert skill to differentiate the safe from the unsafe conditions, pelvic massage can be relied upon to restore abnormal states when intelligently and honestly carried out by one fully understanding its details.

This method of treating uterine displacements has seemed especially applicable on account of our failure to definitely agree upon surgical procedure, which has found and universal acceptance.

Our surgical brethren actually rival Heinz with his fifty-seven varieties of pickles, as more than that number of operations and modifications of operations, have been proposed and practiced for the surgical relief of retro-displacements of the uterus. This fact is evidence in itself that none of them are satisfactory to surgeons generally.

In December last, I read a paper before the Southern Surgical and Gynecological Society on ventro-suspension, and tried to convince its Fellows that this operation was applicable to a wider range of cases than any other, notwithstanding its rare but possible interference with pregnancy and labor, ventral hernia in a few cases and failure to succeed in about fifteen per cent. of still other cases.

In the prolonged discussion, nearly every one had a little fault to find with ventro-suspension, and finally closed his remarks by recommending some modification which he thought an improvement. Hardly any two, however, agreed upon any particular operation.

I thought then, and still think, this procedure has more to commend it and less to discredit it than any other of the fifty-seven varieties, when any surgical operation is required. Every surgeon knows that the same operation has to be differently performed in different cases. Women differ, their conditions differ, and their operations cannot all be the same. One has to fit the punishment to the crime, as they say in "The Mikado:"

In the *Journal of the American Medical Association* for May 11th, is a very thoughtful article by Dr. Lucy White, of Chicago, in which she attempts to prove that surgery is a dismal failure when attempted for the relief of uterine displacements. The paper fairly bristles with statistics. After a general attack on pelvic surgery for this purpose, she asks three very pointed questions: 1st, "Are these operations (for retro-deviations of the uterus) necessary?" 2nd, "Are they safe surgical procedures?" 3rd, "Have they proven successful in a sufficiently large percentage of cases to warrant their continuance?"

She concludes her paper as follows: "From the statistics cited and the testimony presented by the numerous witnesses quoted in my paper, as well as from the results of my own clinical observations, I feel warranted in answering the questions asked in the negative. Surgical procedures in retro-deviations are unnecessary; they are unsafe, and have not proven successful in a sufficiently large percentage of cases to warrant their continuance."

Dr. Hellen Hughes, of Minnesota, in Feby.

25th number of the *New York Medical Journal,* writes a paper on this subject, the first paragraph of which is as follows: "The importance of this disorder among the diseases of women is evidenced by the number of methods which have been exploited for its cure, none of which have been so satisfactory as to close the subject."

If all this be so, we may turn in the future to pelvic massage, which Zeigenspeck says he has tried in over 1,000 cases, and that no method cures so quickly and that none has so few relapses.

From all I have read, and from a slight, though increasing personal experience, I believe there is much of good in pelvic massage, when properly used in properly diagnosed cases. Quite a bright future may yet open up for its expert use in the debatable and yet unconquered field of uterine displacements; but, like all other good things, it is liable to abuse by the unfortunately unexpert or commercially dishonest practitioner.

REMARKS ON THE DIAGNOSIS OF NEPHROLITHIASIS.*

By CLAUDE D. KELLAM, Norfolk, Va.

We will discuss this subject under four headings:

First. The means at our command for making a diagnosis.

Second. The differential diagnosis.

Third. The importance of making an early diagnosis.

Fourth. The result the diagnosis should have upon the treatment.

First. There are several means at our command, all of which are more or less essential, for making a diagnosis of nephrolithiasis; though we must remember that a renal stone may form and remain dormant indefinitely, or be passed without producing any symptoms. The post mortem findings of Doran show 24 kidneys containing stones, 13 of the cases presenting no symptoms.

A patient with this disease usually presents himself to his physician because of one or more of the following conditions: pain, hematuria, or altered function. The physician receiving such a case, should, if possible make a cystoscopic examination, ureteral catherization or segregation with microscopical and chemical analysis of the seperate urines, ureteral soundings, x-ray examination, or even an exploratory operation.

The most common and at the same time the most deceptive of all the symptoms of renal calculus is pain. It may be produced in several different ways; by the stone acting as a foreign body, and producing irritation; by causing an inflammation, or by obstructing the ureter, and in this way damming back the urine and causing a sudden distension of the kidney, and stretching of its capsule. The kidney is very tolerant of all conditions which do not stretch its capsule; thus calculi may form or malignant growths develop, and for a long time cause no pain.

Renal pain may be felt in the affected side or referred to the opposite side or to some distant point. The onset is usually sudden with an aching, tearing or paroxysmal pain, which is most frequently reflected downward in the course of the ilio-inguinal nerve to the genitals, or the genito-crural nerve to the inner side of the thigh. It is usually intermittent in character, being produced by exertion and relieved by rest in a recumbent position.

There is usually tenderness over the affected kidney or along the ureter. "Persistent pain in the latero-lumbar region, or radiating in any direction from this region, which is otherwise unaccountable, should always excite a suspicion of renal calculus."

When the pain is in the form of what is known as renal colic, its source is usually unmistakable. The pain comes on suddenly in the lumbar region of the affected side, and passes down the ureter to the bladder and genitals, the testicle of the affected side becoming tender and retracted. Symptoms of shock develop; patient becomes pale, with a cool perspiration; the pulse is soft and feeble, and in his agony may faint or pass into convulsions. Relief may come as suddenly as the symptoms developed, if the stone passes into the bladder, or falls back into the pelvis of the kidney.

Associated with the pain we quite often find hematuria. If this appears after some exertion, blood being imperfectly mixed with urine,

* Read before the Seaboard Medical Association during its session at Newport News, Va., December 6-7, 1905.

the blood cells altered very slightly and the presence of clots, we are apt to have to deal with a case of nephrolithiasis. A microscopic hematuria is more commonly due to some other lesion. The constant microscopic appearance of a few red blood cells is quite characteristic of stone.

The function of the kidney may be altered in the following ways: By the inflammation causing frequent and painful urination; by the impaction of the stone, producing ulceration which later leads to stricture or rupture; and by obstruction, producing retention, or retention with suppression. When a stone completely obstructs one or both ureters, producing cessation of the urinary flow, it is called calculus anuria. The physician who consciously allows a case to remain in this condition for 24 hours or more, without surgical interference, practically passes the death sentence on his patient.

We should, when possible, make a cystoscopic examination in suspected cases of renal calculus. By this means we can tell the condition of the bladder, the functional activity of each kidney, the appearance of the urine as it comes from each ureter, and we may be able to see the stone when it is located at the lower end of the ureter. By seeing the condition of the bladder, we are able to decide whether it is better to use the segregator or ureteral catheter.

I believe the Harris segregator is the one most generally used. It raises the posterior wall of the bladder in a longtitudinal fold, thus forming a water shed between the ureteral openings. In this way we catch the urine from each ureter seperately, thereby learning which kidney is involved. By examining the urine microscopically for pus, blood cells, crystals and the different germs, we are able to find out more about the character of the lesion.

In cases where the bladder is contracted, or its base thickened, or ureteral openings abnormally close together, or the prostate excessively enlarged, it is better to catherterize the ureters. This requires greater skill and dexterity than does the use of the segregator. By the use of the catheter, we can tell whether or not the ureter is obstructed by the stone.

Kelly devised an ingenious method of detecting stones in the pelvis of the kidney by the use of wax tipped ureteral bougies and catheters. If the bougie passes into the pelvis of the kidney without any obstruction, and after withdrawing it, we find the wax tip scratched, we know that the stone is in the pelvis. If the bougie meets the obstruction in the ureter, we can in this way locate the site of the stone.

By the use of the x-ray an almost positive diagnosis can be made. It is the best of all the means at our command for making a diagnosis of ureteral and renal stones. It not only shows the presence of the stone, but gives its exact location; and we can learn something of the chemical composition of the stone, by the density of its shadow. The oxalate and phosphate stones show plainly, while the purer the uric acid calculus the less distinguishable the shadow.

In an experience of five cases, the diagnosis and location was made positive in three, while the other two were small uric acid stones, I think there was enough lime present to have cast a sufficient shadow, had we been more thorough in our technique.

Last of all, we may have to do an exploratory operation to be sure of the presence or absence of the calculus. In some cases where the clinical evidence continues to manifest itself, even though it may be impossible to make a diagnosis, it is wise to cut down upon the kidney, incising its convex surface, and carefully examine, with sound and finger for concealed calculus. Needling the kidney is to be condemned, since it is neither certain nor free from danger.

Second. Nephrolithiasis has to be differentiated from the following conditions: Renal tuberculosis, renal tumors, movable kidney, appendicitis, acute peritonitis, intestinal colic, hepatic colic and spinal caries.

Renal calculus is more closely simulated by *renal tubercuosis* than any of the other conditions. In this lesion, we may find an inherited predisposition, or suspected latent or healed tuberculous disease of some other organ—though we must not be misled by not finding these, because it occurs singly in the kidney more often than in any other part of the anatomy. The history of painful urination with vesical irritation; the passage of a pale, slightly cloudy urine; urination becoming more frequent during the day with an increased quantity at night, hematuria being copious and not affected by exertion; vague painful sensations in the region of the kdney, and finally the development of a cystitis, which is only aggravated by treatment, should make us suspect renal tuberculosis rather

than calculus. If we find the tubercle bacilli in the urine, the diagnosis is more positive.

Renal tumors develop more rapidly than does renal enlargement, due to stone formation. Malignant tumors produce more or less constant gnawing pain without the acute exacerbations, the hemorrhage is more profuse and is attended by pain, and the patient gradually develops cachexia and pyrexia. Benign tumors are usually painless and are not tender. We should also consider the possibility of syphiloma of the kidney, for more than one patient has gone upon the operating table when mercury and potassium jodide was the treatment *par excellence.*

Movable kidney does not produce the urinary changes that are found in calculus, and by manipulation we are apt to detect the mobility of the kidney.

Appendicitis is distinguished from the gastro-intestinal form of renal colic by the presence of temperature, the absence of blood and pus from the urine, and the age of the patient—the first occurring in the young adults; the latter in the middle aged.

In acute peritonitis we fail to find the usual changes in the urine; pain is distributed over the whole abdomen, temperature is higher and there is a history of the cause.

Intestinal colic does not cause such sharp pain, which radiates to the testicles; the pain is relieved by pressure; and there is no appreciable change in the urine.

Hepatic colic may be accompanied by jaundice; the pain radiates upward to the shoulder rather than downward to the genitals, and there is tenderness over the gall-bladder instead of over the kidney.

Spinal caries when closely associated with the kidney, may simulate calculus, but can usually be differentiated by the deformity and tenderness over the spine.

Calculus in the great majority of cases, can be positively differentiated from all these conditions by the x-ray when skillfully used.

Third. If I am successful in my feeble attempt to make impressive the importance of an early diagnosis in renal calculus, the object of this paper will have been accomplished.

While it may be consoling to know that stone may remain dormant or be passed in the natural way, it is, at the same time, dangerous knowledge. Because every stone, however, latent it may be, is surrounded by a zone of atrophy and induration, which may at any time develop fatty or malignant changes. Morris says: "No disease gives rise to such a variety of morbid changes in the kidney as calculus, and none is more certainly fatal when allowed to progress without surgical interference." By an early operation, we can save the patient from a disease, which is swift and fatal in anuria; torturing in colic; and slowly, grimly progressive in suppuration.

Just here I wish to mention two cases that have lately come under my observation.

Case 1. I am able to report through the courtesy of Dr. Taliaferro, of Norfolk.

Mrs. L., white, age 40, was sent to Dr. Taliaferro with the diagnosis of endometritis, for which she was to be curetted. She had been very healthy until about three years ago. She gradually developed a gnawing pain in right lumbar region; this pain radiated to the regions of the womb and groin. Through the day she noticed that she had frequent and painful urination. She had never had a severe attack of renal colic, though she suffered worse during her menstrual periods. Upon examination of the case, it was found that she had enlargement and tenderness of the right kidney. Examination of the urine showed: Sp. gr., 1022, cloudy, serum albumen, no sugar, leucocytes, epithelial, and blood cells, and presence of bacteria. Her family history pointed to tuberculosis, likewise her emaciated condition, and the slight temperature which was frequently sub-normal in the morning.

After finding that the left kidney was in good condition, we made a lumbar incision over the right kidney; and found that it contained a large stone, which we removed with considerable difficulty, having practically to sever the kidney in its long axis. The wound was left open for drainage because of the concurrent pyonephrosis. The stone weighed 309 grains, after particles of it had been broken off. She made an uneventful recovery, and in a few weeks was sent home.

There are two points about this case which I wish especially to bring out. First, the striking similarity of this case to renal tuberculosis, showing that a kidney may contain a stone one half its own size and yet produce no acute exacerbation. Second, it shows how careful we

should be in the examination of every case, however, trivial it may appear.

Case 2. I am able to report through the courtesy of Dr. Moncure.

Mrs. S., white, age 40, native of Pennsylvania, father and mother died eight years ago, when she first noticed vague pains in the left lumbar region. She also since had several bilious attacks. About eight months ago, she began to lose flesh, and complain of vague pains in back and abdomen. Six months ago, a distinct tumor was detected over the left lumbar region; it continued to grow and finally became very tender. Patient became anemic, with marked cachexia and irregular chilla; temperature and night sweats. Urinalysis showed sp. gr., 1025, cloudy, albumen, leucocytes, blood cells and pus. Condition diagnosed carcinoma.

On the 27th of October, 1905, she was operated on, through the left lumbar region. Finding it impossible to remove the kidney on account of the patient's feeble condition, the kidney was drained, and a piece of the kidney procured for microscropical examination. Dr. Taliaferro made the examination, and found it to be cancerous. By the drainage the kidney diminished somewhat in size, and the patient's general condition improved. One week after the first operation, she was again carried to the operating room, and the kidney was removed through the lumbar incision. The ends of the wound were sutured, while the center was left open for drainage. Upon section the calyces of kidney were found to contain several stones. These stones proved to be the nucleus of the carcinomatous changes. The patient has improved very rapidly and will soon be sent home. But I am afraid her improvement is only temporary, as it is quite likely that the surrounding tissues are involved. Had an earlier operation been done, it is possible that her life would have been prolonged for years.

Fourth. The result the diagnosis should have upon the treatment. What shall we do after having made a diagnosis of nephrolithiasis? Two lines of treatment are in vogue; one medicinal, the other surgical. It may be necessary to give palliative treatment for some of the morbid conditions caused by the stones, but for the stones "per se," I mention only to condemn. All the authorities agree that there is but one line of treatment,—the surgical. As the object of this paper pertains only to the diagnosis of this disease, I will not describe the various operative procedures.

In conclusion I will say that, to debar your patient from an early operation is to be guilty of a great crime.

57-59 *Granby Street.*

PNEUMOGASTRIC COUGH.*

By CLARENCE PORTER JONES, M. D., Newport News, Va.,

Oculist and Aurist to the Newport News General Hospital, Dixie Hospital, Consulting Oculist and Aurist to the National Soldiers' Home Hospital, Va.

The title is perhaps confusing; so, therefore, let me say that I expect to speak about cough from lesions or sources of irritation of the vagus nerve outside of the lungs, and as a further limitation those which come within the field of oto-laryngology.

Of course, lesions in any viscus can, through the vagus, produce cough, as ovarian disorders, gastric or intestinal disease.

The vagus has a more extensive distribution than any of the cranial nerves, and by its vast anastamoses with neighboring nerves and its mixed functions, and peculiar behavior to the many stimuli and its richness in reflex action, its disorders are capable of a great host of morbid nerve energy. It is to be remembered also that it is the chief route of communication between the brain and the viscera, supplying the entire respiratory tract and ear with branches and anastamosing with the spinal accessory, facial, hypoglossal and two upper cervical nerves. Its filiments contribute a large share to the pharyngeal plexus, likewise the pulmonary and cardiac. The two laryngeals supply the larynx. By its junction with the sympathetic nervous system, the vagus influences or controls the function of every organ in the body. Its various responses to different stimuli, as hunger, thirst, nausea, etc., are examples of its complexity.

Its funtion, grossly stated, is that of a great sensitive nerve, through its varied anastamoses influencing deglutition, the heart's action, circulation, respiration, voice and secretion. It is thus sensory, motor and secretory.

Any direct or indirect irritation or impres-

---

*Read before the Seaboard Medical Association during its session at Newport News, Va., December 6-7, 1905.

sion made upon it through any of its filiments may produce a cough.

Coughing is a reflex act, the nervous mechanism of which is that a stimulus, in the form of some mechanical or chemical irritant, is applied to the highly sensitive branches of the superior laryngeal nerve distributed to the mucous membrane of the larynx. The nerve waves produced by the impression travel up the superior laryngeal and vagal nerves to the co-ordinating center, situated in the medulla oblongata. From this, motor impulses eminate, which, descending through the vagus and spinal cord, first excites those muscles to contract which close the glottis, and then induce powerful contractions of the muscles of expiration. The effect is that air is expelled from the lungs with great force, driving the foreign body, if there be one, from its position. This act may be most violent when there is no foreign body or substance to expel, and the lesion or seat of irritation is at a remote quarter.

A careful examination of the lungs should be made in every case, to be certain that the lesion is not situated therein. Should we find chronic bronchitis, we may still be able to say that that malady is only a symptom and not a disease. We will find the patient most likely to be in a highly nervous state, health otherwise good, temperature normal—simply a troublesome cough, possibly a scanty expectoration. These cases as a rule have consulted many physicians, and have probably taken the various oils, emulsions, and the whole catalogue of patent lung balsams without any relief. Probably more than one eminent doctor has assured them there is no lung trouble, yet the ever present cough.

We examine the ear. The external auditory canal is a fertile spot of irritation; a plug of hard wax, a lead pencil point, a bean, or other hard substance can set up a most troublesome cough, to be almost immediatey cured by its removal. The auricular branch of the vagus is a very live little nerve, and markedly sensory in function.

The nose is perhaps the most common site of this trouble. Septal spurs pressing into the inferior turbinate; enlarged middle turbinates pressing against the septum; also any other abnormality and lastly rhinitis. Appropriate treatment with a removal of the cause is urgent.

The naso-pharynx should be carefully examined for growths, especially adenoids, which are so familiar to us all in these days that they are only to be mentioned to be appreciated. A thorough removal should be done. Cough, by the way, if often a prominent symptom of adenoids.

Lymphoid patches on the pharyngeal walls, varicose veins, also atrophic pharyngitis are to be considered as factors. We have seen this cough due to a lithemic pharynx.

The tonsils give trouble, especially the broad, flat submerged organ, with adhesions to the pharyngeal pillars. All tonsils of this character should be removed; certainly the adhesions should be freed. The lingual tonsil is very apt to be overlooked; also sensitive papillæ in the glosso-epiglottic space.

An elongated, or hypertrophied uvula, especially one which is excessively sensitive to touch, should have a portion of its bulk removed. Papillomatous growths on the uvula also should be removed.

The treament as you will see resolves itself simply into the removal of the cause.

I will not recite testimony or report cases to substantiate these claims; but will ask you to examine carefully into all cases of persistent cough, find the seat of trouble, remove the cause, and note results. You will relieve the peace and happiness of many a poor scared victim who feels that he is already with one foot in the grave. Our mission, as we all know, is to ease the mind as well as the body.

118 *Thirty-Second Street.*

Book Notices.

Man and His Poisons. By ALBERT ABRAMS, A. M., M. D., Consulting Physician Denver National Hospital for Consumptives, etc. Illustrated. New York: E. B. Treat & Co., 1906. Small 8vo. Pp. 268. Cloth, $1.50.

This "practical exposition of the causes, symptoms and treatment of self-poisoning" undertakes to show that "the human body, as a receptacle and laboratory of poisons, as a re-receptacle and laboratory of poisons, is constantly exposed to the danger of being overpowered by the alluring germs of *autoinfection*, to which so many of the mental and nervous disorders of our time owe their origin." In the frenzy to

seek the germs outside the body which cause disease when introduced into the system, the fact that the human organs are themselves the laboratory or the manufacturer of poisons which, retained in the system, cause autoinfection and death—this idea is too much lost sight of; and it is the object of this most readable, instructive book to bring back attention to these old matters of every day inportance. The prevention of retention of such autoinfections and the treatment of the conditions caused by their improper or non-elimination, are matters also dealt with. Massage of the organs involved in autoinfection is thought to be of prominent value in the treatment or prevention of diseases due to such *autointoxications*.

Differential Diagnosis and Treatment of Disease. By AUGUSTUS CAILLE, M. D., Professor of Diseases of Children, New York Post Graduate Medical School and Hospital, etc. With 228 Illustrations in the Text. New York and London: D. Appleton & Co., 1906. Cloth. 8vo. Pp. 867. $6 net.

The arrangement, the completeness and the value of the contents of this book at once place it among the standard volumes which should be in the library of every practitioner of medicine. It admirably fills a niche in the wants of every doctor. After an introductory section, it fully details the technique of diagnosis and laboratory aids to clinical diagnosis. A chapter is given to general therapeutic management, and one of over 140 pages to pediatrics. Ten consecutive chapters are devoted to the digestive system; four to the circulatory system; two to the respiratory system; three to the genito-urinary system; four to the osseous, muscular and articular systems; one to infections and contagious diseases; one to diseases due to faulty metabolism, to faulty internal secretions, and to derangements of the ductless glands; the chapter on the nervous system and neurological memoranda covers nearly 10 pages. Then follow chapters on dermatological, otic and ophthalmic memoranda. The concluding chapter is on anesthesia, intoxications, miscellaneous ailments, keeping case records and accounts. If there is difficulty in thus finding reference to a subject treated of, the well arranged index of 28 double column pages will give the desired assistance. In terseness combined with clearness of description of disease, and especially in pointing out the essential points which aid in diagnosis, we know of no book its superior. For the uses of the general practitioner, it is a peculiarly valuable work, in that after aiding him in diagnosis, it then tells him what line of treatment experience and observation suggest as best to meet the therapeutic problems. We most unreservedly commend this book to professional favor as one that will prove of practically daily value to the doctor.

Analyses, Selections, Etc.

Surgical Repair of Injured Nerves.

In a paper read before the Southern Surgical and Gyneological Association, at Louisville, Dec. 12th, 1905. Dr. J. Shelton Horsley, of Richmond, reviewed the work of recent investigators on the histological regeneration of nerves. He alluded to the views of Bethe and others who claim that regeneration of a peripheral nerve can take place without central connection. He classified the surgical methods of repair as follows:

1. Simply nerve suture, including all cases where the ends of the nerve are brought into direct contact and sutured, even when nerve stretching or resection of the long bone may be necessary.

2. Flap operations, which are usually unsatisfactory.

3. Nerve bridging. By this term is meant those cases in which a foreign substance is used to bridge over the defect between the ends of a divided nerve. This includes not only transplantation of nerve tissue from lower animals but also *suture a distance*.

4. Nerve implantation or anastomosis. Under this head are included those cases in which the ends of an injured nerve are implanted into a healthy nerve.

He reports a case falling under this last classification. The patient had suffered an injury, as a result of which the upper part of the median nerve had been destroyed for two and a half inches and the musculo-spiral injured in the lower part of the arm, with paralysis of all muscles in the hand and forearm except those

supplied by the ulnar. Three months after this the median was implanted laterally into the ulnar. Fourteen months later, both flexion and extension had returned to a marked degree. At that time the musculo-spiral was cut across and implanted laterally into the median. Ten months after the second operation sensation and motion of the hand and forearm had almost completely returned.

In discussing several points connected with the case, Dr. Horsley concludes, that the extensors must have been supplied through the anterior interosseous of the median, because flexion and extension improved simultaneously, and because extension was not interfered with at the second operation when the musculo-spiral was completely divided.

Common Bile Duct Obstruction.

During the session of the Southern Surgical and Gynecological Association, at Louisville, Ky., December 12, 1905, Dr. J. W. Long, of Greensboro, N. C., read a paper on common duct obstruction. As compared with gall stones in the gall bladder the condition is many times more serious. He quoted the as yet unpublished statistics of the Mayo clinic, where there have been more gall stone operations done than in any other clinic in the world, showing that in simple gall stones in the gall bladder, the mortality of operation is less than one-half of one per cent., while the mortality in operation for common duct obstruction ranges from ten to twenty-one per cent. These facts were brought out to emphasize the prophylactic value of operating while the stones are yet in the bladder.

Touching the etiology of common duct obstruction he took the position that practically all cases were due, either to stones, or to malignant growths which themselves were caused by the irritating presence of stones. Gall stones may exist in the gall bladder for a long while without producing symptoms; but once in the common duct, not only pronounced symptoms, but many serious complications, arise. The mortality in these cases is due to the complications, the cholemia, infection, contiguous inflammation and exhaustion due to hemorrhage at operation. He emphasized the fact that the common duct obstruction could be treated only by surgical measures. After removal of the obstruction, the first consideration is drainage, since it is imperative to overcome the infection, and second, that no operation must be deemed finished until the patency of the opening into the duodenum is assured.

Attention was called to the importance of not removing the gall bladder in the operation of choledochotomy, since stones occasionally reform in the common duct and in these cases the gall bladder serves for drainage.

A number of cases of operation for common duct obstruction occurring in the hands of Dr. Long were reported, showing the profound disturbance caused by the stones, and the great relief afforded by their removal. In one case it was noted that the stones had ulcerated through the side of the gall bladder and into the common duct, an exceedingly rare condition.

Editorial.

The Patrick-Henry Medical Society

Met in the Opera House, at Martinsville, Va., January 8, 1906, and much interest was manifested by the members present. Several very interesting papers were read and discussed, also a number of clinical cases reported.

Officers for the ensuing years were elected at this meeting, as follows: President, Dr. J. M. Shackleford, of Martinsville; Vice-President, Dr. J. R. Perkins, of Spencer; Secretary and Treasurer, Dr. B. F. Tatum, of Stuart.

The next meeting will be held Monday, April 9th, at Stuart, Va.

The Northern Neck Medical Association

Representing the counties of Richmond, Lancaster, Northumberland and Westmoreland, in Virginia, met at Warsaw, December 7th, with an attendance of sixteen members. Dr. J. W.

Tankard, President, of Lilian, Va., was in the chair, while Dr. R. O. Lyell, Secretary, of Warsaw, was at his desk. A number of matters were discussed in the business meeting, and later several papers on medical subjects were read. An enjoyable banquet was held at the Garland Hotel at night. This Society brings together the doctors of several counties isolated from railroad travel, and there is every promise that its meetings will continue both pleasant and profitable.

Dr. William M. Randolph,

Of Charlottesville, Va., at a meeting of the University of Virginia on December 6th, was elected to position as Adjunct Professor of Surgery. Beginning January and ending with June, 1906, Dr. Randolph will, however, have charge of the whole chair, as the term of Dr. George Ben Johnston, who was recently elected to the chair of surgery and chief of the hospital staff, does not commence until the beginning of the next session.

Dr. William F. Drewry

Superintendent of the Central State Hospital (for the colored insane, etc., of Virginia, at Petersburg), has been elected Superintendent of the Western Virginia State Hospital at Stanton, Va., to fill the vacancy occasioned by the death of Dr. Benjamin Blackford. The magnificent work done by Dr. Drewry so faithfully and well during the past seven or eight years at the Central Hospital entitle him to any promotion in the gift of the people of Virginia in the line of the special work to which he has devoted so much of his professional life. The honor of this promotion is the more to be appreciated in that he was not an aspirant for the position. It is not fulsome praise to state that Dr. Drewry has been the leader of proper reforms in the management of the Central State Hospital for the insane; and if he carries into effect the same measures at Staunton, that he has so well inaugurated at Petersburg, the Western (Va.) State Hospital will soon take rank with the very best instiutions of the country. We sincerely trust that the Board of Managers of that Institution will lend him all the help in their power, in any advanced ideas he may attempt to carry out in his new field of labor.

Preventive Medicine

Is the subject selected for "General Discussion" during the thirty-seventh annual session of the Medical Society of Virgfiinia, to be held at Charlottesville, October 9-12, 1906. The discussion will partake of the nature of a symposium, under the following subdivisions and respective leaders:

Protection of Water Supplies, Dr. E. C. Levy, Richmond.

Prevention of the Spread of Infectious Diseases, Dr. E. E. Feild, Norfolk.

Sanitary Laws, Dr. Rawley W. Martin, Lynchburg. Dr. Wm. S. Gordon, Richmond,

After these leaders have finished reading their papers (limited to twenty minutes each), the subject will be open for "general discussion" in remarks limited to five minutes for each speaker.

Pollution of Drinking Water Supplies.

The rapid strides made during the past decade or two in the way of establishing mills and manufactories, especially along the banks of the rivers and large creeks of Virginia, while adding greatly to the material wealth of the Commonwealth, are yet fraught with dangers to the health of citizens, which have not heretofore been seriously considered. The James River water shed, for instance, beginning in the mountains which skirt the western boundaries of the State, because of its valuable water powers, clear down to the head of navigation at Richmond, is fast becoming dotted with factories, mills and mechanical industries of various kinds; the refuse and sewage from which, pouring constantly into the river, pollute the stream, and are tending to render its water unfit for drinking or even domestic purposes, at points below. Lynchburg and Richmond especially, which already derive their reservoir water supplies directly from this river, must necessarily, sooner or later, recognize the effect of such ever increasing pollution, and as other cities or towns may develop along the banks of this stream and become dependent upon the waters of the same for their reservoir supplies, the injurious effect upon public health and comfort must inevitably follow.

It is not the purpose of these remarks in any way to curtail or limit the establishment of industries along the main water course of this

or any other State. It is, proper, however, for public safety and comfort that legislation should be secured giving the State Board of Health authority and means to properly supervise, from the health point of view, the construction of such industrial establishments, and also to dictate the manner of disposal of refuse, sewage, etc., from such mills, factories, etc.

To help in such matters, the State Board of Health should be able to command the services of a thoroughly competent and reliable sanitary engineer, and placed on a platform beyond the reach of simply political or personal preferment.

We do not know what authority is vested in the Fish Commissioner of this State, or what action, if any, is contemplated by him, looking to the abatement of the nuisance of such pollution of rivers or creeks or have been only hinted. We are told, however, that the pollution of the rivers by the refuse from certain pulp mills and the like is very seriously affecting the supply of desirable fish in the waters for miles below such mills, etc.

The question in Virginia is practically a new one to deal with. In some other States, it is an old one, and from the experience in these other States, Virginia may well learn the lesson in time to prevent greater menace to health, comfort and pleasure. Now that the advantages of location in Virginia for mill and manufacturing purposes are becoming more broadly known, with its relatively equitable climate that scarcely interrupts mechanical and manufacturing industries more than a day or two, during the entire year; with water currents of sufficient quantity and falls or gravity to run any number of electically operated mills along the river courses; with its railroad facilities—built and building—for the handling of raw material to the mills and for the carying away the products of the same to the markets of this country—it is time that the State should now take proper steps looking to the prevention of infectious and other diseases of its citizens that might be developed, unless suitable precautionary measures are promptly adopted.

Dr. Charles R. Grandy, Norfolk, Va.

The Virginia State Board of Health has nominated for commission by the Governor as a member of the said Board, to fill the vacancy occasioned by the death of Dr. Vernon G. Culpeper, of Portsmouth.

An Association of Druggists of Richmond and Manchester, Va.

Has been formed with the hope of advancing local pharmaceutical efficiency and conditions by preparing and submitting to the physyeians of this vicinity, at regular intervals, samples of preparations of established merit—especially those of the U. S. Pharmaeopœia and National Formulary—all of which will have the advantages f open formulas and reasonable cost o the parties.

The Proprietary Medicine Question.

The Chicago Clinic, etc., in discussing this matter says, that the sentiment which underlies the present efforts of certain medical men to protect the profession from imposition, and to make our therapy clean, reliable and trustworthy, is entirely laudable and commendable; but the extent to which some are permitting their enthusiasm to carry them is lamentable. The judgment passed upon many pharmaceutical preparations which have stood the test of time in the practices of thousands of successful medical men has seemed hasty and ill advised. It is questionable if it is right that a small faction of the American Medical Association should use the organ owned by all of its members to condemn or detract from the reputation of long established preparations—many of which are used regularly by a large number of the association. The average preparation which has been used by medical men of intelligence for years with good results must have something in its favor.

The Tri-State Medical Association of the Carolinas and Virginia

Will hold its 8th annual session at White Stone Lithia Springs S. C., February 27th and 28th, and if the efforts of its untiring secretary, Dr. Rolfe E. Hughes, of Laurens, S. C., count for aught, the coming session will be a great success. Preliminary programs will be issue

about February 10th. Any physician who is a member of his State Society in the States named is eligible to membership.

The Tazewell Medical Society

According to its secretary, Dr. C. T. St. Clair, of Tazewell, Va., will meet during February, but he fails to tell us the exact date. He states that the Society is in a flourishing condition and is doing good, honest work. The program for the coming meeting is a good one, and will no doubt repay in many ways all who can attend.

The Seaboard Medical Association

At its meeting at Newport News, Va., during December, 1905, elected the following officers for the ensuing term: President, Dr. Jno. C. Rodman, of Washington, N. C.; vice-presidents, Drs. B R. Gary, Newport News; E. C. Hathaway, Bloxom, N. C.; J. W. Bowdoin, Accomac, Va.; W. D. Hassell, Griscom, N. C., treasurer, Dr. Israel Brown, Norfolk; secretary, Dr. J. R. Bagby, Newport News; orator, Dr. William R. Hoskins, Newport News.

The Wise County Medical Association

Met at Norton, Va., December 20, 1905, the President, Dr. J. B. Wolfe, Jr., of Coeburn, being in the chair. Several papers were read by the members present, and the meeting proved a success being beneficial both from a scientific and social standpoint. Dr. T. M. Cherry, of Glamorgan, is secretary, and has filled the office creditably for some time.

The Southside Virginia Medical Association

Met in Petersburg, Va., December 12, 1905, and had an excellent session. Papers were read by a number of visitors as well as by members of the Association. Clinics were held during the day at the Home for the Sick. A banquet was given, at night, by the physicians of Prince George, Surry and Sussex counties. During the evening session, the following officers were elected for the ensuing year: President, Dr. elected for the ensuing year: President, Dr. E. F. Reese, of Courtland; vice-president, Drs. Joel Crawford, of Yale; Bernard Barrows, Barrows Store; J. W. Baird, of Carsley, and J. H. Hargrave, of Garysville; recording secretary, Dr. J. E. White, Wakefield; corresponding secretary, Dr. R. T. McNair, Emporia; treasurer, Dr. O. C. Wright, Jarratt; and executive committee, Drs. J. F. Bryant, of Franklin; W. B. Daniel, of Templeton; W. W. Seward, of Surry. Emporia was selected for next place of meeting, on the second Tuesday in March.

The Richmond Academy of Medicine and Surgery

Elected officers for the year 1906, at their regular meeting on December 12th, as follows:

Dr. Ramon D. Garcin, president; vice-presidents, Drs. J. Fulmer Bright, E. C. Fisher, and M. P. Rucker, Manchester; Dr. Mark W. Peyser, secretary; Dr. M. B. Foster, assistant secretary; Dr. Sheppard, treasurer; Dr. A. G. Brown, librarian. Judiciary Committee, Drs. Stuart McGuire, William S. Gordon, Ennion G. Williams, C. R. Robbins, W. T. Oppenheimer and B. J. Colemau.

The retiring president, Dr. Edward McGuire, was elected honorary member. The installation of new officers will take place the first meeting night in January, after which the annual banquet will be held.

Bacteriologist for the City of Richmond.

In the *Semi-Monthly* of August 11th, we noted that Dr. Ennion G. Williams, the only representative of the medical profession in either branch of Richmond's legislative body, had introduced an ordinance to establish an office of City aBeteriologist—the chief duties of such an officer being to aid doctors in this community to make prompt diagnoses in suspected cases of tuberculosis, diphtheria, typhoid fever, etc. The ordinance had the usual delays in passage, but, after much hard work by its author, his efforts were brought to a successful issue.

Accordingly, the Board of Health of Richmond, acting under this new ordinance, appointed Dr. Ernest C. Levy to the position. The ability of this appointee is so well recognized by the profession of Virginia, as to make

it superfluous for any comment from us.

The ordinance provides for the equipment of a laboratory which, in all probability, will be located in the City Hall building. Such examinations as are required will be made free, so far as indigent patients are concerned, and report sent to the attending physician.

License Taxes Removed from Richmond Physicians

By an altogether voluntary act, the Board of Aldermen of the city of Richmond, voted to remove license taxes from physicians practicing in this city. Having to be referred to the Common Council for concurrence, it likewise passed that branch by a vote of 26 to 3. As we go to press, the measure exempting the physicians of Richmond from city taxes now only needs the approval of the Mayor, and there appears to be no reasonable doubt as to his favorable action in the matter. It thus places the city of Richmond as the first of municipalities, as also of the counties of the State of Virginia, to relieve the practitioners of medicine from the very unjust burden which years ago was placed upon the doctors of all the cities of this State.

It remains for the Legislature, now in session, to repeal the law imposing State License taxes on doctors practicing in Virginia. Dr. J. B. De Shazo, of Ridgeway, Va., Chairman of the Committee of the Medical Society of Virginia having charge of legislature on this subject, is in the city, and gives encouraging reports as to the probabilities of success of the efforts of the Committee to have the State law repealed—which, at present, imposes State taxes on doctors. Every practitioner in Virginia should lend his help to that Committee.

Obituary Record.

Dr. Robert Bruce Stover,

Of Richmond, died at Williamsburg, Va., December 31, 1905, after having been in failing health for many long months. Dr. Stover was born near Salem, Va., May 15, 1840. His academic education was received at Tuscolum College in East Tennessee. After studying medicine for a year under a friendly preceptor, he entered Jefferson Medical College, Philadelphia, where he graduated in 1858. He located at Dallas, Texas, but at the outbreak of the Civil War, enlisted in a regiment from that State. He served two years as an assistant surgeon, and was stationed in hospitals at Atlanta and Mobile. After the war, he settled near Memphis, Tenn. In 1868, he married Miss Pharabee S. Whyte, of Nashville, from which marriage there was one daughter. An epidemic of yellow fever in Memphis in 1879, however, claimed both wife and daughter among its victims. In 1883, Dr. Stover moved to Richmond where he practiced until his failing health made it necessary for him to lay aside all work. At one time, he was Associate Editor with the late Dr. Henry Houston in the conduct of the *Atlantic Journal of Medicine.*

Dr. Stover is survived by his second wife, who was Miss Edna Davis.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 2.1
Whole No. 237.

RICHMOND, VA., FEBRUARY 26, 1906.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

OPERATION FOR THE RADICAL CURE OF INGUINAL HERNIA UNDER COCAINE ANESTHESIA.*

By STUART McGUIRE, M. D., Richmond, Va.,

President, and Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va., Surgeon to St. Lukes Hospital, etc.

Statistics of various countries show that from one-eighth to one-sixteenth of the world's population suffer from hernia, and the vital statistics of the Census show that one out of every six hundred people who die, in the United States, die from hernia. It is, therefore, apparent that hernia is one of the most common and serious disabilities of mankind, and every practitioner should familiarize himself with the recent advances that have been made in its treatment in order to do justice to his patients.

Hippocrates described the different varieties of hernia, and Celsus wrote with great minuteness in regard to the treatment of the strangulated variety. He advised opening the hernia sac, dividing the constricting ring, and returning the intestines to the abdominal cavity.

In the middle ages, many operations were done for reducible hernia, the most popular being castration and the obliteration of the hernial opening. The mortality, as well as the number of failures to effect a cure, brought the procedure into well-merited disfavor, and, in 1804, we find Sir Astley Cooper condemning any operation except in cases where strangulation threatened life.

With the introduction of anesthetics and antiseptics, however, conditions were absolutely changed, operations formerly painful and dangerous, were rendered painless and free from risk, and surgeons at once began to operate, especialy on inguinal hernia, it being the variety most commonly seen. Much to their surprise, it was found that while the patients did not die from the operation, they were not cured by it. In one-half the cases there was shortly a recurrence of the trouble and the patient's last condition was frequently worse than the first. It was at length appreciated that the fault was in the method of operating; in other words, that it was not sufficient to resect the sac and construct the external ring, but for success, it was also essential to open the inguinal canal and constrict the internal ring. One of the first operations based on this principle was that of Bassini, an Italian surgeon. It soon grew in popularity and was adopted by the profession throughout the world. As the steps are familiar to all surgeons, I will not describe them here. With the modifications suggested by Fergusson, of Chicago, and Mayo, of Rochester, it is now one of the most satisfactory procedures in surgical practice. Its mortality is practically nil and the results are over 95 per cent. of permanent cures. The surgeon who, twenty, or even ten years ago, hesitated to advise a man with reducible inguinal hernia to submit to an operation on account of the danger to life and the uncertainty of permanent cure, now confidently urges an operation as a safe and certain relief from the irksome necessity of wearing a truss and the actual daily danger of possible strangulation.

Despite this attitude of the profession, patients have been found slow and reluctant to profit by it, and an army of truss fitters is still actively at work. In discussing the operation with patients, I have invariably found that the one and insuperable objection was the dread of a general anesthetic. I was therefore delighted when, at the last meeting of the Tri-State Medical Association in Greensboro, N. C., to meet Dr. J. A. Bodine, of New York, and see him operate on two cases of inguinal hernia with local anesthesia. I had, in common with the rest of

*Read before the 36th. annual session of the Medical Society of Virginia, held at Norfolk, Va., October 24-27, 1905.

the profession, read Dr. Bodine's paper on the subject, but until I found for myself the ease and effectiveness of the method, I did not appreciate its great practical application.

In the last few months, I have operated with cocaine anesthesia on ten cases of inguinal hernia, one of them double, and, from my personal experience, I fully agree with Dr. Bodine that cocaine should be employed in all cases of inguinal hernia, unless there are special indications for the use of a general anesthetic. In nine of my cases the patients chatted with the nurses and complained practically of no pain; in one case, the patient made a great outcry, but afterwards admitted that he was more scared than hurt, and said if he had to go through with the operation again he would not take chloroform. In all ten cases the wound healed by primary intention, and, as far as I know, the patients are all permanently cured.

In the evolution of the modern operation for hernia, there are different epochs and a different name is associated with each.

1st. The study of the anatomy of the structures involved, by Cooper.
2nd. The discovery of general anesthesia, by Long.
3rd. The introduction of antiseptics, by Lister.
4th. The education of the profession to the use of absorbable sutures, by Marcy.
5th. The publication of a method of constricting the ring and canal that effected a permanent cure, by Bassini.
6th. The local use of cocaine in a way to render the operation painless.

Before giving credit for the last, but not the least step, to Bodine, I have investigated his claims to the right. To Crile and Corning belong the credit of showing the value of "blocking" a nerve by injecting its trunk. To Cushing belongs the credit of writing up the anatomy of the nerve supply to the parts involved in inguinal hernia and advising local anesthesia in cases where a general anesthetic was contraindicated. But to Bodine, of New York, unquestionably belongs the credit of popularizing the method, improving the technique and making it practicable in all cases where idiosyncracy and complications do not exist.

I have not the time, nor is this the place to describe in detail, the technique of the operation. The essential features are the employment of a freshly made one-fourth of one per cent. solution cocaine; the intra-cuticular injection of the skin in the line of incision; the location of the hypogastric branch of the iliohypogastric; the inguinal branch of the ilio-inguinal, and the genital branch of the genito-crural, and the blocking of these nerves by the injection into their trunks of one or two drops of the solution. I do not believe the operation can be satisfactorily done by the novice, but to the surgeon who knows his anatomy and has had experience in the special operation, the work presents no difficulties. In fact, the operation is easier to do under local than under general anesthesia, because the patient is conscious and able to distend the sac by coughing so as to facilitate its location and separation.

To use the idiom of our western friends, we now have a very attractive *"proposition"* to present to a patient who consults us for hernia. We can tell him he can be cured—

1st. Without appreciable danger.
2nd. Without much question of permanency.
3rd. Without more than two or three weeks detention from business.
4th. Without a general anesthetic.
5th. Without pain.

OPERATIVE TREATMENT FOR TUMORS OF THE NECK.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.,

Professor of Principles of Surgery in Medical College of Virginia; Surgeon to Memorial Hospital.

In the preface of the third edition of his work on "Tumors," Mr. Bland-Sutton says, "We must not forget that the causes of so-called benign tumors are as mysterious as of those that are malign. Until the causes of tumor are detected, (and perhaps even then), the only effectual mode of treatment consists in removing them, whenever this is practicable, at the earliest possible moment."

This statement is of double significance; first, because, in our eager search for the cause of cancer, we are neglecting the etiology of such benign growths as simply lipomas and fibroids. It seems at least possible that the knowledge of the origin of the latter class may explain

*Read before a joint meeting of the Southwest Virginia and East Tennessee Medical Societies, held in Bristol, Va.-Tenn, January 17-18, 1906.

the mysteries of the former. There is surely some connection between these two classes of tumors, for the transmutation of a wart into cancer or a fibroid into sarcoma is no very rare occurrence. Practically the only difference between benign and malignant growths is the ability of the latter to produce metastases—in other words, to infect. The other differences are more apparent than real, and depend upon the rapid growth of the malignant tumors, thereby producing infiltration, pain, ulceration and lack of encapsulation, local symptoms so commonly associated with this class.

But it will be the object of this paper to treat of the second suggestion, above quoted, as applied to the neck; that is the early removal of the tumor whatever may be its nature. For this purpose we must accept the general classification of tumors into benign and malignant.

Benign Tumors.

Tumors of the thyroid are common in mountainous countries, and often reach an enormous size. They may be removed under either general or local anesthesia. While it is a popular impression that local anesthesia is preferable for tumors of the thyroid, I have recently heard it said that Kocher uses general anesthesia for his private cases. The best incision is the so-called collar incision of Kocher. When necessary, a vertical cut can be made from the middle of this incision down the median line of the neck. The veins are friable but important to control. On account of the direction that the growth may take, the arteries may be in unusual locations, but, by lifting the tumor and using dry gauze dissection, making careful hemostasis to avoid staining the field, these vessels will usually be found without trouble.

The dangers are injury to the recurrent laryngeal nerve, removal of the para-thyroid bodies, and sudden death from cardiac inhibition, due to irritation of the vagus. The first danger can be avoided by leaving part of the capsule over the region of the recurrent laryngeal; the second, by hugging closely the gland substance at its upper and outer angle. The third danger may be best avoided by a preliminary injection of atropine before the operation and by careful handling of the vagus.

Tubercular glands do not always require excision, as many of them, especially in young children, are cured by medical treatment for tuberculosis. These cases should be watched carefully, and if the glands tend to spread or increase in size, they should be removed. Tubercular glands in adults may be operated upon more readily as is the case with children; but in every instance, whether operation is performed or not, the usual medical treatment for tubercular patients should always be instituted. The incision depends, of course, upon the location and extent of the disease, but, where possible, it should be parallel with the creases of the neck. For extensive disease of the cervical glands, the incision of Dowd, running under the ramus of the jaw and then posteriorly along the sterno-mastoid, is useful and disfigures but little. It is important to take out these glands in a mass, as far as possible, and to strip the internal jugular clean. It is better to expose this vein early in the operation and so avoid danger later on. Pressure at the root of the neck by a ball of gauze thrust under the calvicle will distend the vein and make its identification easy, for an accidental wound, while it is collapsed may be followed by air embolism.

No surgeon should operate for a tumor of the neck without good knowledge of anatomy which is particularly valuable when operating for tubercular cervical glands; for they are always either in proximity to, or adherent to, the large veins of the neck. Ignorance of the anatomy of this region will make the operator either rash and dangerous, or timid and incomplete in his work.

Lipomas of the neck are common. Diffuse lipomas are rarer than the circumscribed variety, and are much more difficult to remove. In the *Philadelphia Medical Journal,* July 8th, 1899, I reported an operation in which I removed a large diffuse lipoma of the neck weighing several pounds. The photographs of this case may also be found in the last edition of Coplin's *Pathology.* The collar incision of Kocher was employed with the cervical cut in the median line. It is difficult to follow the various ramifications of such a tumor, but after thorough removal it does not recur.

Bronchial cysts are rare. They require removal of all their substance to effect a satisfactory cure. The intimate connection of this class of tumors with the large arteries of the neck, due to congenital development, makes removal of many of them rather a difficult undertaking.

Malignant Tumors.

Malignant tumors of the upper part of the neck may be mixed tumors of the submaxil-

lary gland, which are often classed as endotheliomata. If these are not detected in the early stage, and particularly if there is glandular involvment, the radical operation for carcinomatous cervical glands, which will be described later, should be done.

Operations for malignant lymphoma or lympho-sarcoma are practically never curative, and should rarely be undertaken. While the pathology of the diseases included under these terms is not well understood, evidence seems to point to the fact that many of these tumors arise from a form of constitutional infection. Roentgen rays would probably be of more avail than would operation.

In operating for secondary carcinoma of the lymphatic glands of the neck, much can be accomplished by radical measures. Crile has called attention to the fact that the very abundant lymphatic glands in the neck prevent general metastasis for a much longer time than would be the case in other portions of the body less richly supplied with lymphatic glands. So, by thorough extirpation of all the lymphatic glands and lymphatic bearing tissue, a cure may be obtained that, under the older method of operating, would be impossible. The specimen which I present was removed from a patient on December 16th, 1905, and as it illustrates this method, I will briefly report the case.

There was metastasis in the cervical glands following an epithelioma of the lip. These glands had been removed, but as recurrence was rapid, Crile's operation was performed. A long incision was made under the border of the jaw extending from the mid-line to the posterior part of the mastoid, and a vertical cut from near the end of the first incision was carried to a point just above the sterno-clavicular articulalation. Another incision ran backward from the sterno-mastoid muscle just above the clavicle. This muscle was divided near its origin and the internal jugular doubly ligated and divided. Crile's spring clamp, covered with rubber tubing was placed on the common carotid. The fat, fascia, and glands in the supra-clavicular space were dissected out en masse, and all of the tissue to the trapezius muscle behind, and the scalene muscles beneath, was dissected up in one piece, leaving only the common carotid and vagus nerve. When the external carotid was reached it was doubly ligated and excised. The sterno-mastoid was cut through at its insertion and the internal jugular ligated as close to the base of the skull as possible. Owing to the scar tissue from the previous operation this was difficult and it was necessary to cut through the upper part of the cancerous mass after protecting the wound by gauze. A small portion of the cancerous tissue was removed along with the upper segment of the internal jugular after placing this last ligature high up. Cancerous tissue should never be cut through during an operation, but in this case the lymphatic connection had already been severed and the wound was protected with gauze. It was impossible to put the ligature on the internal jugular as high up as was desired without cutting through this tissue. But little blood was lost during this very extensive operation, owing to the perfect control of the common carotid by the clamp.

The patient recovered without any complication except marked mental disturbance, which is clearing up very satisfactorily. His temperature and pulse varied but little from the normal during convalescence. It is not unusual to have such mental symptoms follow a prolonged operation in an old man. The ultimate outcome of this case will be reported later.

In operating for cancerous disease it should always be borne in mind that the cause of cancer, whatever it may be, is infectious and that these tumors should be treated with the utmost circumspection, always remembering that cancer cells, though invisible to the naked eye, may easily be spilled into the healthy tissue from a cut through the cancerous mass or forced into distant lymphatics by rough handling.

APPEAL FOR NATURE'S BALANCE WHEEL—MODERATION.*

By E. T. BRADY, M. D., Abingdon, Va.,
President of Southwest Virginia Medical Society.

Unworthy, as I am, of the position to which my fellow-members have so generously elevated me—incapable, as I feel myself to be, of presenting to you any subject in such a manner as would do credit to two such societies—I have never been more fully cognizant of that un-

*Address of the President of Southwest Virginia Medical Society before a joint meeting of the Southwest Virginia and East Tennessee Medical Societies, held at Bristol, Va.-Tenn., January 17-18, 1906.

worthiness and incapacity than while I was trying to choose a subject befitting this occasion. As it is the wont of the incapable to hide their ignorance beneath a maze of glittering generalities—I, too, will seek a refuge in generalities, which, in no sense glittering, may serve as a base upon which you can build the gems of your thought until it shall shine from reflected splendor. The basis for my theme, if the rambling remarks I shall present may be dignified by such a title—is

An Appeal for "Nature's Balance Wheel—Moderation."

It would be an endless task to undertake to present many of the phases of the subject, and I will confine myself to such features as are peculiarly pertinent to our profession, in its relations to its component members, and to the public at large.

Natural laws are immutable, and their violation brings with it more certain punishment than is the ease with human law. That this is true, that cause and effect are inseparable, is forced upon the notice of even those whose powers of observation are least developed. It is common knowledge that the path of least resistance is the one which least often crosses nature's laws.

The lessons of experience force upon the least intellectual such established facts as that, over-eating produces a belly-ache; continued indulgence, a dyspepsia; over-drinking, the so-called "Big-head," and continued debauches, the consequent mental, moral and physical confusion—the latter evidenced by tremor or unsteadiness; over physical exertion brings tire, exhaustion and stiffness; over mental exertion, neurasthenia; over excitement, sleeplessness and incapacity for application. So, too, the opposites, just as extreme, bring their attendant train of evils. Idleness brings sluggishness, both physical and mental torpor and vital depression; fasting to the extreme, brings just as intractable an indigestion and innervation of the vital organs as does gluttony. So, too, it has seemed to me that the total abstainer, suffers from a narrowed perceptivity which renders him less filled with the milk of human kindness, and in a way as much a clog upon social well-being, as is his brother who errs upon the other extreme.

Even on so trite a subject as the weather or climate, the principle of moderation and excess are manifested. Excessive cold conduces to meagreness and barrenness, both vital and intellectual; excessive heat, to rankness in morals no less than in vegetation; and it is to the temperate or moderate zones we look for productivity—intellectual, moral and vital.

But it is useless to attempt to recount the endless pointers which have guided the ages to a realization of this underlying natural law, which demands moderation in all things. They are recognized facts, and it is unnecessary to enlarge upon them before such an assemblage as this.

It is to the bearing of the law upon ourselves, our methods, our counsel, our expressions before and to the public, that I would impress upon you the acknowledgment of the applicability of this natural law. Extremism is the danger which confronts our profession to-day—and let us hasten to erect a light-house, which shall so spread the rays of *the law of moderation,* as to enable us to avoid certain shipwrecks in the sea of public opinion. No one of the learned professions has made more rapid strides in the line of progress than has our own within the last half century; yet we occupy the anomalous and even paradoxical position, of gaining in our powers for the public weal, and waning in our repute at the hands of that public to whose improvement we have added so much. Is this expression too strong? It has certainly been true from my view-point and I believe the cause is by no means hidden. It seems to me to be due to the intemperate extremism of men who have shown in the lime-light of publicity. Not a fad but finds its followers, and these seem to consider the greater part of their duty to decry the regular profession. But gentlemen, it is alas, too true, that there has not been a fad but was based upon the intemperate practice and expression of some member of our own profession, who rode his hobby into the stable of oblivion, but whose presence there in no wise counteracted the follies founded upon the intemperate teachings he spread broadcast from the saddle. Prone to enthusiasm, eager to advance, ever hopeful of adding to the general welfare, and not a little ambitious for personal renown, we, who should set an example of prudence and forethought, and furnish the balance wheel of moderation, are proving ourselves as arrant faddists, as ever existed amongst the laity. Not, I grant you, all of us—not even—

God be thanked—most of us; but many of us; and the vast majority are erring by withholding that criticism which would restrain their impulsiveness.

Who shall distinguish between the ignorant teacher of osteopathy, and the self-stultification of the supposedly intelligent teacher who announces loudly his utter disbelief in the efficacy of medication? The one is a common ass who pretends to think that one means will cure anything; the other is a more uncommon ass who thinks that every drug should cure anything. Certainly a difficult choice as to which is the most dangerous to the community, but certain it is that the latter brings more discredit upon his capable brethren; and by his teaching disseminates misinformation which will do its deadly work, long after the teacher has discovered that his lack of results was due to his inability to recognize the applicability of his medicaments to the conditions he meets. Fortunately his patrons are not so stupid, and are soon driven by necessity to obtain relief at the hands of some less noted but more capable man.

Again, wherein lies the difference between the "Christian Scientist," the "Faith Curist," the "Divine Healer" and the "Electric Enthusiast," who by means of the "unknowable fluid" would ascribe to it miraculous powers unknown to medicine or surgery? Are they not alike "fakirs," relying on mental impressions and inexplicable, therefore, indefensible theories? Shorn of its "isms," "schisms," and "fol de rol," christianity is an indispensable agent for good; but "Christian Science" is a pocket lining sacrilege, begotten of a shrew, who, from lack of the softening influence of maternity became naturally a neurotic, and very shrewdly converted her erratic dreamings into coin of the realm. Faith is a divine attribute, and, founded upon sincerity, and guided by reason, deserving of universal commendation: but the blind adherence of the faith-cure faddists to their false prophets, has brought discrediting criticism even upon the Church of God. Divinity has power to heal, and we should with veriest reverence recognize that each of us within his humble limitation, has been made an instrument to that end: but how describe the damnable blasphemy of one who would usurp the Divine power for himself, and actually finds enough blind dupes to constitute a following? So, too, electricity has its power for good, but in the hands of the ignorant, an even greater power for evil; and the enthusiastic chronicler of occasional happy coincidences, attendant upon its use, has led the unthinking and careless into perilous and disastrous attempts, whose failure has rebounded not upon them, but upon the mass of our profession, who would never have endorsed the application.

Take once again the dictatorial surgeon, demanding immediate section for every abdominal disturbance, whether due to the previous night's "Welsh rarebit," green fruit, exposure to cold, or of unknown origin. Is he moderate, and is he not heralding an idea which will reap a harvest of victims for the grave, and an equally undesirable harvest of criticism at the hands of the public?—this again falling undeservedly upon the profession as a whole.

Then the expert alienist, who would consign to an asylum all those who differ from his own little view-point. The extreme gynæcologist who would unsex every virgin who shows hysterical symptoms, the equally extreme practitioner who would not operate for anything—and so *ad infinitum,* we can point to extremists who lack the balance wheel of moderation. I appeal to the balanced men, the bone and sinew, who, I am proud to say, constitute the vast majority of the profession, to call a halt; to apply the brake, and by advice, by counsel, and by example and unhesitating expression of opinion, prove to the world that our highest destiny and greatest aim is to deserve and maintain the reputation of teaching moderation, thereby acting as civilization's balance wheel.

CARCINOMA OF THE UTERUS.*

By GEORGE BEN JOHNSTON, M. D., Richmond, Va.,
Professor of Gynecology and Abdominal Surgery, Medical College of Virginia; Professor-Elect of Surgery, University of Virginia, etc.

Cancer of the uterus presents certain practical points of difference from those forms of the disease which invade other organs. Of these considerations, first place should be given, perhaps, to the absence of distressing symptoms during the early stage of the disease, thereby leading to the lamentable fact that a very large

*Read before a joint meeting of the Southwest Virginia and East Tennessee Medical Society, held at Bristol, Va.-Tenn., January 17-18, 1906.

proportion of all cases of uterine cancer fail to come under the observation of the surgeon until it is too late for him to save, or even materially prolong, the life of the unfortunate victim. In the case of cancer of the breast, larynx, or rectum, ignorance or carelessness on the part of the physician may, it is true, result in the loss of valuable time, thus allowing a case, favorable when first seen, to pass into the inoperable class before the nature of the malady is recognized; but almost without exception the patient himself has been led by the urgency of the early symptoms to seek medical aid, and the responsibility for the unfavorable outcome of such cases rests with the physician first consulted.

In the case of cancer of the uterus, however, quite another picture presents itself. This malady, while it may occur as early as the eighth year of life or as late as the seventieth, most commonly develops at the time of the menopause; and, since there exists the most exaggerated idea of the physiological evils of this critical period of female life, most women are inclined to regard symptoms such as irregular menstruation and unnatural discharges, so long as they do not progress to the point of being positively unbearable, as a natural dispensation, to be borne with philosophical fortitude until such time as relief, equally in the course of nature, is brought about. In this position she is not infrequently encouraged by the attending physician, who, while making no physical examination and adopting a purely palliative line of treatment, tells his patient that she is merely suffering the natural consequences of "change of life."

Thus it comes about that a very large proportion of all cases of carcinoma of the uterus (about 70 per cent. in the writer's experience) are no longer operable when first they come into the hands of the surgeon. For each surgeon this proportion will naturally vary with the social standing of the patients, the skill of the physician by whom the cases are first seen, and lastly, with the individual views held by each surgeon as to what constitutes an inoperable case. But the chief factor, and the one which it is desired especially to emphasize, is the importance of getting women themselves to realize the necessity of seeking competent medical aid in all cases of irregular menstruation between the ages of forty and fifty years, and especially in cases where there is an apparent reappearance of the menses some time after the menopause. Leucorrhea appearing at this period of life in women not before afflicted with this trouble is also a symptom which should always be inquired into. In many cases it is the earliest symptom of cancer of the uterus, but in any event it is indicative of a pathological condition which should receive attention.

The symptoms above mentioned are always sufficient, especially where the patient has borne children, and most particularly where she has suffered laceration of the cervix, to cause the medical man who is consulted to make a thorough physical examination with special reference to the existence of cancer of the uterus, realizing that these may be the only early symptoms of that malady. Later on, when the patient complains of pain and a fetid discharge, the case is probably already inoperable, while, as has often happened in the writer's experience, if the patient comes with a history of urine, or gas and feces, passing from the vagina, and with cachexia already developed, further inquiry is not necessary to convey the information that it is too late for hope from surgical intervention.

When the patient seeks the services of the surgeon, a physical examination usually serves to make clear the diagnosis in cases of carcinoma involving the cervix, even in the early stage. In infiltrating carcinoma of the cervix, the parts are hard and thickened and the tumor usually nodular and friable. The last-mentioned feature, taken in conjunction with the bleeding, is almost pathognomonic. In the superficial papillomatous form, the growths consists of a cauliflower-like mass, soft, friable and bleeding easily. Where ulcers are present, their margin is irregular, hard and raised, and the base is uneven. They bleed freely upon the slightest injury. Ulceration may go on to complete destruction of the cervix. The final proof in all early cases consists in microscopical examination, for which purpose a wedge-shaped piece of the cervix, of sufficient size, should be removed.

The diagnosis of carcinoma confined to the body of the uterus is more difficult in the early stage. Cancer of the fundus, however, occurs with less frequency than cancer of the cervix, the proportion being variously stated by writers as from 1 in 6 to 1 in 10. The age of the

patient, irregular menstruation or appearance of hemorrhage after the menopause, leucorrhea where it has not previously existed, the presence of a watery discharge, even without odor, along with the detection of a tumor by bimanual examination, are strong presumptive points in the early stage. Here even more depends upon the microscopical findings than in cancer of the cervix, since the direct signs are less conclusive, but we are limited to curettings for our material. The scrapings, however, are usually more abundant than in non-malignant growths. Later on, when the discharge has become fetid, the uterus much enlarged and nodular, and more or less fixed, the diagnosis is evident, but the hope of successful operation has then almost if not completely vanished.

The course of the disease, whether of the cervix or of the body of the uterus, varies considerably in its rapidity, but the final outcome, as in cancers elsewhere, is invariably death, unless proper steps be taken to arrest the process. The disease may prove rapidly fatal or the patient may survive two years or even longer.

Regarding curative measures, complete hysterectomy offers the only means worthy of consideration. The only points to be decided in each instance are whether the case is still operable and the details of the operation itself.

In the first stage of cervical cancer, the vaginal route offers certain advantages and is to be preferred. Its chief claim to superiority over the abdominal route is that the operation is less severe and the immediate mortality correspondingly lower. Freedom from recurrence, however, is the real criterion by which to judge the merits of operative procedure here, and except in just the class of cases above mentioned, the advantages from this point of view are in favor of the abdominal operation. High amputation of the cervix was formerly much resorted to, but the impossibility of being sure that the disease has not already invaded the body of the uterus is sufficient to place this operation in the list of palliative rather than truly curative measures. Byrne has reported a very successful series of final cures following amputation of the cervix, but, while the accuracy of his figures is not called into question, other operators have been unable to duplicate his results.

In cervical cancer where the vagina itself is involved, and in all cases of cancer of the fundus, with or without extension of the process which can be made out prior to the operation, abdominal hysterectomy should be performed; for only by this means can thorough removal of all affected parts be accomplished, should it be found that the disease has extended beyond the uterus, a point which itself can be determined only by the complete examination made possible by abdominal exploration. In operating by the abdominal route even if the disease is apparently limited to the uterus itself, the operation should be as wide as is consistent with the safety of the patient.

Of all points connected with the treatment of cancer of the uterus, the question of what constitutes an operable and what an inoperable case is the one concerning which there is the widest divergence of opinion among individual surgeons. All will admit the correctness of operating so long as the disease is limited to the uterus itself, while, at the other extreme, opinion is equally unanimous that the operation is to be discountenanced if the disease has extended to a point where complete removal of all the affected parts and tissues is no longer possible. But just when a case has reached this last condition is a question which leaves much scope for individual judgment, and it is no uncommon thing to find one surgeon agreeing to operate on a case which has just been declined by another of equal ability.

It is evident, therefore, that no rules on this subject can be laid down. The most painstaking preliminary examination (under anesthesia in certain cases), a careful weighing of the evidence thus afforded, with the view of deciding whether all the diseased tissues can be safely removed, and consideration of the general condition of the patient must lead each surgeon to his own conclusions. So far as the writer's own position can be stated in general terms, he does not operate where the vagina or uterine appendages are extensively involved, where there is fixation of the uterus by the cancerous process, or where glandular involvement exists. This last can frequently be made out in very thin subjects, especially under anesthesia. The extensive dissection required in such cases as these makes the operation one of the most severe known to surgery. The immediate risk is great, owing to the extent and tediousness of the operation, while the task of removing every particle of involved tissue is so uncertain that the hope of permanent relief is slim.

Owing both to the age at which cancer of the

uterus usually occurs and to the nature of the lesion itself, pregnancy rarely complicates this disease. Yet cases do occur, and these demand special consideration. Where otherwise favorable for operation and where the pregnancy is of short duration, the mother only is to be considered, and the operation should be performed without delay. Where the disease is already inoperable when first seen, the fetus being viable (a combination which, in the nature of the case, must be exceedingly rare), Cesarean section should be performed at once. The cases demanding the exercise of the greatest judgment are those in which the cancer is still in its early stage and the pregnancy is of from four to six months duration. Here the rights of the unborn child should be considered, and the effort should be made to carry the case along to the seventh month, at which time a Porro operation may save both mother and child. If in the class of cases last mentioned it becomes evident that further delay would probably render the mother's case hopeless, but that by waiting a few weeks the child's life could be saved, individual considerations must decide as to the proper course in each instance.

Concerning the question of recurrence after radical operation for cancer of the uterus, no figures even approximately accurate can be given. In view of my own experience in operation on suitable cases of carcinoma and the permanent cure afforded in a very fair proportion of cases I cannot subscribe to the pessimistic view that all cases of adeno carcinoma are hopeless from the start, and believes that there is a time when these cases are local and amenable to local measures. The cases of different surgeons are not comparable, since it is evident that one who operates only when the neoplasm is still confined to the uterus will make a far better showing in this respect, other things being equal, than one whose cases themselves were of a more hopeless nature. In general terms, the prognosis in cases where the disease is limited to the uterus is good, and is better in corporeal than in cervical cancer.

In cases in which the disease has progressed beyond the point where radical operation is advisable, palliative measures must be resorted to. In these cases the comfort of the patient is to be regarded as the chief consideration, rather than the mere prolongation of a miserable existence. Curretting the ulcerated portions of the growth is useful in checking hemorrhage and discharge. It must be done cautiously, as the disease may have extended through the rectal, vesical or uterine wall, and the bowel, bladder or peritoneal cavity may be entered. After removing as much of the diseased tissue as can be done with safety, the exposed surface should be seared either by the Paquelin cautery or by some appropriate chemical agent. Morphine should be given freely for the relief of pain. As life is a matter of only a few months, no question of establishing a habit is to be considered.

Deodorizing douches are useful in relieving one of the most distressing symptoms. X-ray treatment is to be placed among the merely palliative measures. In some cases it appears to have a certain usefulness in relieving pain, but its employment should be limited *strictly* to inoperable cases. As a means of preventing recurrence of the neoplasm after removal by the knife it seems to have little or no field. Where recurrence does take place, it is not usually in such location as could have been effectually reached by the Roentgen rays, even allowing their efficacy where the parts can be properly exposed.

The most important of all lessons to be learned by the general practitioner in connection with cancer of the uterus may well be again emphasized in closing these remarks. Women themselves must be taught to regard marked irregularity of menstruation between the ages of forty and fifty years and especially the appearance of a bloody discharge after apparent cessation of the menses, as pathological in character, and they should promptly seek medical aid for their relief. The further lesson is that when these women do consult a physician, his first duty, most particularly in women who have borne children and suffered laceration of the cervix, is to make a thorough physical examination. Fortunately, cancer of the uterus will be found in only a small proportion of such cases, but in all some condition will be discovered which will be benefited by proper local treatment, while in those cases in which cancer is present it will be detected at a stage when prompt radical measures will result in the saving of many lives now needlessly sacrificed.

HOW PHYSICIANS ENCOURAGE THE USE OF PATENT MEDICINES.*

By J. T. GRAHAM, M. D., Wytheville, Va.

The present seems to be a time of moral house-cleaning. Not only is the lid raised from off many of the Government Departments; but the back-doors, side-entrances, and private stairways to all the great combines and corporations are thrown wide open. While the process of ventilation is going on, the stench coming from the rottenness within is enough to make the man in the moon hold his nose and turn his face in disgust, as he makes his nocturnal journey through the heavens.

Of all the corruption, of all the fraud, of all the black hearted villainy that has been brought to light by recent investigations, that of the Patent Medicine Business is the blackest. It is based on deception, fostered by robbery, and dyed with the blood of its victims. There are many causes that contribute to the success of this great "American Fraud," but to us as medical men the pertinent question is, How do physicians encourage the use of patent medicines?

In considering a few of the many ways in which physicians encourage the use of patent medicines, let me say that we are all guilty of one that is prolific in results that are disastrous to us and also to our patients, viz; a too great indifference to our patients' complaints. Even though symptoms are purely imaginary, their effect is just as detrimental to the physical condition of a patient, and often more so to his peace of mind, as when they are produced by some well defined pathological cause, upon which we can place a diagnostic finger.

To such a class belongs the great number of miserable sexual neurasthenics. The exuberant and impressionable imagination of youth is morbidly excited by the wretched specimens of manhood pictured in the daily press, and sent broadcast over the country in circulars and almanacs by the "Lost Manhood" sharks. With such pictures in mind, if a nervous young man's seminal reservoir runs over, and some of the precious fluid is lost during his troubled dreams of the strenuous life, when he awakes in the morning, he at once jumps to the conclusion that his doom is sealed, and beholds in his mirror the image of a man physically and mentally a wreck. This unfortunate young man may, in this state of mind, consult his physician, who, if he be wise, will not make light of his patient's fears; but, on the other hand, will show an interest in the case, explain to him the physiology of the sexual function; and by tact gain the confidence of his patient. Confidence gained is worth all the medicine you can give. Without it, treatment is useless. Such a man, by having a little time given to him and an interest shown in his unhappy condition, is saved to the doctor who should treat and cure him; but let the doctor once show impatience, or prescribe with an air of indifference, and he adds one more recruit to pay tribute to the "Lost Manhood" cause.

The above is only a type of many cases. We send patients to patent medicine doom by our indifference. To get relief from pain is as natural to the sufferer as the desire for life. People apply to us for this relief, and if, by a superficial and hasty examination, we fail to locate the cause of their trouble, we necessarily fail to give the much desired relief. The habit of making a snapshot diagnosis is all right, when it succeeds, and it may impress a few shallow minds with the supposed greatness of our ability; but it is a dangerous method of practice. The majority of our mistakes, if we honestly study them, will be found to be due, not to ignorance, but to a lack of thorough and systematic examination of our cases.

I recall two recent cases of uterine cancer that were beyond relief when discovered. Both of these women had applied to their family physicians for relief from pain, excessive and irregular menstrual flow, and other suspicious symptoms, and both were told that they were passing through the change of life, were given ergot and viburnum; but no examination was made, and the real cause was not discovered until the disease had progressed so far that surgery could give no hope of saving life, or of even mitigating their horrible condition. Such cases can never be forgotten. With features distorted by pain, the brain tortured by opium delusions, the dying groans growing louder as the body is slowly poisoned by a loathsome cancer—all combine to make a picture of despair that can never be erased from the memory of one who has ever seen it.

*Read before a joint meeting of the Southwest Virginia and East Tennessee Medical Societies, held at Bristol, Va.-Tenn., January 17-18, 1906.

Take another case, not so painful in its final result, but one of misery long drawn out. A woman comes to you complaining of weakness, pain in her back, leucorrhœa, etc. You make no examination, but prescribe a tonic, and perhaps an antiseptic douche. You attempt to cure what is often a severe local inflammation of the cervix uteri, with more or less involvement of all the pelvic organs, by tonics and imperfect cleansing of the vagina. As well try to cure local inflammation in a tooth with tonics and a mouth wash. This patient may come back to you a few times, still complaining. But soon she ceases to come. You congratulate yourself, thinking you have cured her. In a few weeks you are called to see some other member of her family, and before you leave the house, you are surprised to find one or two bottles of some patent nostrum on the mantel. Your inquiry will often bring forth a confession something like this—"Well, doctor, your medicine did not help me much, and Mrs. Jones said when she had just this same trouble eight years ago (you remember, doctor, you all doctored on her), she thought she couldn't live till she got a bottle of Lydia Pinkham's medicine, and it helped her so much she has been taking it ever since; but Mary Smith said Peirce's Favorite Prescription cured her when she was worked just like me; so I got a bottle of Lydia Pinkham's, and it sure did make me feel better, and then I tried a bottle of the Favorite Prescription; and now I take both, first one and then the other." Who is to blame?

The greatest danger, the greatest curse of many of the most used patent medicines is that they do make one feel better, and that they do relieve pain. But at what cost? They create a desire which they alone can satisfy, and in ever increasing doses. The habit of taking patent medicines, once formed, few ever give them up.

There is another dangerous habit that many of us have formed, and that is using too many stock formulas. In these days of elegant pharmaceuticals, the compounding of prescriptions by physicians is becoming a lost art. Even the writing of prescriptions, except for some compound or some remedy by a trade name, is getting to be rare. The large drug houses of this country not only furnish the materials for our work, but they compound them into various formulæ, and send them out to physicians with directions how to use them and what to use them for.

Examine the prescription files in your drug stores, and you will make two discoveries that will surprise you. First, if you go back two, three or four years, you will find prescriptions in your own handwriting for medicines that you never use now, and many are not even familiar in name, long since given up as useless. Why did you prescribe them, and why did you give them up? The complete answer to this question would require another article, discussing medicine as an inexact, but progressive science; but a partial answer will be found in your second discovery in the prescription file, viz: the prescriptions you find there will enable you to tell, with a fair degree of accuracy, when the special representative of each drug firm was in your town distributing samples and giving you advice as to their special merits in every case. Some of these compounds, yes the majority of them, are good; but will they suit every case for which they are recommended? Their use begets in the doctor the habit of prescribing by routine, and nothing is more detrimental to the progress of scientific medicine than routine practice. Rational therapeutics is replaced by the rankest empiricism.

The next step is the habit of prescribing proprietary medicines, to which we must all plead more or less guilty. When you have a patient taking a proprietary medicine, you have placed him on dangerous ground. He is so near the fence that it is only a matter of time when he will cross over into the ranks of the patent medicine devotees. You not only lose your patient by the use of ready made stock formulæ, but the greatest harm you do is to yourself by destroying the habit of systematic study of disease and treatment. Each individual case must be studied, and treated, not as a class, but according to the individual contingencies in that particular case.

A patient comes to you with severe headache. Do you always determine the cause of that particular headache; whether it be eye strain, neuralgia, some digestive disturbance, or what not, before prescribing? Too often you give him some stock remedy. It relieves without removing or correcting the cause, and the headache soon returns.

The patient in time learns the name of the medicine he is using, and you never prescribe

for his headache again. But he is not cured. A careful, systematic study of such a case will often result in a cure by enabling you to locate and remove or correct the cause. You will retain your patient and save him from becoming a victim to the insidious coal tar poisons which are, at best, only nerve foolers, always dangerous, and are never known to effect a cure.

I have left many points untouched in this otherwise imperfect paper, which I hope will be brought out and forcibly presented in the discussion. It seemed best to the writer not to take in too much territory, for in an attempt to cover it the arguments might become too thin to wear well.

GALVANIC TREATMENT OF HABITUAL (CHRONIC) CONSTIPATION.*

By MARK W. PEYSER, M. D., Richmond, Va.,

Secretary Richmond (Va.) Academy of Medicine and Surgery; Director of the X-Ray and Electrotherapy Department Retreat for the Sick; Examining Physician for the National Home for Consumptives, Denver, Colorado; Assistant Physician to the Home for the Aged and Infirm, etc.

In a paper entitled *Pathology and Symptoms of Constipation* read before this body in July, 1903, I stated that "though constipation is often a symptom of other conditions, as intestinal and abdominal tumors, chronic diseases, etc., it, undoubtedly, exists as an idiopathic affection, and as such, it will be dealt with here." And so in this article, I shall confine my remarks on treatment to this form of costiveness.

All of us are familiar with those patients who go from physician to physician seeking relief; and all of us are familiar with the fact that while for a time our prescriptions are of benefit to this class, gradually we must increase the dose to *provoke* a movement, and then, that particular agent failing us, resort must be had to another, and so on and so on.

If constipation alone were the trouble, the trouble would not be so severe. The accompanying or sequential symptoms are what make the patient seek relief; and too seldom are we able to make that relief permanent by drugs only.

The great desideratum, then, is a remedy that will not only cure the condition, but its effects. I believe we have such an agent in the galvanic or direct current of electricity, and that it is without superior in chronic, idiopathic constipation.

With other forms of mechanical treatment, excepting the faradic current, I have had no personal experience; some of my patients, however, have been massaged, but without effect, and one had, in addition, by advice of her attendant rolled a cannon ball over the course of the colon. Though one writer, (Dr. J. R. Harvey, of Sunnyside, Wash.) has stated that he uses surging static electricity with much success. Monell says there can be no effect from this current except indirectly by building up the patient's general health. Vibration is said to be very successful.

The faradic current by itself, has been without avail in my experience. Following the galvanic application, I have found it of benefit in strengthening the muscles of large, flabby abdomens. Rockwell and Shoemaker, however, speak highly of it, the latter advising that the cathode be placed in the rectum and the anode on the perineum.

It is possible that where there is packing in the lower part of the rectum, faradism may be of benefit; but as to affecting the colon, this is doubtful. Unstriated muscle tissue is not easily made to contract by the induced, interrupted current, especially if the excitability of the tissue be diminished; but the direct current is quite capable of producing intestinal peristalsis, even in cases of paresis, particularly if it be slowly interrupted; and this, by the way, is true in paralysis of striated muscle tissue where nerve innervation is lost and the tissue does not respond to the faradic currernt. We thus understand the value of this form of electricity in habitual constipation where there is diminished irritability of the nerve supply, and atony, and, in some instances, degeneration of the muscular coats.

Before the advent of the electric injection, a metallic electrode was introduced into the rectum, but either because of the danger of electrolysis of the mucous coat of the intestine, producing scars, or inefficiency because of the small amperage that could be employed, the method fell into disuse. It was revived, however, upon improvement of the technic which permits the use of a larger amount of current, and which is as follows: A short soft rubber, rectal tube in which is placed a metallic conductor, is passed into

*Read before the Richmond Academy of Medicine and Surgery, January 23, 1906.

the rectum, coiling in the ampulla being prevented if possible. The metallic conductor is attached to the positive pole. The tube is connected with the tube of a fountain syringe which contains saline solution. A large pad electrode well moistened with saline solution or thoroughly soaped, is attached to the negative pole. While the solution is flowing or after the syringe is emptied, the current is turned on and gradually increased in strength till from 15 m. a. to 20 m. a., are passing, or till the patient complains of burning at the negative pole. There should be no sensation from the current at the positive pole. The solution in the bowels acts as one of the terminals, thus spreading the current over a large extent of surface and permitting more current to be used. Similarly, the large pad permits increased amperage.

In a varying period of time, desire for defecation comes on—sometimes immediately, sometimes not for several hours. Should it come immediately, the patient should be persuaded to endeavor to continue the treatment for a while longer. The succeeding evacuation may consist of the solution only, of the solution stained with coloring matter, or of feces, most frequently the last.

That it is the electricity and not the saline that is the exciting factor, is demonstrated in many instances by the fact that ordinary enemata have been absolutely without effect. There are apt to be stools succeeding the first application and. usually, when the patient presents himself the next day for treatment, he will have had one that morning.

The number of treatments required varies from six to ten, rarely less than the former or more than the latter. The tolerance of the patient should be the standard as to the quantity of current, some taking 20 m. a. even at the first treatment, others never being able to take more than 12 m. a. at any time. The time of each treatment should be from fifteen to twenty minutes, seldom more, repeated daily till positive effects are obtained, and then at lengthening intervals till success is assured or failure manifest.

I may say that while I have not succeeded in all of my cases, there has not been an absolute failure in any that I have treated with electric injections. Some have not, for one reason or another, completed the course. For illustration, I detail a few cases.

Case I. Mrs. L., white, aged 40, has suffered from nervous indigestion and constipation for five years; and has gone as long as two weeks at a time without evacuation notwithstanding the use of powerful purgatives. In all this time, she has never had a natural movement. Neurasthenic symptoms are marked. She was first seen August 23, 1904. A purge was given, also, peroxide of hydrogen and glycerin to be taken before meals, and taka-diastase, lactopeptin and phosphate of sodium after meals. She was frankly told that medicines were, in her case, a makeshift, and advised to try galvanism. Seen August 25th, she was slightly improved; and an enema (the like of which she had never employed before) of olive oil and glycerin ordered. Galvanism was again advised.

August 29th. She was given a current of 10 m. a. for fifteen minutes. A copious evacuation followed immediately. Treatment was repeated for five consecutive days, the patient always having a second movement before coming to the office; and then, because of the appearance of the menses, six days elapsed before another application was made. On account of some anal contraction, the rectum was dilated on September 12, 14 and 16, and on the last date, galvanism was also administered. For the relaxed abdominal walls, the faradic current was applied three or four times. The patient was discharged cured after eight galvanic treatments, and when last heard from about a month ago from this writing, she was still regular. Even after the first treatment she manifested great improvement in her nervous condition, and this continued until she was again normal.

Case II. G. B. C., white, aged 25. Previous to electrical treatment, I had been attending this patient off and on for over a year, the first call being for ischio-rectal abscess which was aborted. He has been of a constipated habit as long as he can remember, always requiring a purgative before defecation; enemata to be effective, must be repeated. He is very nervous; his head aches from arising till going to bed; and he has gastric indigestion. Readjustment of glasses was of temporary benefit to his head. Taka-diastase, lactopeptin and phosphate of sodium were given, as in Case I, but with slight effect only, as were other remedies.

September 20, 1904. The electric injection was essayed, but was stopped in less than five

minutes because of uncontrollable desire for defecation. A fair stool resulted.

September 21. Headache was absent on awakening, but came slightly as the day advanced; he is feeling better generally. Electric treatment was given with result as before.

September 22. 10 m. a. were given for ten minutes, and, in addition, the induced current for five minutes.

September 23. 15 m. a. for fifteen minutes; September 24, 25, 26, 27, 29, October 1 and 4, 20 m. a. for fifteen minutes, the patient never being able to take the current for a longer time. Movements were always small; but he had two daily, one in the morning after rising, the second after the injections. In addition, he was given malto-pepsin with glycero-phosphates for the neurasthenic condition; and while not cured, was much improved and remains so.

Case III. J. B. W., white, aged 25. Gastro-intestinal indigestion severe; constipation for several years, there being a small movement every other day that required much straining; neurasthenia, somewhat sexual in character, marked. The patient was advised to take the electric treatment, but demurred on account of the expense. He was given peroxide of hydrogen and glycerin to be taken before meals, and the digestive powder mentioned before, to be taken after meals. Finding that improvement was slight, he began, on March 30, 1905, electric treatment which was begun but not completed because of the intense desire to defecation. A copious stool resulted.

March 31. Treatment was interrupted as before, but resumed after defecation. Patient volunteered the statement that he feels much improved April 1. 15 m. a. for ten minutes; and, in addition, the induced current; he had an evacuation yesterday and also to-day before coming for treatment. To-day's application produced peristalsis of the stomach as well as of intestines; evacuation was most copious and attended by nausea and a feeling of weakness.

April 3 and 5. Treatments were repeated, but the patient, admittedly improved in every way, refused to continue them.

Case IV. Mrs. W. H. E., aged 23. Gastro-intestinal dyspepsia, at times marked by violent hysteric attacks simulating heart seizures; great abdominal distension, eructation, etc. Constipation is relieved only by severe purgatives; during one attack, it was one week before the bowels could be made to act, notwithstanding drastics and enemata. Malaise is present at all times. Her condition dates from the latter part of December, 1904.

April 27, 1905. Electric treatment, 10 m. a. for twenty minutes. Fifteen minutes after treatment ceased, there was a large movement.

April 28. Patient reports that she is feeling much better than in weeks. 15 m. a. were given for twenty minutes and resulted in two copious stools within one hour after treatment.

April 20. There was a small, hard movement before the patient came to-day. Fifteen milliamperes were given for twenty minutes, and, in addition, the induced current for five minutes. A copious mivement resulted. The feeling of well-being continues.

May 1. Small, hard movements, requiring straining (desire was present) yesterday and to-day. Ten milliamperes were given for twenty minutes and the induced for five minutes, followed by a copious evacuation as before. Because of the appearance of the menses, treatment was interrupted not to be resumed till days later. Meanwhile, there were small, hard movements daily, desire being always present, which was not the case before administration of electricity was begun.

May 15. Treatment as before.

May 21. Tretament was begun, but desire for stool was so overpowering that it was stopped. The movement was the largest had in months, bowels being completely emptied, nausea accompanying.

May 25. Patient reports two and three large movements daily since last treatment. Treatment as before.

May 27. Patient reports as before. No treatment was given.

In July, while under great mental stress, the old condition presented itself; but with care in diet and very gentle laxatives, improvement soon followed and the patient is well to-day.

Case V. Mrs. A. L., white, aged 21 years. Has been constipated for years. So far as she can remember, there has never been a natural desire for stool. In the spring and summer of 1905, she was massaged by a professional, and in addition, rolled a cannon ball over the course of the large bowel. Under this treatment she improved slightly, but soon relasped. She then had recourse to enemata, sometimes requiring

two in succession. Movements are always scybalous and never complete.

September 27, 1905. Galvanic injection with small negative electrode in the hand and on abdomen. 12 m. a. for fifteen minutes; with negative pad on abdomen, 20 m. a. for five minutes. A small scybalous action resulted immediately.

September 28. Twenty milliamperes for fifteen minutes, and , in addition, the interrupted constant current for five minutes. A slight movement resulted immediately.

September 29. Patient *enjoyed* a large, natural evacuation this morning, feeling that the bowel had been completely emptied. Twenty milliamperes were given for twenty minutes, followed by a small movement.

October 1. Patient had a large movement yesterday morning and again this morning. Treatment to-day followed by a copious evacuation.

October 3. No movement since previous treatment, but frequent desire. Immediately after to-day's application, there was expulsion of the solution, a large evacuation following in two hours.

October 4. No movement this morning. The current not flowing freely, treatment was stopped for examination of the rectal electrode, and in the interval, patient had a large evacuation. Treatment was resumed, 15 m. a. being given for fifteen minutes, and following it there was a small evacuation.

No further administration of electricity was made in this case for the reason that I suspected the patient to be pregnant, and feared, if it was so, that the current would produce a miscarriage. The patient returned to her home in another State much improved, and frequent messages from her advise me that the improved condition continues, though she is obliged to take a gentle laxative every three or four days.

Case VI. Mrs. J. B., white, aged 21 years. Did not present herself for treatment for constipation, but she was the possessor of that condition. Her trouble was uterine prolapse with hypertrophy (the os almost presenting at the vulva), and menorrhagia. The womb, which was freely movable, was replaced before each treatment, and a positive amalgamated sound introduced for the purpose of checking the flow. Five or six treatments were given, and then stopped for certain reasons. The condition was much improved, but the by-effect was even more marked, there being entire cure of the constipation. Of course, this has reacted on the uterus, and gradual improvement is being manifested in its condition also.

Strumpell says that it is sometimes a question whether hypochondria and neurasthenia cause constipation or are caused by it. The nervous affection is often, probably, the primary disease which is followed by constipation, while in other cases, the habitual constipation leads to the nervous depression. The two conditions usually form a vicious circle, since each of them is able to keep up and increase each other.

It is my experience that constipation most often produces the abnormal nervous state, though some of my cases began with the latter condition; but whatever the cause and whatever the effect, relief of costiveness has always brought about, if not total, yet partial relief of the neurosis.

Larat of Paris, has used the electric injection in many cases of intestinal occlusion, and advises that it be used before operation is attempted, two or three treatments being given, if necessary, in the same day. He also advises it in the paresis that sometimes follows laparotomy, and cites cases to prove its efficiency, but even if it does no good it can do no harm, and there are but few contra-indications to it.

303 *Twelfth St., North.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M.D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery University College of Medicine, Richmond, Va.

LECTURE XV.

Erysipelas — Definition — Cause — Description of Specific Germ—Pathology—General and Local.
Symptoms—Clinical Types—Diagnosis—Prognosis—Treatment.
Curative Power of Erysipelas.

Erysipelas, or St. Anthony's Fire, is an acute non-suppurative inflammation of the superficial lymphatics of the skin or mucous mem-

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

brane, caused by a specific germ and characterized by redness and a continued type of fever. The disease was formerly a frequent complication after accidental or operative wounds, and at one time prevailed in a malignant type throughout both Europe and America. Descriptions of an epidemic of erysipelas that occurred in the Northern States in 1842 are to be found in all lenghty treatises on the disease. In this epidemic deep structures were involved, extensive disintegrations of tissue took place, and the discharges were so acrid that they acted on steel like the strongest acid. Instruments used in the wounds and left uncleaned would in a few hours be so corroded as to be worthless. The mortality of the disease in this epidemic was great. Fortunately since the use of asepsis and antisepsis erysipelas has almost disappeared and the few cases that still occasionally develop are of a mild type and rarely result in death.

Cause.—It has long been known that erysipelas is contagious, and as soon as the germ theory of disease was established investigators began to try to isolate the essential microbe. The early efforts were failures and it was not until 1883 that success was finally obtained by Fehleisen who succeeded in reproducing the disease not only in animals but in man, by the injection of a pure culture of what is now known as the streptococcus of erysipelas. These cocci are from three to four microns in diameter. They grow in serpentine chains, multiply by direct division and are readily stained with ordinary aniline dyes. Owing to the close resemblance observed between the streptococcus of erysipelas and the streptococcus of suppuration it was at once claimed that they were identical and this view is still held by many good authorities, who believe that they are the same germs showing different activities, and producing different results because they are placed under different external conditions. A careful and impartial consideration of the arguments on both sides has led me to the conviction that the streptococcus of erysipelas is absolutely distinct from the germ of suppuration, and that the question of their identity would never have arisen except for their unfortunate resemblance in shape and grouping. The streptococcus of erysipelas never causes suppuration, and if pus develops during the progress of an attack of erysipelas, it is always due to secondary infection with one of the numerous species of pyogenic bacteria.

Pathology.—The unbroken skin is a complete barrier against the entrance of the germ of erysipelas. For infection to occur there must be an infection atrium. There is no such thing as idiopathic erysipelas, and when a case develops where there is no obvious point of entrance it should not be looked upon as an exception, but merely as an instance of where the defect in the skin or mucous membrane was so small as to be incapable of being demonstrated at the time of examination. After gaining entrance, the cocci locate principally in the superficial lymphatics of the skin. They multiply so rapidly that the vessels are soon filled with them and it is difficult to find a lymph corpuscle. The current in the vessels is arrested and a progressive lymphangitis is instituted. The infection spreads by continuity of tissue, the germs being most numerous on the edge of the advancing inflammation. Observation shows that the germs are short-lived and do not survive for more than three days at one point. Tissue infected soon becomes sterile, the wave of infection sweeping over it, exhausting its nutritive resources and seeking pastures new. In other words, erysipelas is a tramp and has to "move on" to gain subsistence.

Symptoms.—The period of incubation of erysipelas, or the time which elapses after inoculation before the development of characteristic symptoms, is from fifteen to sixty-one hours. This has been definitely determined by many cases in which the disease has been artificially caused for therapeutic purposes. The disease can be produced by dipping a needle in a pure culture and then pricking the skin. Such punctures leave no visible lesion after a few hours and then show why infection atria sometimes can not be demonstrated in accidental cases. Before the development of well marked symptoms there may be headache and malaise, but usually the first evidence of the disease is a sharp chill, or what is its equivalent in a child, a convulsion. This is followed by a rapid rise in temperature to 104° and even more. The fever is of a continuous type and, unless there are complications, shows little or no remission. There is headache, thirst, loss of appetite, nausea and perhaps vomiting. The pulse-rate is increased. Its volume is at first full and strong, but later it

may become weak from toxemia. In severe cases there may be delirium or even coma. The local symptoms of erysipelas develop simultaneously with the constitutional, and consist in a crimson discoloration at the point of infection attended by a sense of tightness, itching and a burning pain. The skin around the infection atrium is firmer to the touch than normal and the characteristic dusky redness extends rapidly to involve adjacent surface. The discoloration is more or less uniform, and light pressure will show that the disease is superficial and does not affect deep structures. The edges of the inflammatory area are sharply marked and are more or less zig zag in outline, one writer stating that they resemble the edges of burnt paper, another that they have fan like prolongations. The amount of swelling varies with the anatomy of the part involved. In loose tissue, such as the face or neck, swelling is considerable. In compact tissue such as the finger tips swelling is inconspicuous. As the inflammation increases in intensity numerous vesicles form; many of these coalesce and large bullæ filled with serum result. With convalescence these vesicles and bullæ dry and form yellowish or brownish scabs, so that during resolution there is considerable desquamation. In true erysipelas there is no suppuration. If pus forms it is a complication due to secondary infection with pyogenic germs.

The local changes above described do not remain focussed at one point but tend to spread in various directions. When on an extremity the direction is usually towards the trunk and when on the face usually towards the scalp. The disease does not involve one point for more than three or four days and then moves on to adjacent structures. The part first involved may become inflamed a second time, however, and this tendency to recur is one of the characteristics of the disease. Volkmann says, "It is like a fire over which we have no control; it burns on wherever it finds material, and it suddenly breaks out afresh in a spot where it was supposed to be extinguished."

Erysipelas is a self-limited disease and usually exhausts itself in from one to two weeks. If it can be confined to a limited area it soon ceases.

Varieties.—The clinical forms of erysipelas are all due to the same germ and attended by the same pathological changes, but they vary with the part affected and the complications that ensue.

1. *Phlegmonous Erysipelas* is a type of erysipelas complicated by suppuration. As it has been clearly proved that the germ of erysipelas does not cause suppuration the presence of pus can only be explained by coincident infection of the tissue with pyogenic cocci. When this double infection occurs the clinical picture is a composite of the two septic processes, the symptoms of suppuration overshadowing those of erysipelas. The temperature shows greater fluctuation, the pulse becomes weaker and more rapid, and the swelling is no longer limited to transudation into the skin, but affects the deeper tissues as well. Pus undermines the skin and dissects up fascia and separates muscles. The external appearance of the part often gives little evidence of the damage inflicted to the deeper structures and prompt incision is necessary to save life or limb.

2. *Erysipelas Gangrenosum* is a type of erysipelas attended by gangrene of the part involved. It is caused by germs of great virulency acting on tissue of low resistance. The bacteria multiply with rapidity and block lymphatic circulation. Toxins are produced in large quantities and gangrene of the skin follows. This death may involve isolated patches of cutaneous surface or may result in total death of a large area. This type gives a grave prognosis. I recently saw, as consultant, a case where this type of the disease attacked the scrotum from infection with dirty finger nails. The inflammation was unattended by suppuration but caused the death of the skin of the entire scrotum, the inner sides of the thigh and the lower portion of the abdomen. The man died of acute septicemia.

3. *Erysipelas Metastaticum* is a type of erysipelas where the specific inflammation develops at another part of the body without involvement of the intervening skin or the implantation of germs through a second infection atrium. This may be explained in two ways: either the infectious agent is carried by the lymphatic stream or else is conveyed by means of an embolus through the blood current. Examples of the above are when in the course of erysipelas on one limb the disease appears on another extremity, or when during the course of facial erysipelas there is suddenly the development of fatal meningitis which post mortem examination

shows was due to infection of the membranes with the specific streptococcus.

4. *Erysipelas Neonatorum* is a type of erysipelas attacking the umbilicus of a new-born child. This type was exceedingly common in the lying-in hospitals of the pre-antiseptic era, and proved almost invariably fatal. Fortunately now it is very rare. It is mentioned to impress the necessity of cleanliness in the dressing of even the most trivial wounds. When it developed it rapidly spread over the entire abdomen and death resulted from depression of vital powers at a time when the hold on life was feeble.

5. *Erysipelas of Mucous Membranes* is erysipelas attacking mucous membrane. The condition is sometimes overlooked because the scarlet discoloration is not so obvious owing to the lack of contrast to the normal color of the part. When nasal mucous membrane is invaded there is swelling of the lachrymal duct; when the pharyngeal mucous membrane is involved there is usually enlargement of the sub-maxillary and cervical glands. When the mouth is involved the tongue may be much swollen and discolored, causing the so-called "black tongue." The disease may extend to the larynx causing fatal edema, or to the bronchi causing pneumonitis. Erysipelas may also attack the vagina, urethra, bladder or rectum.

6. *Facial Erysipelas* is erysipelas involving the face. It usually begins at the ala of the nose, a point the common seat of minute lesions and one especially liable to become infected from unconscious manipulations with the fingers owing to the irritation of itching. The inflammation usually extends to the cheek and orbit of the affected side, then crosses the bridge of the nose to the opposite side. It then involves the forehead, the scalp, and terminates usually in from seven to ten days at the back of the neck. It rarely if ever involves the chin and anterior part of the face. There is usually considerable swelling especially of the loose tissue around the orbit. The eyes are often closed for several days. The principal danger is the possibility of extension of the disease to the meninges of the brain.

Diagnosis.—The diagnosis of erysipelas is easy in a well marked, uncomplicated case. The existence of an infection atrium, the chill and high fever, the characteristic crimson blush with its sharply marked zig zag outlines, give unmistakable evidence of the nature of the disease. It can be told from erythema by the existence in the latter of islets of healthy skin in the inflamed area; from deep lymphangitis, by the location of the induration; from phlebitis, by the discoloration being red streaks which follow the anatomical course of the vein in the latter and the vessel being demonstrable as a hard tender cord; from phlegmonous inflammation, by the lack in the latter of a well defined limit to the redness and by disease beginning in deep structures and becoming superficial in its later stages.

Prognosis.—The prognosis of erysipelas in uncomplicated cases is good, but it is grave when it is associated with suppuration or gangrene, and attending sepsis, or when complicated by meningitis or the involvement of other inaccessible structures. In this as in other diseases, the age, general health and surroundings of the patient have to be taken into consideration.

Treatment.—The preventative treatment of erysipelas consists in the immediate disinfection and proper dressing of accidental wounds, and in the application of efficient aseptic and antiseptic measures in the infliction of operative or intentional wounds. Also in the isolation and quarantine of cases of erysipelas as soon as a diagnosis is made to prevent the spread of infection to other individuals.. The *constitutional treatment* of erysipelas consists in the use of remedies and measures to sustain strength and regulate the functions of the body. Usually the first prescription is for a saline or mercurial purgative to empty the bowels and thus remove a source of irritation which is largely responsible for the anorexia, nausea and vomiting. Sleeplessness and delirium, if present, should be combatted by small doses of opium, bromide or chloral. Concentrated, nutritious, but easily digested food should be ordered in small quantities at frequent intervals. Abundance of drinking water should be insisted upon to aid the emunctories. Alcoholic stimulants should be unhesitatingly prescribed if indicated. Fever should be controlled by cold sponging. Tincture of chloride of iron and sulphate of quinine are time honored remedies and may be given for their supposed alterative and tonic effect. The anti-streptococcic serum has been used and good results are reported, although its use is illogical if it is believed that the germ

of the disease is distinct from the germ of suppuration. *The local treatment* of erysipelas consists in the application to the part affected of remedies so numerous that only a few of them can be mentioned. The fact of their great number is proof conclusive that there is no one specific. Erysipelas is an acute self-limited disease and tends to spontaneous recovery. The last local application made is the one accredited with the cure that has come through natural agencies. It is eminently proper for the surgeon to apply local treatment but he should be certain that, if he does no good, at least he will do no harm. Irritants and caustics such as tincture of iodine and nitrate of silver should not be used as they cause solution of the continuity of the skin and predispose to the danger of secondary infection. Scarification around the inflamed area with the hope of arresting the spreading lymphangitis has proved ineffectual and should be avoided for the same reason. The best course to pursue is to disinfect the part affected as if it were to be the seat of a surgical operation and then apply one of the following preparations:

1. Coat the part with a 5% ointment of ichthyol in lanoline.

2. Apply a mixture of 5% resorcin, 5% ichthyol, 40% mercurial ointment and 50% lanoline.

3. Use Crede's Soluble Silver Ointment (15%).

4. Paint the part with pure carbolic acid and as soon as it becomes bleached neutralize the drug by the application of 96% alcohol.

Curative Properties of Erysipelas.—It has been observed that an attack of erysipelas occurring as a complication in certain diseases often produced decided beneficial and sometimes curative effect on the primary trouble. There are numerous reports of cases in which keloids, lupus, carcinoma and sarcoma have been apparently cured by accidental attacks of erysipelas. At once the possibility of using the disease as a therapeutic remedy was appreciated and many patients suffering with inoperable troubles were intentionally inoculated with the essential germ. The deaths which followed, however, brought the practice into disrepute. Coley of New York has attempted to secure the possible curative effect of erysipelas without the danger incident to the disease by using the toxins in place of the germs. He discovered that the toxins of the streptococcus of erysipelas were made more active by combination with the toxins of the bacillus prodigiosus, and the mixture of the two can now be bought on the market. The injection of Coley's Mixed Toxins in the dose advised causes constitutional reaction in the form of a chill, fever and sweat. The local effect is not so obvious. Coley does not claim that the treatment does much good in carcinoma but says that it has decided curative effects in many cases of sarcoma. He reports a number of cases of permanent recovery following its use. There is no question of Coley's honesty or diagnostic ability but it must in fairness be stated that no one else has been able to get the same results. Senn has tried it on fifty cases with absolutely negative results in every instance. Keen and White of Philadelphia give equally discouraging reports. It has been used in St. Luke's Hospital of this city on twelve cases and the sarcomatous growths have not been improved while the general strength of the patient has been much impaired. The last word has not yet been said on the subject and the future alone can decide whether or not the remedy has a place among our therapeutic resources.

Analyses, Selections, Etc.

Wandering or Aberrant Retroperitoneal Fibromata of Uterine Origin.

In a paper by Dr. I. S. Stone, of Washington, D. C., read before the Southern Surgical and Gynecological Association at Louisville, Ky., December 12-14, 1905, he stated his belief that such tumors could reach the retroperitoneal space only by way of the broad ligament, and that all such growths are primarily sub-peritoneal or encapsulated until, by reason of persistent uterine contraction and the additional pressure of other fibroids, the tumors are forced to a distant locality behind the peritoneum. He described the relations of this form of tumor, and claimed that after once reaching the free space above the pelvic brim they were capable of an existence without further arterial supply from the organ from which they sprang. Such tumors are not merely "sub-peritoneal," nor are they

"parasitic." The latter name belongs exclusively to such wandering tumors as become anchored in a new location and receive a distinct blood supply from some organ remote from their former home.

The author reported two cases illustrating the variety he described in his paper. One of the patients (the first case) had the appearance of one with an ovarian tumor, and had been increasing in size for several years. She had both intra and extra-peritoneal tumors, the latter being of enormous size. The second case was not apparently worse for the presence of the tumor, but its development was unusual and the complications were insurmountable. The first case recovered and the second died. In both of them the same general plan of development had occurred. In each one, large tumors had been pushed toward the liver, and also had firmly fitting pelvic portions which were very difficult of removal.

The tumors, which first developed in the uterus, had been forced in both directions by the continued growth of other tumors behind them. In both cases, the tumors near the liver had no apparent or visible arterial supply: In the first case, the pelvic tumor had no vessels, but the second case had such invisible vessels as to allow injury, which resulted fatally. In both cases, the impaction of the tumors in the pelvis were unusually firm yet there was no great pain or any other annoyance such as weight or pressure. The first case had a tumor weighing 18 1-2 pounds and the lady is now enjoying good health. The tumor in the second case weighed 15 pounds. The specimen in the first case was made up principally of three tumors one of which had marked cystic degeneration. The second case had rather different formation in that the central portion was made up of many smaller tumors which had very effectually exerted pressure, similar to that shown in the first case.

Two Cases of Vaginal Cesarean Section for Eclampsia—Both Recovered.

Dr. John F. Moran, Washington, D. C., in a paper read before the annual session of the Southern Surgical and Gynecological Association, said that owing to the obscurity of the etiology, and the indefinite state of the pathology, the treatment of eclampsia is necessarily, to a considerable extent, empyrical. Accepting the theory of toxemia, however, elimination, sedation and safe delivery are the methods of procedure to be considered.

As to the first and second indications, there is general accord, differing only in the matter of detail. As to the third, however, there is decided lack of unanimity. He prefers the combined treatment, and believes that delivery should be effected as quickly as possible, consistent with safety, in the interest of both mother and child. Essential to success, is a well thought-out plan of prompt, definite but *not over-zealous* treatment, based on the various phases of the disease, combined wtih a knowledge of the condition of the cervix and the changes it must undergo, before labor can terminate or be terminated.

In primiparæ, during labor, there is dilatation from above downwards with gradual effacement; in multiparæ, on the other hand, until the onset of labor, the internal os is usually closed, but the external is patulous; as labor progresses, the entire canal dilates and there may be little or no effacement, particularly, if dilatation occurs before the presenting part has entered the brin. These characteristic differences should be borne in mind as they have an important bearing upon the method of procedure. If the cervix is well dilated, forceps or version should be employed, depending upon the location of the head. Then, if the cervix is undilated, the rubber bags may be used with good effect provided time is not a necessary element, as in impending eclampsia; but, on account of the slowness and uncertainty of action, they cannot be relied upon during the convulsion. Manual or instrumental methods are serviceable, when the cervix is effaced or effacing; but when it is in tact, they are not applicable, except in skilled hands, and even then, there is great danger of extensive lacerations of the cervix and lower segment of the uterus, with possible hemorrhage and subsequent infection. It is in this class of cases that multiple incisions of the cervix, vaginal Cesarean section and the classical Cesarean section have been advocated.

The statistics of classical Cesarean section, in 39 cases reported by Hillman, give a maternal mortality of 51.3 per cent. and fœtal, 43.9 per cent., and are not more favorable than other methods of intervention. Therefore, in the absence of absolute indication, of contracted pelvis, it is not to be recommended.

Multiple incisions are of value when the cervix is effaced; when it is not, they are fraught with danger because of the likelihood of hemorrhage and extension of the incision by tearing during extraction, on account of insufficient dilatation. It is here that the operation of vaginal Cesarean section, as performed by Acconi (1895) and Duhrssen (1896), is more advantageous because it provides ample opening of the cervix to admit of immediate extraction.

Dr. Moran reports two cases and describes the technique. Both were primiparæ about seven months' gestation. The cervix was undilated; one had had 8 convulsions, and the other 16, before operation.

Hemorrhage, extensive lacerations owing to incomplete dilatation, infection, and rupture of the uterus in a subsequent labor, are the dangers to be apprehended in the cutting operations of the cervix. With a well executed technique, these complications should rarely occur.

All the methods of intervention are of value, but each must be used only after thorough examination and study of the case has determined its fitness.

Vaginal Cesarean section fulfills all the indications of accouchement force, and it has the additional advantage of not being *restricted* by the limitations of the other methods, therefore, in an elective case, it should give the best result. It is a most efficient operation and worthy of addition to the obstetric armamentarium.

Book Notices.

Anatomy—Descriptive and Surgical. By HENRY GRAY, F. R. S., Lecturer on Anatomy, St. George's Hospital Medical School, London, etc. Edited by T. PICKERING PICK, F. R. C. S., Consulting Surgeon to St. George's Hospital, etc., and ROBERT HOWDEN, M. A., M. B., C. M., Professor Anatomy University of Durham, etc. New American Edition. Thoroughly Revised and Re-edited with Additions. By JOHN CHALMERS DaCosta, M. D., Professor Principles and Clinical Surgery, Jefferson Medical College, etc. Illustrated with 1132 Elaborate Engravings. Lea Brothers & Co., Philadelphia and New York. 1905. Imperial 8 vo. Pp. 1,600. Cloth, with illustrations in black, $5.50 net; full leather $6.50 net. With illustrations in black and colors, cloth, $6 net; full leather, $7 net.

While the author, Henry Gray, died young many years ago, he so well presented the subject of Anatomy as then understood, that his name has been retained through each of the many revised and enlarge editions of this work. The advanced knowledge of Anatomy since 1901 has been so marked as to require the addition of about 400 pages of text, as also several hundred more engravings, which render graphic the description of parts. The present revised edition has been so thorough as to require the re-writing of the entire text, and resetting in new type. As compared with the former edition, changes will be especially noted in the sections on the brain, spinal cord, nervous system, abdominal viscera, lymphatics, etc.

As Gray's *Anatomy* is the standard text book of colleges, and as, in its enlarged and revised form, it will practicaly serve the purposes of the practitioner for many years to come, and as the price of the book is so moderate for one of its size and magnificent illustrations, we cannot be too urgent in the advice to any one in need of an up-to-date *Anatomy,* to purchase the edition of Gray now under notice. And as the difference in price between the plain print of illustrations and the colored print, we most unhesitatingly suggest the purchase of the edition with illustrations in black and colors.

Manual of Materia Medica and Pharmacology. By DAVID M. R. CULBRETH, Ph. G., M. D., Professor of Botany, Materia Medica and Pharmacology, University of Maryland Dental, Medical and Pharmaceutical Schools, Fourth Edition, Enlarged and thoroughly Revised. With 487 Illustrations. Lea Brothers & Co. Philadelphia and New York. 1906. Cloth. 8vo. Pp. 976. $4.75 net.

This *Manuel* contains description of all organic and inorganic drugs which are, or have been, official in the United States Pharmacopeia, together with important allied species and useful synthetics, and much other matter of special service to the physician and pharmacist alike. While it is not intended as a book on therapeutics, the medicinal uses and doses of each drug are named, so that for epitome-reference on these points the book is useful. While the greater part of the work is devoted to organic drugs from the vegetable kingdom, a section of some 35 pages is given to organic drugs from the animal kingdom, including such things as anti-diptheritic serum, streptococcus antitoxin, etc. Inorganic drugs from the mineral kingdom are considered in the succeeding 140 pages. Among other useful things in this book

for the doctor is the dose table of rare and unofficial drugs not further treated of in this volume. All the usual tables, memoranda, etc. common to works on Pharmacology, are to be found in this book. This edition is revised on the basis of the recent issue of the United States Pharmacopœa—calling attention to the difference in strength of preparations as compared with former issues if the Pharmacopeia. The book contains so much useful information about drugs not found in the popular text books on therapeutics that the doctor will find it an invaluable help for frequent reference.

Text Book of Pharmacology and Therapeutics. By ARTHUR R. CUSHNY, M. A., M. D., Aberdeen. Professor of Pharmacology, University College, London; formerly Professor of Materia Medica and Therapeutics, University of Michigan, etc. Fourth Edition, thoroughly Revised. Illustrated with 52 Engravings. Lea Brothers & Co. Philadelphia and New York. Cloth. 1906. 8vo. Pp. 752. $3.75 net.

The immediate occasion of the issue of this fourth edition appears to have been chiefly to make the work conform to the changes in strength of the pharmaceutical preparations in the eighth revision of the United States Pharma copœia, published during 1905. Advantage is taken of the opportunity to include the latest discoveries as to the action of drugs in health and disease. Among some of the newer facts brought out are the dangers of wood alcohol, especialy in the causation of blindness, the observations of Embley with reference to the action of chloroform, showing that even in the commencement of anesthesia, the heart's action is weakened, and often fails to re-commence beating, and permanent failure of the circulation and death results. In other words, he has shown that fatal arrest of the heart may occur in every chloroform anesthesia through excessive inhibitory action upon the weakened heart. This is a good, practical text book on pharmacology and therapeutics. It devotes much space to the explanation of drug action—so far as the latest observations go.

Pocket Formulary. By E. QUIN THORNTON, M. D., Assistant Professor Materia Medica, Jefferson Medical College, etc. New (Seventh) Edition, Revised. Lea Brothers & Co. Philadelphia and New York. 12 mo. Leather bound, with pocket and flap. Pp. 287. Price $1.50.

Former editions were known as *The Medical News Pocket Formulary.* Besides some 16 pages of useful data, such as incompatibles, poisons and antidotes, tables of doses, etc., this book contains over 2,000 prescriptions with indications for their uses, etc. All remedies conform to the latest revised United States Pharmacopœia. The *Formulary* is arranged alphabetically as to diseases and discriminating annotations are added as to the selection of prescriptions for varying conditions. It is a book which may be carried in the doctor's satchel, and will oftentimes be found of service in suggestion of a course of therapy. The table of poisons and antidotes is also a valuable aid to memory in an emergency.

Progressive Medicine. Edited by HOBART AMORY HARE, M. D., Professor Therapeutics and Materia Medica, Jefferson Medical College, Philadelphia, etc. Assisted by H. R. M. LANDIS, M. D., Visiting Physician to Tuberculosis Department, Philadelphia Hospital, etc. Vol. IV. December, 1905. Lea Brothers & Co. Philadelphia and New York. 1905. Paper. 8vo. Pp. 367. $6 per annum.

This volume of the "quarterly digest of advances, discoveries and improvements in the Medical and Surgical Sciences" is taken up with the diseases of the digestive tract and allied organs—the liver, pancreas and peritoneum; Anesthetics, fractures, dislocations, amputations, surgery of the extremities, and orthpedics; Genito-urinary diseases; Diseases of the kidneys. Practical therapeutic referendum. Many illustrations in colors, etc., illustrate the text whenever it seems necessary.

Food and Diet in Health and Disease. By ROBERT F. WILLIAMS, M. A., M. D., Professor of Practice of Medicine, Medical College of Virginia. Lea Brothers & Co. Philadelphia and New York. 1906. Cloth. 12 mo. Pp. 392. $2 net.

The author departs from the custom of dividing foods into "animal" and "vegetable," but arranges them according to their predominating alimentary substances so as to better serve practical purposes. Most of the tables of food have been taken from the reports of the Experiment Stations of the United States Department of Agriculture. Liberal drafts have been made upon standard works on dietetics. Technicalities have been, as far as possible, avoided, in order that the subject may be intelligible to persons

without technical training. The book deals rather with "results, facts and clear directions" in the plainest language. It is a book which, properly read, will prove of great service to patients, to those in charge of feeding of children, etc. The concluding chapter of over 30 pages is filled with recipes for preparing food for sick, etc.

Lectures on Tropical Diseases. Being the Lane Lectures for 1905, Delivered at Cooper Medical College, San Francisco, August, 1905. By SIR PATRICK MANSON, K. C. M. G., M. D., etc. Lecturer, London School of Tropical Medicine, etc. Chicago. W. T. Keener & Co. 1905. Cloth. Small 8 vo. Pp. 230. Price $2.50 net.

Although the general run of practitioners of this country may not come in frequent contact with the class of diseases included in these *Lectures*—except Malaria—the student of medicine cannot help feeling an intense interest in them—from beginning to end of this book. To the practitioner of this country, the chapter on "Malaria"is of special interest—as showing the difficulties of diagnoses between the "tropical" and the malarial diseases. If, however, the doctor proposes to become a medical missionary to such countries as Southern Asia, or a Surgeon in the Navy, or other like service, this book would be of incalculable service to him. The section on the value of ipecac in the treatment of dysenteric troubles is one of special use to practitioners of this country as well as elsewhere. Enquinine is as useful in malarial troubles as quinine, and possesses the advantage of being practically tasteless. Many other items of every-day importance are pointed out, which give the *Lectures* a value to the general practitioner.

Editorial.

Testimonial to Dr. Robert Fletcher, Washington, D. C.

On January 11th, a banquet was given at Rauscher's in the city of Washington, to Dr. Robert Fletcher, as a testimonial of appreciation for the work he has done for medical literature in getting up the Index Catalogue and Index Medicus of the Library of the Surgeon General's Office, U. S. A. It was a ten dollar a plate dinner, and a few over one hundred doctors were present. These included a number of doctors from other cities among whom were to be noted: Drs. Keen, Willard and Tyson, of Philadelphia; Billings, Jacobi and Polk, of New York; Welch, Halstead, Thayer and others, of Baltimore. Speeches were delivered by the following: Toastmaster, Dr. H. C. Yarrow; Army Medical Library, Dr. J. S. Billings; Poem, Dr. W. S. Thayer; the Army in Medical Literature, Dr. W. D. McCaw; the Navy Medical Corps, Dr. J. C. Wise; the Public Health and Marine Hospital Service, Dr. Geo. Tully Vaughan; Presentation of Loving Cup, Dr. W. W. Kem; acceptance of same, Dr. Robert Fletcher; the Perils and Dangers of the Loving Cup, Dr. H. W. Wiley; Remarks, Dr. Wm. Osler; Our Guest as Physician, Scholar, Companion, Dr. A. F. A. King.

To use the expression of one of those present, "We had quite a lively time." Dr. Osler came in for a good natured thrust from Dr. Vaughan, who amused the crowd generally by triting him on his chloroform theory, as Dr. Fletcher is 82 years old and still at work.

Proceedings of the Medical Examining Board of Virginia

Are received as we go to press with this issue. They will appear in full in the second February number.

The Journal of the American Medical Association

Is the official organ of the American Medical Association. That association is practically composed of members of all the State Societies of the Union. Every member of that association who pays his membership dues ($5), is entitled to annual subscription. The same price is charged to those not members. In round figures, there are about 35,000 members of that association—including a number of homeopaths, eclectics, etc., who are allowed to join by the present "re-organized" rules of the association. This membership of the National Association guarantees an annual income of about $175,000 —*in addition* to an unknown income from ad-

vertisements in every issue of the weekly *Journal,* which unknown quantity, we presume may be estimated at not less than $75,000—thus securing a total annual income of $250,000, or more. How much of this is profit we do not know; possibly $100,000. Such an amount of profit results that, not content with its own success, it is now venturing into the field of competition with other heretofore solid enterprises, such as that of making a directory of the profession of the United States, etc. We cannot believe that it was ever the purpose of this American Medical Association to assume the role of such competitions.

The *Journal* is the property of the American Medical Association. It should be the exemplar of ethics in the journalistic field, as well as in its dealings with the medical profession. It would seem, therefore, that it would place itself above the plane of ordinary competition with other reputable medical weeklies of the country, and avoid invidious distinctions or comparisons. Instead of adopting, however, this higher ethical course, it puts itself in comparison—both as to the total number of subscribers and amount of matter annually in its columns—with some of the most reputable medical weeklies of the country, as if to show their relative weakness in these respects. Such a course is not dignified—is not becoming—for the obvious intentional effect is to exalt the one, and pull down the others. We do not believe that the better element of the profession will sustain the management of the *Journal of the American Medical Association* in any such effort.

The present plan of organization of the American Medical Association has sufficiently injured enough formerly good journals by causing them to limit their spheres of subscription patronage to the State Society memberships of which they have become the so-called official organs or bulletins. The *Journal of the American Medical Association* has secured, through the influences of the State Societies, the salaried drummers it can easily afford to send out under the title of "organizers," etc., a patronage sufficient to let these larger medical weeklies alone in quietly fulfilling their mission as regular medical journals of high merit, and as exponents of independent views.

If the American Medical Association is annually adding materially to its surplus fund by virtue of its increasing membership, there are many fields open for investment, profitable to the profession and to humanity, without undertaking to pull down enterprises that were appreciated and fairly profitable. There are many matters for scientific investigation which the individual doctor has not the means to attempt without financial assistance. From time to time, as circumstances may allow, sufficiently salaried commissions might be organized among qualified workers in the profession to ferret out the truth of reasonable suggestion in some department of medicine. Such a course would be more in keeping with higher professional sentiment than undertaking to pull down enterprizes of established value.

Many other avenues of profitable expenditure of the profits of the Association, than that of entering into competition with useful business enterprizes by distinct corporations might be suggested—were it the purpose of this note to do so.

We do not by any means oppose the American Medical Association. On the contrary, properly conducted, it has a legitimate field of usefulness that no other association of the profession can fill. It is only as a caution that it should cease to antagonize the honest convictions and rights of a great mass of the loyal members of the profession that we write. Otherwise, the time will come, as with some of the insurance corporations of the day, when searching inquiries will be made which may threaten the downfall of the now mighty organization.

The American Journal of Clinical Medicine

Is the new name, beginning January, 1906, of the *Alkaloidal Clinic,* published at Chicago by the Clinic Publishing Company. Along with this change of name, we note an increased scope of usefulness. Dr. Wm. J. Robinson, of New York will conduct a department on Dermatology and Skin Diseases, while Dr. Emory Lamphear, of St. Louis, will direct the department of Surgery, Gynecology and Obstetrics. Also associated in the editorial "cabinet" with Drs. Abbott and Waugh, we notice the name of Dr. A. S. Burdick. Each successive issue will show increased fields for its armamentarium, so as to include every known therapeutic platform—active principle therapy, surgery, synthetic chemistry, massage, electricity, opotherapy, serum therapy, hydrtherapy, radiotherapy, etc.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 22.
Whole No. 238.

RICHMOND, VA., FEBRUARY 23, 1906.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

ACUTE PRIMARY MENINGITIS.*

By J. BEVERLY DeSHAZO, M. D., Ridgway, Va.

This is the most severe disease of infancy and is to be dreaded more than all others combined. It is not confined to any age or climate, but is most frequent from the 18th to the 24th month of babyhood innocence. Only a part of this terrible destroyer of human happiness will be considered.

It usually begins very unexpectedly with vomiting, constipation, convulsions, fever, and every evidence of continual pain and a severe disease. The fever is constant and is more uniformly near 102 degrees than any other. Hyperæsthesia, photopobia, and opisthotonos, or at least some stiffness or rigidity of the post-cervical and post-spinal muscles are nearly always present. Later symptoms are severe constipation and general prostration, piercing headache, active dilirium, or the low typhoid state, and not infrequently, convulsions may be continual. The respirations are slow and perhaps irregular, but the temperature now may be between 101 and 105. Rarely a few spots are seen on the face and body. The pupils are irregular, more often dilated, but may show every variety of deviation from the normal condition. The pulse may only be slightly above normal, but towards the end becomes fast and feeble. In from one to two weeks, indifference or a comatose condition with general relaxation of the anterior muscles of the whole body appears, the pupils become dilated or irregular, and generally the typhoid of limpid state or the development of continual convulsions closes the final scene. If recovery occurs it extends over weeks or months, and in nearly every case some serious mental or physical defect follows in its wake.

Severer Forms.—Cases may end fatally in twenty-four or thirty-six hours, presenting continual convulsions or active delirium and with very high fever; a majority of these die without the diagnosis being satisfactory.

Of special symptoms, the most varied relate to the eye, which presents every form and direction of distraction, some being even nearly normal. The fever is pretty general throuhout the disease and is not fluctuating. The respirations are usualy slow, as above stated, but may be irregular, very fast or very slow. Constipation is persistent and obstinate in cases with this symptom, but some others present frequent rhythmical actions from the digestive tract without any local cause. The vomiting is peculiar and is done with exaggerated force and unexpectedness, and comes on without regard to eating or drinking. The kidneys present the usual lessening of function common to severe diseases.

Prognosis.—Nearly all die in from three days to three weeks.

Diagnosis.—The age of the children afflicted is most often during the last third of their second years. The previous good health is no evidence against the occurrence of the disease. The mistake in the diagnosis is nearly always made in calling some other malady meningitis in the great haste to name it, when in reality it dose not exist. The characteristic and persistent vomiting without any apparent cause, the constant whine, the irritation displayed when moved about or disturbed in any way, the stiffness in the back of the neck and spinal region, abnormal pupils, and slow pulse, with fever, which is nearly always faster in proportion to the rise of temperature in other common diseases, are especially significant. The continual noise or whine with expiration mingled with piercing shrieks of agony drives all doubt from ordinary brains. Photophobia, while nearly

*Read before the Patrick-Henry Medical Society, at Martinsville, Va., January 8, 1906.

always present, is sometimes absent, as well as nearly all the other symptoms of the eyes, heart, and respiration, if the inflammation is limited to the convexity of the brain, and nothing but the continual increase of alarming symptoms will enable a correct diagnosis to be made.

It may be confounded with pneumonia, but the cough, high fever, quick pulse, absence of obstipation and a slight examination of the chest will easily distinguish pneumonia from meningitis. From typhoid fever it is harder to differentiate, but the gradual and regular increase of symptoms in typhoid fever, especially of the intestinal region with the evening temperature highest, coupled with the position assumed by the patient in bed, together with the absence of convulsions and the eye symptoms, especially the irritability of the retina, will usually distinguish fever. Scarlet fever is told like measles —by the eruption in the mouth as well as on the skin, and the peculiar tongue and respiratory phenomena, as well as the brief duration of the symptoms common to eruptive diseases. In inflammations about the throat, the differential diagnosis is very difficult, because the head is thrown back and stupor is frequent, the eye symptoms do not persist, convulsions are rare indeed, and the pulse may be moderately slow and the fever uniform if there is pus formation, but these do not persist as in meniigitis. Teething presents many difficulties during the first year of infancy and shows many symptoms of meningitis for the first three days but the absence of fever and the lapse of time will make definite the diagnosis.

In all cases, an early diagnosis, while urgently demanded by the parents, if hastily made, may place the physician in an uncompromising, even pitiful, condition. It is much better to delay it until it is positive, for the continual and regular progress and severity of all the symptoms of the nervous system will certainly make the diagnosis clear cut, except in those rare cases of inflammation located at the convexity above specified.

The puncture of the spinal canal offers an additional and accurate method of diagnosis. The spinal fluid is not clear, but more or less cloudy in meningitis, albumen is more abundant than normal, and, too, the varied bacteria carrying the disease are readily detected by a microscopical examination.

A few other symptoms of diagnostic importance may be mentioned—one of these is the great anxiety of the mother, nearly every one of them saying pitifully, "O doctor, my baby is terribly sick, please do all you possibly can for it." Another is the constant effort of larger children to get in a quiet or dark place; the very poor, in the early stage, will often crawl into the closets. The peculiar positon occupied by the patient with the extremities constantly in any queer position, which they speedily gain in a few minutes if corrected, is higly diagnostic.

A majority of them sooner or later have contractions or peculiar fixed positions of some part of the body. The characteristic boat symptom presented by the anterior formations of the body is typical and rarely absent in severe cases. A convulsion develops in every case and the majority of the supposed cases of the disease recovering in the hands of very young practitioners never show this symptom. It may be at either the beginning or end of the disease, but will surely appear with all its omnious forebodings.

Treatment. Unfortunately, it is very unsatisfactory and can he summed up by suggesting morphine, cathartics, ergot, potassium iodide, counter-irritation, and the local application of cold; however, the ice-bag should never be placed without some thick material between it and the child's head. Because the precious little sufferer does not complain of it, is no sign that it is not painful when applied direct, and simple mercy demands a complete reformation of this line of barbarous treatment.

HAVE WE PROGRESSED?

By D. L. FIELD, M. D., Jeffersonville, Ind.

The occupation of the general practitioner of medicine, whose duties are continuous and necessitate routine, is not conducive to orignal research in any of the fields of science, familiarity with which is, nevertheless, essential to the education of an accomplished physician.

With the modern facilities for printing and distributing knowledge, and the enterprise of modern medical journalism, everything is known as soon as thought, and much material is contributed to the rapidly increasing volume of medical literature that does not add to our large stock of knowledge.

No one man, if he had anything else to do, could now read all the medical books issued by

the medical publishers of this country from year to year, to say nothing of the medical journals, that under the fructifying influence of advertising patronage, as "sample copies" alone, encumber our office tables.

Medical schools have greatly multiplied, and flourished; and sects in medicine, based upon pretensions of new discoveries, or protests against old abuses in practice, have sprung into existence within a comparatively short period —some of them to acquire more than a transient foothold, and importance.

The practice of medicine, because of the inability of one man to master all of the knowledge, or pretentions of knowledge of the healing art, has naturally tended to a crystalization into distinct specialties. The "family physician" now sends his "eye cases to the oculist; surgical cases of females, to the gynecologist; and if a tooth needs extracting, to the "Doctor of Dentistry." The diseases of the brain and nervous system, must go to a "specialist," and so on almost *ad infinitum*.

That there has been but little change in the character of diseases, may be known from the fact that disease is a phenomenom, the characteristics of which are determined by the cause that develops it, and the condition of the organs from which the phenomenon proceeds. The same cause, other circumstances being similar, will produce the same disease. That any change has taken place in the general structure of the human body, is not to be believed. If there has been any, it has been for the better, and not for the worse.

Hippocrates, Cullen, Galen, Syndenham, Armstrong, and Rush, in their days, described the same phenomena of various diseases, as accurately as we have them described by modern observers, and precisely as we see them now. Had disease changed, a new description would be necessary.

Facts go to show that longevity of the civilized races has increased in the past fifty years; the ratio of mortality from disease, has greatly diminished in the past thirty years.

Men, as a rule, are as strong, and as enduring now, as they ever were. They resist hardships and exposure of Army life, and the shock of battle wounds, and surgery, as well as did their sturdy ancestors. They are better fed; better clothed, and better housed than were their forefathers.

If there is any difference against the present generation of men and women, it is that they make a living too easy; too much mental and indoor pursuits; too many clerks, bookkeepers, and brain workers! They have not enough outdoor work, with its exercise of muscle, and the invigoration of fresh air! Not enough want to learn to be skilled artisans; but young men, and young women, take to stores, counting rooms, typewriters, stenography, and measuring tape, or dress-making. The consequence is the appalling mortality from the "White plague," and stomach diseases.

If it were not for the great gain we have made in manner and character of treatment of such cases, the death rate from such cases as tuberculosis, and cancer would be far greater.

The healing art has progressed in discovery, invention, pharmacy, and improved agents and means of care, but not in healing *per se*.

SKIN CANCER.*

By NAT. T. DALANEY, M. D. Bristol, Tenn.

Not very long ago a county medical society was held in a village in the Tennessee mountains. One of the doctors, who had spent most of his life in the saddle instead of the study arose to report a case. It was a very interesting case. A man had received a gunshot wound of the abdomen. The doctor said it had punctured the ileum, and when a fluid was injected into the bowel through the rectum it came out the hole in the ileum.

Another doctor, better posted on anatomy, arose and inquired, "Doctor, will you please tell us how the fluid got above the ileo caecal valve?" The old fellow modestly replied, "Hell, he was shot below that!" Illustrating the great truth that some of us are fearfully and wonderfully made.

I do not wish to present any especially new truths nor to advance any finely spun theories, for there are many things in medicine that are not better understood than the doctor's idea of the anatomy of the ileum.

The study of skin diseases is not new. The late Dr. Larrabee, of Louisville, Ky., used to say that he was a specialist on the hide and all

*Read before East Tennessee Medical Society, held at Bristol, January 17-18, 1906.

that was in it, and in this he laid down a great truth, and that is that any specialty that is divorced from general medicine and surgery loses the groundwork upon which it is founded; and any specialist who goes into a specialty because he does not like the study of general medicine, has placed a great barrier between himself and complete success. I do not mean that a specialist should keep up his practice in general medicine, for this he should not do; but all medicine has but one object, and that is the prevention and cure of disease; and nowhere do we find a thorough knowledge of medicine in its various departments of more importance than in the study of diseases of the skin.

The first trouble that confronts the student in beginning the study of skin diseases is that he looks upon it as something entirely separate from all other departments of medical science, and in many places it is not looked upon as a part of dignified medicine at all. In the next place, the study of skin diseases is one-sided, but the skin is composed of nerves and blood-vessels, connective tissue and epithelial cells. The skin, like other organs, has its malformations, its anæmia and hyperæmia, its inflammation, hypertrophy, atrophy and new growths; and the process that produces these varied conditions is the same as in any and all other inflammations of the great structure of man.

It is with its connective tissue, its epithelial cells and its new growths that I shall deal in this paper.

The development of cancer is on the increase. Only a few years ago so many cases developed in and around Buffalo, N. Y., that that section was called the "tropic of cancer." It seems that the same might be applied to our section of the country. But it is hard to tell what the percentage of increase has been, for with our new means of treatment many cases have come to light, that a few years ago were allowed to blush unseen, because the patient feared it was cancer and knew that if it were discovered by the medical profession it would be carved away bodily, and would as surely return, carrying destruction and death in its path. Nor were they far wrong. The patient feared the doctor and waited developments. Meanwhile the cancer grew beyond the reach of medical skill. The doctor applied the remedy too late to get the successful results that could have been obtained in the beginning.

The trouble too often has been that the doctor failed to recognize the true nature of the disease in its curable stage, and advised the patient to wait and see what it would do. Our graveyards are filled with patients who saw too late what it would do—the doctor buried his mistakes.

The treatment of these cases by surgical means drove the sufferers to seek relief from advertising quacks who too often healed themselves instead of healing the patients, and from ignorant herb doctors who had a remedy they had inherited from the deathbed of a friend.

The medical profession is responsible for the evil that is done by the ignoramus who pretends to cure human ills with vegetable pills and secret nostrums; for if the medical profession had studied medicine in its various departments and all its departments year ago, and had set about to find the remedy used by the ignorant snake-hunter in the treatment and cure of skin cancer, instead of denying that the patient had been cured, or if he had been cured he never had cancer; I say if the proper investigation had been carried on then, there would now no longer be any doubt that skin cancer can be cured.

I have not time here to minutely describe the various methods now in use, but I will say that some cases are best treated by the paste, some by early excision, and most of them by the light treatment, the best of which is the X-ray. A few cases should be treated with the paste, and they are those which have a horror of the knife, or in which it is impossible to get beyond the outline of the new growth without endangering the life of the patient in the operation. The ideal treatment in the great majority of cases is the preliminary light treatment with early excision, and the secondary light treatment to remove the scar. It is not necessary to remove all the growth, and about the face this is very important, as the scar is less than where the entire growth is removed.

The main points which I wish to emphasize are that skin cancers can be cured; that they are malignant and mean death if left alone; that they should be recognized early and treated immediately and intelligently and vigorously. I do not believe in the use of mild caustics upon any growths, malignant or benign. It simply

irritates the benign growth and paves the way for a serious breakdown. It hastens the end in the malignant cell prolification. And right here I would like to discourage the internal use and abuse of arsenic in those cases of skin disease where roughened patches form from increase of the corneal layer of the epidermis in people past the meridian of life, for beyond this meridian is the true "tropic of cancer," and arsenic increases the growth of epithelial cells.

The great majority of epithelial cancers occur upon the face, and I have found the predisposing cause in the skin itself. For this reason, we oftentimes see several of the peculiar overgrowths upon different parts of the face of the same patinet, and for this reason these malignant tumors will sometimes return a year or more after they have been cured, and return at a different point upon the skin from the first location. This is the best evidence in favor of the light treatment in all cases, no matter what other treatment has been used. The light destroys some part of the entire epithelium upon which it is used. It destroys the pigment, and an increase of pigment increases the tendency to cell prolification and cell breakdown. It contracts blood-vessels and controls the circulation through diseased structures.

I do not believe that all cancers will ever be cured, but light has already dawned for the new day in which we can master the malady in some of its dread manifestations; and I believe that when this day has reached its midday glory we shall be able to say to this monster of human misery, "You shall no longer torment man with your horrible deformity."

Time was when all its forms were equally terrible. Time will be when none will be considered incurable. The crown awaits him who discovers the key that unlocks the great secret.

HEADACHES.

By OSCAR WILKINSON, A. M., M. D., Washington, D. C.

The study of headache is to me one of the most interesting studies in medicine. There is no question but that it has been the opprobrium of medicine for ages, and has ruined more capable minds, and frustrated more lives than any other tormenter to which flesh is heir. It saps one of his energy; it deprives him of advancements; it makes life a burden; it changes the disposition and makes the most lovable person irritable, and makes us, as Savage has truthfully said, "wish to be old that we might escape our headache," which Heberden observed, more than a hundred years ago, would leave us as age advances.

I noticed an article on this subject in the *Virginia Med. Semi-Monthly* for Oct. 27, 1905, from Dr. D. L. Fields. His article is an exceedingly interesting one and even remarkable in some respects. While the doctor has mentioned above thirty causes for headache, and more than one hundred remedies for its relief, all of which are good, and some of them very good, I can not see how he is so blind as to the real cause of at least 75 per cent. of all chronic headaches. I can not conceive how a man can think of thirty causes of headache, and overlook the *one* cause that probably produces more headaches than all the thirty causes which he enumerates. This one cause is termed by Ranney "Eye-strain." I do not wish to criticise, but it is time that all men, whether medical or not, but especially medical men, knew that the most fruitful source of persistent headache, in these strenuous times, is the eye. I am not writing this article in a spirit of criticism of Dr. Field's article, for every remedy that the Doctor has suggested is good, and every cause that he gave for headache has produced headache. I have only mentioned his article as a class, as so many of the general practioners do not yet seem to be awake to the fact that the eye is a potent factor in the production of headache.

I do not claim that all headaches are due to the eye; I have just said that all of the thirty causes which the Doctor mentioned were, at times, factors in its production. What I want to do is to impress upon all that there are *thirty-one* (or more) causes for headaches, and that the thirty-first—eye-strain—is chief among ten thousand. While I admit that all headaches are not due to the eye, I will further admit that all eye defects do not cause headaches. I have 0.50D of astigmatism in one eye and 0.75D of astigmatism in the other, at oblique axes, accompanied with two degrees of right hyperphoria, still I do not have headaches. However, that does not prove that the same amount of defect in a differently constituted person might not produce headache and entirely incapacitate

him for close work. That it does do so, is the experience of every busy oculist.

The Doctor very wisely says, "The *first* and most important thing, is to endeavor to ascertain the *cause* of the headache, and a remedy will be found to cure."

This is entirely true, but he, as thousands of others have done before him, has looked for some obscure cause, instead of looking to the eye; and this has led him to use 108 different remedies, in a vain effort to give relief, while the proper adjustment of glasses, the only means that will cure a headache from the eye, except rest, was entirely overlooked. When the headache is from the eye you had just as well pour medicine down a crawfish hole as to try to cure it with palliative remedies. They can but give temporary relief. Purgatives, regulation of the diet, the correction of acidity of the stomach, and the relief of constipation all have their place in the treatment of headache and should receive attention; but in eye cases, they afford but temporary relief at best, and when the eye is put back to work again, the same old enemy creeps in, despite your purgatives, your sodas, your regulation of diet, and the various palliative remedies.

It would be as absurd in me to claim that all headaches were due to the eye, as it would be to say that the eye is never a causal factor in its production. No one imagines that spectacles will cure a headache due to a syphilitic gumma, hyperacidity of the stomach, a total lack of digestive ferments, constipation, pelvic disorders, brain abscesses, and the various acute, febrile disorders; but while we recognize this, we must not forget that the digestive disturbance may be, and *often is* caused by the eye-strain. If any one is skeptical as to this fact he has but to put on a pair of 0.75 cylinders at oblique axes and wear them, or a 3 degree prism, base either up or down before one eye. This will make the most doubting Thomas a convert, and in most cases, in a very short time. I have seen patients made so sick as to vomit and have to go to bed, from attempting to use badly fitting cylinders.

Donders, in 1864, first suggested that the headache might be due to the eye, and that the use of glasses would relieve it. After him Thompson, Dobrowolski, Weir Mitchell, John Green, Clark, Savage, Ranney, Steven, Gould and others, long ago recognized the eye as a factor in the production of headache. Since these, hundreds of men, such as, Jackson, Veasey, Stephenson, Wood, Myles Standish, Weeks, Risley, Reber, Foster, Calmart, Gallant, Pyle and Thorington, have cured thousands of their headache patients by correcting the ametropia. It is the experience of every oculist that headache is one of the most constant symptoms, and often the only symptom of eye-strain. Nor is this all, insomnia, neurasthenia, irritability, migraine, general depression, and light forms of chorea, are often, if not usually, produced by eye-strain. The neuroses, as symptoms of eye-strain, are becoming more recognized by the profession in general. Even the public have awakened to the fact, and it is not uncommon that they, of their own accord, seek relief from their headaches, by having their eye defects corrected.

In order that I might emphasize the importance of the recognition of the ocular element in these cases, and also to call attention to the inability to give more than temporary relief by other means I will report a case in question that came to me about a year ago.

Mrs. T., age 30, was referred to me by a fellow practitioner on account of headache, for whom he had been prescribing during the previous six months. From her I obtained the following history: She had suffered from headaches as long as she could remember. For the past eight or ten years they had been worse, except at the time that she was pregnant, at which time she was unusually strong. She had been so nervous that last summer she spent several months in a private institution for nervousness. About four months before coming to me the headaches became so very severe that she was persuaded to go to one of our local hospitals by her family physician. There she was seen by three other men and a diagnosis of "spinal irritation" was made and she was blistered from the back of her neck to the center of her back. While there she was somewhat improved; however, at no time did she get rid of her headaches except when she was taking some anodyne. She has during the past five years taken every thing that she could hear of which was recommended for headaches.

On examining her eyes I found that she had one dioptre of hypermetropia accompanied with 1.50D of astigmatism in each eye. I told her that I would probably be able to give her relief, of which she was very skeptical. Since giving her the above correction, without taking

a dose of medicine, she has been free of her headaches and nervousness, can sew and read, a thing that she had not been able to do for years, and can now take drives for hours, which always before prostrated her on account of aggravating her headaches.

The above case is but one from a number that any observing oculist could report. I could report many such cases, some with worse symptoms, but that ought not to be necessary. I have merely written this "Lest we forget." Surely by this time all medical men know that the eye is a most potent causal agent in the production of headache.

1404 *L Street, N. W.*

OUR BUSINESS OPPORTUNITIES.*

By R. O. HUFFAKER, A. B., M. D., Chuckey, Tenn.

I hold distinctly in mind one of the first lectures I heard after entering the University. The great professor spoke of the mission of the doctor, how his life was full of sacrifice, given to the uplifting of physically fallen man; that in the honors and riches attained and gathered in by men in other callings he would have no part or parcel. "If there is any one here," the solemn orator continued, "who has taken up the study of medicine with the hope that he may some day be a great man as the world accounts greatness, he will see his illusions languish; if he expects to accumulate riches, disappointments will mar his usefulness, inasmuch as his labors are with the afflicted and his revenue from the poor."

Now this was all very fine in its way, but in such speeches the seed of discontent is sown that brings forth fruit after its kind so long as we practice medicine. The idea that we are *giving* our life work to others is not pleasant to a normal man, and we brood over it, forgetting that good men in almost all honest pursuits give much to humanity. We are dissatisfied with our profession, regretting that we did not choose some other. Then, as it is too late to change, we imagine that we could make much more money in another country. The latter I think is the case with many of us in Greene county. Wild reports come to us from the West, telling of the fortunes that are made by medical men there. Our kindred and friends write us personal letters, "Why do you stay in the midst of hills when there are wide fertile plains waiting for you?" Again, the message comes from the large towns and cities, "Why don't you leave the village with its narrow limits, the muddy rural roads, the long lonesome rides?"

These suggestions are usually accompanied with mild flattery, allusions to talents and great abilities wasted on an unappreciative people. And we ponder these things, wondering if we are not very foolish to remain, forgetting what a noble heritage we really have.

It is the object of this paper to make us more contented. Statistics show that the average income of physicians in the United States is less than $600.00 per annum. In making this estimate let us bear in mind that the princely salaries of famous surgeons, of men in high official positions, of those in large cities and new countries where the expense of living is enormous are included. Let us consider the comparative expense. Our western and city brother is compelled to make a show of prosperity and keep up a rapid pace if he expects to retain a paying clientelle. His stanhope must be spotless, his horses well groomed; he keeps an autocar, a suite of costly rooms. High house-rent, electric lights, grocery bills, and a hundred other things make his income seem small even if it is good. Most of us own our own homes; our manner of life is simple. We do not need to do things for appearance sake, for our population is a settled one. They know what we are and what we can do—it matters little to them whether we have fine offices, ride in carriage or not; it is sufficient that we are skillful. Most of us own farms and raise our hogs and cattle; sweet smelling hay fills our barns. We have pure milk, poultry, fresh eggs, vegetables, all so convenient that we lose sight of their value.

But leaving out all such pleasant considerations as these, are we so poorly paid as our friends would have us believe? I think there is hardly a physician in the county who collects less than $600.00, and the fact that he does not make more is largely his own affair. There is no reason why he should not conduct his business as does the merchant. The fact that we have had long acquaintance with our patrons gives us an advantage in collecting; we know what they have to pay with and their manner

*Read before Greene County Med. Society, Greeneville, Tenn., Feb. 5, 1906.

of paying. What if we do lose accounts? We will have enough from those who do pay if we attend calls promptly and go any distance demanded of us. Our fees are very moderate, but we could charge more if we wish, since we are not crowded with competitors.

We will never get rich practicing medicine in Greene county; men rarely get rich following any one occupation; wealth comes through other channels, lucky trades, accidents, peculiar abilities, but the doctor has many opportunities for adding to his income from outside sources. Never before has capital been directed to East Tennessee as now; the value of real estate is advancing steadily and the observant physician knows more than almost any one else of property to be sold and of its real worth. If he wishes to deal in cattle on a small scale no one, next to the cattle traders, is better informed of where to buy. He can deal in timber if it suits his inclination; he knows where the forests are. He can invest his money in paying enterprises, mills, factories, etc.—many ways in which to make money.

Our old professor was right when he intimated that we should hold our high calling above mercenary strivings, but if the gathering of gain is what you want you can accomplish it here. Make the poor man divide his hog with you, take a good portion of the widow's small allowance, take the invalids crop of corn, grind the poor; you have a good mill for the purpose, for all that a man hath will he give for his life. Perhaps your soul is generous. You stop your horse at the gate, intending to ask the man of the house to pay his long due account. While you wait some children come through the yard. You feel the cold wind and look at the children with their thin garments and little feet bared to the frosty earth. They gaze at you with wide innocent eyes, eyes full of affection, for are you not the good doctor who cured their mother? "Some more convenient day," you sigh, and ride on, seeing in your mind your own little ones clad in nice warm woolens. You intend writing a sharp statement to a delinquent as soon as you get to your office. On the way home you stop at the grocery, and order something nice sent up. Alas! there stands the delinquent's hard-working wife, her face seamed with lines of struggles against odds. She is buying the cast-offs that her children may not starve. "Some more convenient day," you sigh, and give her a kind word.

Make money or not, gentlemen, as you like. Reproach the noble heart of you that sees something grander in this life than striving after unneeded wealth, but do not think that you have no business opportunities.

A CASE OF GASTRO-DUODENOSTOMY.

By J. SHELTON HORSLEY, M. D., Richmond, Va.

Professor Principlesof Surgery Medical College of Virginia; Surgeon to Memorial Hospital.

The case reported below was operated upon at the Protestant Hospital, Norfolk, Va., during the meeting of the Medical Society of Virginia last October, through the kindness of Dr. E. T. Hargrave. As several of the members of the Society witnessed the operation the subsequent history may be of some interest to them.

The patient was a negro man, a cook, about twenty-seven years of age who had been suffering with stomach trouble more than ten years. A few years ago he spent some time in a hospital in North Carolina, where gastric lavage was carried out but with only temporary benefit. At various times he vomited blood, though never in a large amount. For the last year he suffered much pain a few minutes after indigestion of food, though some kinds of food caused less pain than others. The stomach was slightly enlarged and there was tenderness on pressure and moderate muscular rigidity over it.

The operation was performed with the assistant of Doctor Hargrave and the house staff, Doctors Smith, Bell and Tucker. An incision slightly to the right of the middle line disclosed the pylorus contracted and moderately adherent to the surrounding tissues. After separating the adhesions a gastro-duodenostomy was done after the method of Finney, using a continuous stitch instead of the interrupted. An incision was made with its center at the pylorus, one and extending about two inches into the duodenum; the other a similar length into the anterior wall of the stomach. Starting at the pylorus a running catgut suture united the lower lip of the wound in the stomach to the lower lip of the wound in the duodenum, and then the upper lip of the wound in the stomach to the upper lip of the wound in the duodenum. This line

of sutures was buried with a running silk Cushing suture. The patient left the table in good condition. The subsequent history of the case is given by the following extracts from letters of Dr. Hargrave. On October the 31st, six days after the operation, he wrote, "His temperature never got above ninety-nine and a fifth, and pulse never went higher than ninety. He is able to take liquid food without discomfort and his condition is very much better than before operation."

On November 29th, Dr. Hargrave wrote as follows: "The man upon whom you operated is doing nicely. He left the hospital about the fourteenth day after the operation very much improved. I saw him a few days ago (thirty days after operation), and found him still improving.'

On December 29th, he wrote: "It affords me a great pleasure to tell you that our patient is gaining rapidly in weight, has a normal bowel movement daily." Previous to operation he had suffered greatly with constipation.

In conclusion, I wish to say that the satisfactory outcome of this case is in large part due to the careful attention of Dr. Hargrave, who is solely responsible for the after-treatment.

303 *West Grace Street.*

CAUSE OF PNEUMONIA.*

By HENRY G. GRAHAM, M. D., Gresham, Nebraska.

Sternberg discovered the micrococcus lanceolatus in 1880. This was one year prior to the finding of the tubercle bacillus by Koch. Subsequently, Fränkel, under the name pneumococcus, wrote of the organism discovered by Sternberg.

Attention having been called to the presence in the rusty sputum of pneumonia of a diplococcus, many independent observers employing various terms for its designation, have since described a microorganism found in the exudate of acute lobar pneumonia; so that at the present time it is pretty generally accepted that the micrococcus lanceolatus or pneumococcus is the exciting cause of that disease.

The purpose of the present paper is to endeavor to fix the *source* of the micrococcus lanceolatus or pneumococcus, to give its *distribution* and to establish, if possible, the *manner* in which infection occurs.

The basis upon which the statements herein contained are made, consists in part of a series of specimens removed from among living individuals of the species of organism as it exists in a state of nature. The name of the species is lepadella ovalis.

The specimens were obtained by allowing the organism to fix itself by means of its slimy secretions to the free surface of a cover-slip. When so fixed, the zooid will eventually disintegrate, and the progeny springing from a single individual will grow and multiply and will remain for a time on the site of the parent body.

If before the young have had time to quit the site of their origin, the cover-slip is removed from the fluid culture medium or from running water and dried at room temperature, and stained and mounted in Canada balsam, they may be viewed through a one-twelfth inch oil-immersion objective and be seen still within the ovum with every detail of the arrangement of its component elements preserved.

Even long after the walls of the ovum have given way or disappeared completely from the field, the young may frequently be seen in their characteristic grouping; or if partially dispersed, a sufficient number may still remain upon the former site of the parent body to mark the spot of its disintegration. And this will assist in the identification of the organism.

But the main reliance to be placed upon this method of culture rests upon the fact that other forms of the species than the ovum may be observed in the same way. One of the principal among these is the repent or ameboid form of the organism, in which the entire zooid is a matrix in which the young develop. This peculiarity is one of the reasons that induced Huxley to name the centrally located body of a zooid an endoplast instead of calling it a nucleus as had previously been done.

The repent zooid is of especial interest in lepadella ovalis in that the most beautiful and perfect specimens of the micrococcus lanceolatus are developed in this form of the organism. Attention is directed not so much to this particular species of protozoan, but more especially to the form here designated repent zooid. For a number of species closely allied to lepadella

*Read before the Harvey County Medical Society, at Newton, Kansas, November 6, 1905.

ovalis produce this same ameboid phase in rounding out their life cycle, and this repent form of the zooid likewise forms within it the micrococeus lanceolatus or pneumococcus-form of its respective species. And in a number of species of protozoa, that like lepadella develop a lorica, the ameboid phase and the pneumococeus phase of a single species resemble so closely the corresponding forms of associated species that it may not be possible to distinguish morphologically one species from another until the lorica of the adult zooid has had time to develop.

This makes the study of these organisms as they are found in nature imperative, if we would gain an insight into the distribution of the pneumococcus and into the manner of its transmission to the tissues of the human body.

Pritchard in his excellent work on the infusoria places lepadella ovalis with the family *euchlanidota,* genus *lepadella.* His description of the species is about as follows:

The animal, contained within a lorica, presents the typical features of the Rotatoria, and closely resembles,therefore,those members of the class that are shelless. Rotary organ retractile and armed with cilia; jaws of the œsophageal head single-toothed; eyes absent; œsophagus very short; alimentary canal constricted below, usually filled with yellowish substance, except when it feeds upon eolorless monads; the tail or foot which terminates in two digits is largely employed in locomotion either as a rudder or as an anchor. The ovary is globular.

The hardened tegument, forming the lorica, resembles the carapace of a tortoise and is open at the extremities. It is depressed, oval, not emarginate, attenuated anteriorly, the ends truncated. Length 1-240 (9 mikrons).

"The genus lepadella develops itself occasionally in such myriads in stagnant water, as to give a whitish turbidity to it."

To this description by Pritchard, and as a further means for the identification of the species, it may be added that the superior, larger, convex plate of the lorica is divided by a longitudinal suture into two lateral halves, and each half subdivided into two unequal portions by a transverse suture extending slightly forward and outward to the border, from a point a little in advance of the center of the plate. In the embryonic state of the organism, the lines of cleavage correspond to these sutures, but the inequalities in the size of the four resulting bodies do not appear in the tetrad nor in the individuals into whieh it is subsequently resolved. The superior plate is notched anteriorly for the lodgment of the rotary organ when retracted.

The inferior plate, the smaller of the two, is less convex on its external surface, almost flat, and is notched anteriorly for the freer movement of the œsophageal head, and posteriorly to permit of freedom of motion of the furcate extremity which serves as an anchor when the animal is feeding. Further range of motion is secured by the peculiar strueture of this appendage.

The body of the animalcule is prolonged to form a tubular sheath into which the first segment may be telescoped. In like manner the second segment may be telescoped into the first. The bifid extremity is an out-growth from this segment. When the animalcule takes alarm, it shuts itself up suddenly within its lorica, where it is secure from attack on the part of an enemy.

This shell or carapace, like the two digits, is composed largely of a hard chitinous substance; but in younger forms this is less firm, they being frequently encased in a pelicle, which in the repent form of the organism is a mere film of protoplasm.

Between these two extremes there is every gradation in the degree of hardness of the enveloping substance, which, in the micrococcus lanceolatus, is the capsule, made visible by the staining method of Gram.

The lorica, being comparatively indestructible persists long after the soft parts have disappeared from the field; and with the two digits, often found lying near by, serves frequently as a means of identification of the progeny still within, or that have but recently made their escape. Since their exit is usually made through the larger anterior orifice it will be an additional proof in attributing their origin to this species if the young are found nearer the anterior extremity of the lorica.

What is termed by Pritchard an ovary appears more like a germinal area with each half lying on either side the median line. When the animalcule disintegrates, this ovary may quit the shell as a repent zooid or ameba, or it may first divide and each lateral half may as an independent repent zooid quit the lorica. Fis-

sion of this body may continue here until the subdivisions are exceedingly minute.

The ovary is thus seen to be analogous to the endoplast of the illoricate protozoa, and like that body, is polymorphic to a degree that is truly wonderful. Thus, upon the germinal area within the lorica, the young lepadellæ may be numerously developed as a staphylococcus, as a diplococcus (diplococcus pneumonia), a tetragenococcus, as sarcinæ, as a streptococcus (short chains) or as embryonic forms destined to become exemplars, representing the highest type of the species like the parent.

A capsule cannot be demonstrated in the earlier forms, but gradually one makes its appearance, and fission in a coccus may then not involve the capsule. In that event two bodies will be seen within a single capsule. Such a form is micrococcus lanceolatus. This process may extend to more than one coccus and there are then formed within a single capsule, which is either elongate, ellipticle or spherical, four cocci or gonodia, according as they are of small or of large size, or a multiple of two or of four, amounting at times to a great number.

Lepadella in common with the infusoria generally, forms a filament. Within this, if it does not previously disintegrate, there will eventually appear an axial filament. Fission may modify the filament as it does the coccus; it may be frequent, producing short bacilli, or infrequent resulting in the formation of long rods or leptothrix, and it may involve its entire diameter or that only of the axial filament, forming in the latter instance within a sheath, which may be transparent, single bodies, spores, sporular bodies or larval zooids or shorter or longer chains of these.

From the filament when t first forms, provided fission takes place early, there results a mass of plain bacilli (zoogloea). Upon the appearance of the axial filament, these will be granular. If they had formed in an old infusion and had remained there many months, these would now be acid-fast. If still within the repent zooid, which had probably a long time since come to rest, will be seen in the interior of a *giant* cell, for this form of the animalcule may, before it divides, attain a size many times that of the organism within its carapace.

In addition to the forms enumerated, there may be seen upon the germinal area the perfect embryos encased within a firm membrane. These had sprung up from within liquid protoplasm and were cocci, appearing as staphylococci, before they could be made out as embryos lying within their enveloping structures.

But these cocci, instead of multiplying to form other cocci, of the same size, began to *grow*. As development progressed, they attained sucessfully to every size intermediate between that of the coccus and the embryo matured. Since this growth may extend over a period of time, measured not only by weeks, but by months and even years, this incubating form, especially if development had been much retarded, if selected for purposes of observation, at any one period of time, will appear to be stationary.

Their elaborate enveloping structures make these embryonic forms acid-fast, and those cocci destined to become embryos, are from their first appearance in hyaline protoplasm, likewise acid-fast. It may happen, however, that each individual of the mass of staphylococci will become an embryo, and upon being set free, will develop into a mature loricate lepadella.

It is under these conditions that the myriads mentioned by Pritchard are developed.

The hyaline substance upon the germinal area, which may so extend its borders as to ultimately occupy the whole of the interior of the lorica, instead of being transformed into staphylococci, may first move about in the water—a mass of liquid protoplasm like an ameba. In fact it is exceedingly doubtful whether there is such a *species* as ameba princeps, ameba verrucosa, ameba vegula, etc., for it is very apparent that each species of protozoan assumes an ameboid form at some period in its life history.

From this mass of liquid protoplasm or ameboid form of the organism, the staphylococci may subsequently develop in such numbers that they will be seen lying upon each other like so many peas in a measure of capacity.

The other forms of the organism, like the staphylococci, will develop from this body after it has quit the lorica the same as if it had remained within that structure. Whether within or without, this protoplasmic mass is to be regarded as an independent organism, the imme-

diate successor to the one that had just gone to pieces within its shell.

It is true that its tegumentary covering, if it may be said to have any, is a mere film of protoplasm, but the very next generation that forms within may develop a distinct pellicle, and this may become a capsule consisting of a single layer or of a number of superimposed layers that may be made visible by staining, within which the embryos can be distinctly made out; and these, when set free, develop around them in turn the indurated structure which Ehrenberg very aptly compared to the carapace of a tortoise. It is upon this investing sheath and its many modifications of form and of structure that the staining property of the diversified forms of the species largely depends, these frequently being acid-fast and often incapable of being stained at all with carbol-fuchsin and methylene blue.

If its dimensions with very slight modifications, the number of its motile organs, the presence or absence of spore or capsule, the form and size of its sporular body and the number of spores present be made the test for the classification of a bacillus, it will be seen that its tegumentary structures are a very important part of the organism, not only as affecting its morphology, but as a means of protection against adverse conditions.

Thus in addition to those already enumerated, there is frequently developed a special structure, much thickened and numerously beset with spicules set in its substance at right angles to the surface when the body is intact, giving it an appearance that is not inaptly compared to that of a chestnut bur. Even this shell, typifying as it does winter and rough weather, during which time it presents its most formidable front, exists under so many modifications of form that the envelope is found to be the film of protoplasm that would have been at the surface of the repent zooid, or in a still more attenuated form at the surface of its pseudopodia, but that in this instance is much thickened or made up of a number of superimposed layers or films to form the ineliastic or even indurated covering of this incubating form that has never been motile, but which had developed directly from the endoplast of the zooid. The spicules are so many stunted and metamorphosed radiophores, that under more favorable conditions would have been filaments of the ray fungus or astral derived from the same endoplastic body of the zooid.

In an environment less favorable than that found in running water, the organism is a ray fungus. Wtih development markedly retarded, these radiating filaments are transformed into bacilli, that in form, size and staining property exactly resemble the tubercle bacillus.

Whether the adverse conditions be those of cold winter weather or those encountered in the tissues of the body, in time, the effect upon the struggling filament will be the same. The rudimentary outgrowth from the endoplast will be neither spicule nor filament but tubercle bacillus. The endoplast itself will have neither the regular outline of the spherical or spheroidal nucleus of the zooid nor the irregularities of form characteristic of the repent zooid with its pseudopodia. Its form will be a compromise between these two extremes, and its appearance that of the giant cell. This accounts for the frequent presence of tubercle bacilli within the giant cell. Since disintegration of the endoplast or giant cell ordinarily occurs long before the tubercle bacilli have had time to form, these are usually dispersed over a large area and are seen singly, in pairs or in groups.

With the filament a sterile spicule and the ectoplasm an indurated and much thickened boundary wall, one generation become mere appendages for the protection of the next that form within. In the repent zooid or ameba or ray fungus, the first are formed from the zone lying beyond the endoplast, the second from the round or ovoid endoplast itself. From this the incubating forms within the winter egg spring. From the zone lying beyond this endoplastic body in the ovum, and which in the ameba forms the zone of fluid protoplasm surrounding the endoplast, are formed the spicules and the tegumentary structure now indurated and seen at the surface of the winter egg.

In the specimen under the microscope, the endoblast was resolved into the micrococcus lanceolatus, the individuals of which are dispersed throughout the extent of the repent zooid. After diffluence of its more fluid portions, nothing is to be seen upon the former site of the zooid but the micrococcus lanceolatus.

This is true of so many forms of the organism; hence the difficulty in tracing their origin.

Like the lorica the shell of the winter egg may, long after the young have escaped from

it, serve as a means for their identification.

From the endoblast are also developed (1) the fluid protoplasm, (2) the mass of cocci, (3) the filament and the manifold forms evolved from these three.

The investing sheath serves to preserve for a time the grouping resulting from the growth and multiplication of the young of the species. After diffluence of this envelope the component elements of a morula are to a degree retained in position by an agglutinating substance of greater or lesser density. It is this that causes the bodies of a tetrad and of a streptococcus to remain adherent to each other.

The fully developed animalcule of this species is far less actively motile than is the adult of the illoricate infusoria. Its young are a still greater degree of its more elementary forms. Its young are therefore more frequently observed upon their site of origin and for a longer time.

Previous to the bursting of the capsule that encloses the embryo, the tail or foot can be seen to be folded forward beneath the organism. The much smaller motile appendages, the cilia, cannot at this time be made out. The two minute embryos seen in micrococcus lanceolatus are quite surrounded by the capsule; hence this form of the organism is non-motile. The caudal extremities occupy respectively the two ends of the bacillus, the anterior extremities being directed centrally. These may be broad and the embryo may taper to a point towards the caudal extremity. This modification of the form of the lorica is very frequent in the adult.

Instead of lancet-shaped, the body in the end of the bacillus may be quite round. In this form it may enlarge and the capsule partake of the nature of that enveloping the winter spore. When it bursts, a cloud of organic matter with sharply defined borders, and in volume as much as a thousand times that of the bacillus from which it suddenly issued, is to be seen upon the field, and within it minute granules. These granules may develop into pneumococci or some other of the many forms the organism is capable of assuming, in rounding out its life's cycle.

Many of these bacilli with the round sporular bodies occupying the two ends may form a single lepadella, and in culture they will all explode at nearly the same time, the appearance when stained reminding one of the smoke from the powder seen immediately after the discharge of a pistol.

It is very evident that this sudden release of myriads of pneumococci on the part of the invader signalizes the ushering in of the attack of pneumonia with its attendant symptoms.

Lepedella being probably the most common of the loricate infusoria and of wide distribution in nature, it is perhaps the species most frequently present in the tisues in croupous pneumonia. Other uchlandiota that are apparently ofttimes the cause of lobar pneumonia are cuchlanis and salpina. It will probably be found that the list of species of protozoa capable of causing pneumonia is very large and that it includes the illoricate infusoria.

Of metopidia, Pritchard says, "They may be regarded as lepadellæ with two red frontal eyes," and colurus so nearly resembles these two that a form so small as that of micrococcus lanceolatus, when seen apart from the parent cannot with any degree of postiveness be assigned to the one or the other, to say nothing of other species closely allied to these, and which have of course, a similar life history.

The twelve different names as enumerated in Abbott's *Bacteriology*, appear therefore peculiarly appropriate.

The micrococcus pneumoniæ is then a form common to a number of species of infusoria. As an invading organism, the pneumococcus is not confined to any one region, but through the circulatory systems, it may reach nearly every tissue of the body.

Fed to guinea-pigs it will produce a typical lobar pneumonia, and will eventually form the tubercle bacillus.

With a still more permanent adaptation as a parasite form, the loricate infusoria appear capable of causing carcinoma and malignant growths that are still taxing the resources of the pathologist to satisfactorily classify. Such classification will be much simplified when it shall come to be recognized that the same infusorian may cause successively scrofula, tuberculosis, cancer. Nor will the illoricate infusoria be excluded from this list of parasites.

Its *source* having been determined, its *distribution* is seen to be that of the infusoria from which it is derived, and these being present in the *air* we breathe, upon *food* that we eat, and

in *fluids* that we drink the *manner* of its transmission is perfectly apparent.

Though much has been accomplished in the way of prophylaxsis and still more may be done towards limiting its spread it is a perfectly safe observation to make that disease will not disappear from the face of the earth, except with the human race itself.

Proceedings of Societies, Etc.

Virginia State Board of Medical Examiners.

The Medical Examining Board of Virginia, met at Murphy's Hotel, Richmond, Va., 9 P. M. Dec. 12, 1905. Dr. R. W. Martin, Lynchburg, President, presiding; Dr. R. S. Martin, Stuart, Secretary-Treasurer, recorded.

On roll call, the following other members were present: Drs. R. M. Slaughter, Theological Seminary; E. T. Brady, Abingdon; A. S. Priddy, Bristol; H. M. Nash, Norfolk; J. E. Warriner, Richmond, R. F. D. No. 7; W. B. Robinson, Tappahannock; Robert Randolph, Boyce; O. C Wright, Jarratts; M. R. Allen, Norfolk; E. C. Williams, Hot Springs; C. W. Rodgers, Staunton.

Minutes read and approved.

Questions on Practice, Materia Medica and Therapeutics, Surgery, Histology, Pathology and Bacteriology, Obstetrics and Gynecology, Anatomy and Chemistry read and adopted.

The order of examinations agreed upon was as follows:

Wednesday—Practice, Obstetrics and Gynecology and Surgery.

Thursday—Histology, Pathology, Bacteriology, Chemistry and Physiology.

Friday—Anatomy, Hygiene and Medical Jurisprudence, Materia Medica and Therapeutices.

The President appointed Drs. Robt. Randolph, W. B. Robinson, C. W. Rodgers and M. R. Allen, Committee on Oral Examinations.

The Committee appointed at last meeting of the Board to change the sections and number of questions reported as follows:

We, your committee, beg to report as follows: In future there shall be nine sections, divided as follows:

1st.	Anatomy and Embryology	10
2nd.	Chemistry 6, Toxicology 2, Medical Jurisprudence 3	11
3rd.	Histology 2, Physiology 6, Hygiene 3.	11
4th.	Materia Medica 6, Therapeutics 6...	12
5th.	Pathology 6, Bacteriology 3, Neurology 3	12
6th.	Laryngology, Rhinology, Ophthalmology and Otology	10
7th.	Practice of Medicine, Diagnosis and Etiology	12
8th.	Obstetrics 5, Gynecology 5 and Pediatrics 2	12
9th.	Surgery	10
	Total	100

C. W. Rodgers,
Robert Randolph,
R. S. Martin.

Adopted.

Dr. Priddy offered the following resolution, which was adopted:

Resolved, That the President before the first day of May, 1906, make the assignment of Examiners for sections for the ensuing four years.

Dr. Brady moved that the next meeting of the Board be held in Richmond, June 19-22, 1906. Adopted.

There being no further business, the Board adjourned until tomorrow, when examinations will begin.

Rawley Martin, *Prest.*
R. S. Martin, *Secy-Treas.*

Alphabetically aranged list of applicants for license to practice Medicine, Surgery, etc., who passed satisfactory examinations before the Medical Examining Board of Virginia during its Fall Session December 12-15, 1905, held at Richmond, Va.

Anderson, V. V., Lynchburg, Hosp. Coll. of Med., Louisville, 1903.
Butzner, Jno. D., Fredericksburg, Va., Univ. of Va., 1904.
Blackwell, H. B., Norfolk, Va., Univ .of Va., 1901.
Black, Root A., Brooklyn, N. Y., Coll. Phys. Surgs., N. Y., 1883.
Boice, R. H., Low Moor, Va., Pulte Med. Coll., 1905.
Byrd, J. H., Richmond, Va., Leonard Med. Coll., 1904.
Compton, Robt. F., Charlottesville, Va., Univ. of Va., 1900.
Clarke, Wm. F., Petersburg, Va., Leonard Med. Coll., 1905.

Casey, Elsie May, Lynchburg, Va., Woman's Med. Coll., Balto., 1905.
Cooke, T. S., Portsmouth, Va., Univ. of Va., 1905.
Cowie, C. S., Culpeper, Va., Columbian Univ., 1891.
Derby, A. P., Gordonsville, Va., Univ. of Va., 1904.
Dameron, B. W., Warfield, Va., Med. Coll. of Va., 1905.
Dow, Lyman, Ware Neck, Va., Med. Coll. of Ohio, 1867.
Easley, H. O., South Boston, Va., Univ. of Va., 1904.
Edwards, Geo. Martin, Philadelphia, Pa., Univ. of Pa., 1903.
Fitzgerald, R. S., Spruce, W. Va., Univ. Coll. of Med., 1905.
Fletcher, C. C., Langdon, D. C., Natl. Univ. of Washington, 1903.
Fisher, C. E., Little Orleans, Md., Detroit Homeopathic Med. Coll.
Goldbach, L. J., Norfolk, Va., Univ. of Md., 1905.
Grant, H. C., Univ. of Va., Round Hill, Va., 1904.
Gray, A. R., Atlee, Va., Med. Coll. of Va., 1905.
Hammond, S. W., Amsterdam, Va., Univ. of Md., 1905.
Hall, A. J., Rosslyn, Va., Geo. Washington Univ., 1886.
Hare, J. H,, Newland, Va., Maryland Med. Coll., 1905.
Hays, B. K., Oxford, N. C., Univ. Coll. of Med., 1894.
Jones, G. I., Washington, D. C., Geo. Washington Univ., 1905.
Lankford, H. M., Princess Anne, Md., Johns Hopkins Univ., 1905.
La Roque, G. Paul, Richmond, Va., Univ. of Penna., 1902.
Mayes, D. C., Charlottesville, Va., Univ. Coll. of Med., 1905.
Murray, A. E., Graham, N. C., Med. Coll. of Va., 1905.
Moone, S. I., Onancock, Va., Leonard Med. Coll., 1904.
Miller, H. T., Richmond, Va., Univ. Coll. of Med., 1905.
Nottingham, C. L., Sea View, Va., Maryland Med. Coll., 1905.
Owens, O. S., Manchester, Va., Univ. of Maryland, 1905.
Riley, Philander C., Natural Bridge, Va., Columbian Univ., 1899.
Richardson, J. E., Mt. Valley, Va., Hosp. Coll. of Med., 1905.
Storie, J. G., Hurley, Va., Tennessee Med., 1898.
Wall, Harry, Winchester, Va., Univ. of Va., 1904.
Whitehead, R. H., Charlottesville, Va., Univ. of Va., 1887.
Welborune, Wm. C., Glencarlyn, Va., Vanderbilt Univ., 1899.

QUESTIONS FOR EXAMINATION.

Section on Hygiene and Medical Jurisprudence.

Dr. A. S. Priddy, Examiner, Bristol, Va.

Hygiene.

1. Give the principal sources of the water supply of large towns and cities; state how pollution of such sources may be caused and the most deleterious substances and germs frequently present.
2. Describe the effects of a hot and moist atmosphere on the human system, and state the classes of disease of which it is productive.
3. Give clearly and concisely your understanding of the modern theory of the propagation of yellow fever and of foci and sub-foci in connection with epidemic disease.
4. Give names, causes and sanitary remedies for the relief and prevention of the principal diseases incident to school life.

Medical Jurisprudence.

1. In matters of civil rights, what is considered a live birth by our laws, and what manifestations of life would establish it medico-legally?
2. Give the usual motives which, in a general way, underlie malingering, and state what general observations would assist you in differentiating between the feigned and real condition of a suspect.
3. Give a practical and reliable test for human blood stains, and state the difference in color of the blood of one dying from strangulation from that of one dying from suffocation by illuminating gas, and explain the cause of this difference.
4. Fully describe the symptoms of poisoning by each of the following: Belladonna or its active principle, bi-cloride mercury and chronic lead poisoning; and the conditions found in bodies after death from each of these poisons.

Pledge.

Chemistry Examination.

Dr. O. C. Wright, Jarratts, Va., Examiner.

Block 1.

(a What is meant by convection, conduction and radiation?
(b) Define the terms ohm, ampere and volt.
(c) What is the difference between static and dynamical electricity.

Block 2.

(a) Give chemical and physical properties of oxygen.
(b- Place an animal in an atmosphere of pure oxygen, give primary and secondary effects, giving reason for latter.
(c) What are the indications for administering oxygen and how is it given.

Block 3.

(a) Give formula for sulphuric acid.
(b) Give in detail mode of preparation.
(c) What are its chemical and physical properties?

lBock 4.

(a) How is phosphorus found in nature?
(b) How is it prepared?
(c Give symptoms of acute and chronic phosphorus poisoning.

Block 5.

(a) What is the source of organic compounds?
(b) Define a radical.
(c) What are Alcohols?

Block 6.

(a) Define and give general properties of organic acids.
(b) How do proteids occur in nature and give the composition.
(c) What effect does the gastric juice have on proteids?

Block 7.

(a) Give test for blood in urine.
(b) How would you recognize pus in urine.
(c) Having boiled a specimen of urine you get a cloudy precipitate; how would you proceed to determine nature of the precipitate?

Block 8.

(a) What methods are used for obtaining urinary sediments?
(b) What are the most common sediments found in acid urine?
(c) Give chemical test for uric acid in urine.

Answer any six blocks.
Pledge.

Anatomy.

Dr. C. W. Rodgers, Staunton, Va., Examiner.

I. Describe one of the following bony surfaces: Upper extremity of ulna; lower extremity of radius; shaft of femur.
II. Describe the pancreas; giving location, contour, structure, nerve, and blood supply.
III. Describe two of the following three muscles, including their origin, insertion, and action: Gracillis, Latissimus dorsi. Extensor longus digitorum.
IV. Describe the mammary gland, including the nerve and blood supply.
V. Describe the first portion of the right subclavian artery; giving its relations, and naming its branches.
VI. Give origin, course, distribution, and function, of hypoglossal nerve.
Pledge.

Physiology.

Dr. Robert C. Randolph, Boyce, Va., Examiner.

I. (a) What are Carbohydrates? (b) Name three. (c) Where is Glycogen found, and how formed?
II. (a) What are proteids? (b) Name three. (c) Give names of Bile Pigments in man and beast.
III. (a) Name most important ductless glands. (b) What is lymph? (c) What is chyme?
IV. (a) Describe mouth digestion? (b) Describe stomach digestion. (c Describe intestinal digestion.
V. (a) Give functions of the skin. (b) Give functions of glands of the skin. (c) What is diapedesis?
VI. (a) Give functions of fourth cranial nerve. (b) Give function of eleventh cranial nerve. (c) Give function of cerebellum.
Pledge.

Histology, Pathology and Bacteriology.

Dr. R. M. Slaughter, Theological Seminary, Va., Examiner.

Answer six blocks.

I.—(a) Names the classes into which all tissues are divided. (b Classify each of the following tissues: Cartilage, muscle, the epidermis, the liuing of blood-vessels and tendons. (c) Name the three essential constituents of a cell(but don't give the cell membrane as one of them).

II.—(a) Name the three groups into which bacteria are morphologically divided. (b) Name and describe the third of these groups, and name the members of it which are pathogenic. (c) Define and illustrate what is meant by mixed infection.

III.—(a) Define hemorrhage. (b) Define hemorrhage by rbexis, and hemorrhage by diapedesis. (c) Define hematoma. (d) Define hematemesis, hemoptysis, and hematuria.

IV.—Name the mechanical and chemical causes of necrosis.

V.—(a) Which of the connective tissue tumors is malignant? (b) Where does cylindrical-celled carcinoma especially occur? (c) What is the variety of epithelioma that occurs at the junction of skin and mucous membrane? (d) Why is scirrhus carcinoma so called?

VI.—(a) What is meant by regeneration of tissue? (b) Under what conditions is it possible? (c) Histologically, what is so-called scar-tissue?

VII.—(a) Is the sp. gr. of the urine high or low in diabetes mellitus, acute parenchymatous nephritis, and chronic interstitial nephritis? (b) What abnormal constituents, both chemical and microscopical, are to be found in the urine in the above named conditions?
Pledge.

Obstetrics and Gynecology.

Dr. H. M. Nash, Norfolk, Va., Examiner.

Obstetrics.

1. Give the differential diagnosis of pregnancy.
2. What are the phenomena of a faulty metabolism during pregnancy, and what organs are most frequently involved?
3. Why do prophylactic measures play so important a part in bringing about a normal puerperium?
4. Define uterine inertia; from what conditions may it arise, and indicate its treatment?
5. Describe the management of labor in transverse and shoulder presentations?

Gynecology.

1. What are the indications for the radical treatment of fibro-myoma?
2. In suitable cases, what are the advantages of myomectomy?
3. Give several methods of treating prolapsus uteri, noting the most preferable.
4. Give the indications for, and dangers that may follow, the use of the Uterine Sound.
5. May leucocytosis be made a diagnostic factor in Gynecological cases?

Answer any four of each block of the above questions.
Pledge.

Materia Medica and Therapeutics.

Dr. W. B. Robinson, Tappahannock, Va., Examiner.

Materia Medica.

I.—(a) Give the physiological action of the salts of ammonium. (b) State the dose of bismuth subnitrate and its effect along the digestive tract. (c) Mention the symptoms attending chronic chloral poisoning.

II.—(a) Compare the action of morphine with that of codeine. (b) Compare pancreatin with pepsin. (c) Give dose of salol, how frequently repeated, and state in what portion of the alimentary canal is its decomposition effected, and by what means.

III.—(a) State the dose of the extract of colocynth and give its physiological action. (b) Describe the toxic symptoms which may be produced by the salts of mercury, and give antidotes. (c) Give the dose of croton oil and state its effects externally applied and internally administered.

IV.—(a) Compared with digitalis, how does strophanthus differ in physiological action? (b) To what alkaloids is the action of veratrum viride due, and what pathological conditions contraindicate its use? (c) Give the antidote for carbolic acid poisoning.
Sign pledge and number only.

Therapeutics.

Dr. J. E. Warinner, R. F. D. No. 7, Richmond, Va., Examiner.

I.—Define a prescription and name its different parts. (b) What is meant by incompatibility, and give examples of two kinds. (c) Why are antagonistic agents sometimes combined, and give two examples.

II.—(a) Give the therapeutic uses of ergot and state its contra-indications. (b) Name the principal nitrites and state briefly their uses. (c) Formulate a compound cathartic pill containing three ingredients acting on different parts of intestinal tract.

III.—(a) What are direct and indirect antacids? Give examples of each. (b) How is the reaction of the blood and urine affected by the administration of alkalies before and after meals. (c) Give leading indications for use of belladonna and state chief objection to its use.

IV.—(a) Give a leading example of mineral and vegetable astringents. (b) What are chief uses of tincture aconite and give maximum adult dose when using old strength U. S. P. (c) Give chemical antidotes for iodine, corrosive sublimate and opium.

Sign pledge and number only.

Practice of Medicine.

Dr. E. T. Brady, chairman, Abingdon, Va.; Dr. E. C. Williams, Hot Springs, Va., Examiners.

1. What conditions are accompanied by severe pain in the chest and what characteristic symptoms would enable you to differentiate them?
2. What are the early manifestations of tuberculosis and how best managed?
3. What are the clinical symptoms of gastric ulcer and cancer, and how would you distinguish between them?
4. Give etiology and symptoms of: (a) Tonsillitis. (b) Adenoids.
5. In what disorders is the urine increased, and in what decreased? Give a reliable test for each of the following: Albumen, sugar, blood, bile.

6.—Give etiology, symptoms and complications of erysipelas. Differentiate it from erythema and acute eczema.

Answer all questions. Sign pledge.

Surgery.

Dr. R. M. Slaughter, Theological Seminary, Va.; Dr. M. R. Allen, Norfolk, Va., Examiners.

I.—What are hemorrhoids? Give their cause, classification, diagnosis and radical treatment.

II.—What is synovitis? Give its causes, symptoms and treatment.

III.—In a case of anuria, how would you determine whether due to suppression or retention? Name the causes of retention of urine and give treatment?

IV.—Give the causes of non-union in fractures and describe the various methods of treatment?

V.—Give the diagnosis and treatment of iritis? (b) Give the diagnosis and prognosis of fractures of the base of the skull.

VI.—Give the symptoms of hip-joint disease in the early stage. (b) Describe the technique of intravenous injection of salt solution?

VII.—What is (a) phymosis and (b) paraphymosis? Give treatment of each. (c) Give indications for skin-grafting, and describe a method of grafting.

Pledge.

INSTITUTIONS REPRESENTED BY THE APPLICANTS BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, FROM THE ORGANIZATION OF THE BOARD, JANUARY 1, 1885, TO DECEMBER 12-15, 1905.

	Total Number from each Institution.	Total Number Licensed First Examination.	Total Number Rejected First Examination.	Licensed on Second Examination.	Rejected Second Examination.	Licensed Third Examination.	Rejected Third Examination.	Licensed Fourth Examination.	Rejected Fourth Examination.	Licensed Fifth Examination.	Rejected Fifth Examination.	Incomplete or Withdrew.	Partial examination.
Total number before Board from organization to Dec. 12-15, 1905.	2877	1644	574	188	97	37	35	4	23	1	0	43	461
University College of Medicine, Richmond, Va.	1	1	..	3									
Medical College of Virginia	6	..	1	2	2	1							
University of Virginia	8	6	..	2									
Hospital College of Medicine, Kentucky	1	2	1	..	1								
Maryland Medical College	3	2	..	..	1								
Johns Hopkins University	1	1											
University of Maryland	5	3	..	..	1			..	..	..	..	1	
University of the South	2	..	..	..	1		1						
Howard Medical College	1	..	..	..	1								
Leonard Medical College	7	..	..	1	2	1	1	1	1				
Columbian University, Washington	2	2											
National University, Washington	1	1											
Detroit Homeopathic	1	1											
Med. and Chir. College of Christ Institution, Baltimore, Md	1	..	..	..	1								
Woman's Medical College	1	1											
Pulte Medical College, Hom.	1	1											
Baltimore Medical College	1	..	..	..	1								
University of Pennsylvania	2	2											
Physicians and Surgeons, New York	1	1											
George Washington University	2	2											
Vanderbilt University	1	1											
Medical College of Ohio	1	1											
Tennessee Medical College	1	1											
Partial	67	..	..	..	..	..	..	..	..	..	..	..	67
Totals	3001	1673	576	196	108	39	37	5	24	1	0	44	528

INSTITUTIONS REPRESENTED BY APPLICANTS WHO CAME BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, FALL SESSION, AT RICHMOND, VA., Dec. 12-16, 1905.	Total Number of Applicants from each College.	Total Number of Applicants Licensed from each College.	Total Number of Applicants Rejected from each College.	Partial Examination.	Incomplete.
University College of Medicine, Richmond, Va.	4	4	..		
Medical College of Virginia	6	3	3		
University of Virginia	9	8	1		
Hospital College of Medicine, Kentucky	4	2	2		
Maryland Medical College	3	2	1		
Johns Hopkins University	1	1			
University of Maryland	5	3	1	..	1
University of the South	2	..			
Howard Medical College	1	..	2		
Leonard Medical College	7	3	1		
Columbian University	2	2	4		
National University, Washington	1	1			
Detroit Homeopathic	1	1			
Med. and Chir. College of Christ Institution, Maryland	1	..			
Woman's Medical College, Baltimore	1	1	1		
Pulte Medical College, Hom	1	1			
Baltimore Medical College	1	..	1		
University of Pennsylvania	2	2			
Physicians and Surgeons, New York	1	1			
George Washington University	2	2			
Vanderbilt University	1	1			
Medical College of Ohio	1	1			
Tennesee Medical College	1	1			
Non-graduates taking partial examination	67	..		67	
Total	125	40	17	67	1

Nos. of examination papers.	INSTITUTIONS Whose Graduates were Rejected by the Medical Examining Board of Va., at Regular Fall Session, Dec. 12-15,1905 With Percentage Marks of each. COLLEGE OF GRADUATION.	Hygiene and Med. Jurisprudence.	Chemistry.	Anatomy.	Physiology.	Histology, Pathology, Bacteriology.	Obstetrics and Gynecology.	Materia Medica and Therapeutics.	Practice.	Surgery.	Total.	Average.
13	University of Maryland	78	79	45	57	65	75	65	74	72	610½	67
14	University of the South	88	71	59	77	78	72	75	78	72	670	74
16	Howard Medical College	88	75	64	73	65	77	73	75	76	666	74
17	Leonard Medical College	75	70	74	75	68	78	66	75	76	647	73
31	Medical College of Virginia	85	75	76	64	65	70	60	75	70	640	71
36	Leonard Medical College	75	81	65	88	68	67	76	75	70	665	73
56	Leonard Medical College	88	76	76	86	65	63	69	72	70	665	73
68	Med. and Chir. College, Maryland	82	70	68	35	65	76½	72½	71	68	608	67
87	Hospital College of Medicine	74	2	9	0	35	25	35	68	50	298	33
97	Maryland Medical College	78	62	61	64	75	76	68½	70	55	609½	67
98	Baltimore Medical College	76	66	73	56	65	78	75	72	65	626	69
100	Medical College of Virginia	78	73	60	75	68	76	72½	78	78	658½	73
101	College of Medicine	70	70	30	57	68	66	62	60	65	548	60
103	Medical College of Virginia	80	76	80	70	72	75	75	68	75	671	74
111	Leonard Medical College	92	76	75	85	65	63	67½	75	65	663½	73
114	University of the South				Oral	Exa	mina	tion.				50

Analyses, Selections, Etc.

Overlapping the Aponeuses in the Closure of Wounds of the Abdominal Wall.

Dr. Charles P. Noble, of Philadelphia, in a paper read before the Southern Surgical and Gynecological Association, which met at Louisville, Ky., January, 1906, states that his experience with the method of overlapping the aponeuroses in the closure of wounds of the abdominal wall has given such admirable results in the prevention of post-operative hernia that since 1896 he has been an enthusiastic advocate of this method of closure as applied to all wounds of the abdominal wall—no matter what their location, provided drainage was not employed.

Prior to 1892, he employed the through and through silkworm gut suture in the closure of celiotomy wounds. The high percentage of hernia following the method, especially in fat women, led him to abandon the method in favor of the tier suture. Following the principle of Schede, of Hamburg and Edebohls, he adopted the use of the buried permanent suture. Edebohls,[2] in June, 1891, first employed silkworm gut as a permanent buried suture in the cure of a large umbilical hernia, and in May, 1892, adopted the tier suture as a routine precedure, burying one row of silkworm gut at a plane of the aponeurosis and then closing the skin and fat with a superficial row. He adopted Edebohl's technique and used it with but few changes until the end of 1896 for all wounds of the abdominal wall including the Alexander operation, inguinal hernia and nephrorrhaphy.[3 4].

In spite of this satisfactory experience several considerations induced him to abandon the Edebohl's technique and to devise the method of overlapping the aponeurosis as a routine operation. These considerations were: First, the advantages of closing the peritoneum with a running catgut suture; second, the advantages of a mattress suture in relieving tension; and third, that by a special preparation of the aponeuroses and the overlapping of these structures a surface to surface union of the aponeuroses could be substituted for an edge to edge union, which promised to add materially to the strength of the resulting cicatrix. The advantages of the mattress suture and the overlapping of the aponeuroses first became apparent to him in operating for a large umbilical hernia in a stout woman, April 7, 1894. Mattress sutures were introduced primarily for the purpose of taking off tension from those introduced in accordance with the Edebohls' technique, but it was evident to him that an additional advantage was gained in the extent of surface of the aponeuroses which was brought into apposition. The method was used occasionally from that date until it was adopted as a routine procedure at the end of 1896, especially in cases in which considerable tension was to be overcome.

It is generally accepted that the chief strength of the abdominal wall as a supporting structure depends upon the aponeuroses, and it is also accepted that the chief cause of post-operative ventral hernia is defective union of the aponeuroses, leading to separation of the aponeuroses and the development of hernia. The question which presented itself to his mind was whether an improvement could be made in securing aponeurotic union over that obtained by the methods in use in 1896. It was clear to him that the aponeurotic union secured by these methods consisted in a scar of about one line in thickness between the divided edge of the aponeuroses, provided accurate union throughout the length of the wound was secured. It seemed to him that a much stronger union could be obtained by substituting a surface to surface union for an edge to edge union; therefore, the method was devised (4) and after various changes is now carried out as follows for celiotomy wounds:

The incision in the hypogastrium for operations on the female pelvic organs may be taken as the type. This incision is made by choice through the inner border of the right rectus muscle. In closing the wound the peritoneum is first closed with a continuous suture of fine cumol catgut. The fat is then dissected from the upper surface of the aponeurosis of the transverse muscles on the left side of the wound from one-third to one-half ienh. The aponeurosis upon the right side of the wound is then separated for an equal distance from the rectus muscle. The muscles and fasciæ are than sutured by means of a medium weight chromicized catgut suture in the following manner: The suturing is begun at the lower angle of the wound upon the left side. The suture is passed from above downward through the aponeurosis

and rectus muscle. Then the separated bundles of the rectus muscle are united with a continuous suture until the upper angle of the wound is reached, when the suture is passed from below upward through the aponeurosis upon the left side of the wound. The suture is then passed from below upward through the aponeurosis upon the right side of the wound, and an additional suture is taken above this point to fix the suture and take the strain off that part which has brought the muscle in apposition. The aponeurosis is then closed from above downward by catching the aponeurosis from the left side of the wound after the manner of the Lembert intestinal suture, and then passing the needle from below upward through the aponeurosis upon the right side of the wound. When this suture is drawn taut, it slides the aponeurosis of the right side of the wound upon that of the left side and holds the two in apposition; the amount of overlapping depending upon the distance from the edge at which the needle is passed through the aponeurosis upon the left side of the wound. The process is repeated until the lower angle is reached, when the two ends of the suture are tied. In long wounds two or more mattress sutures are placed to take tension off the lines of continuous suture. The fat is closed with a continuous suture of fine cumol catgut. The skin is closed with fine eumol catgut suture by the intracuticular method. When median wounds are long, extending near or above the umbilicus, care is taken to unite the posterior aponeurotic sheath of the rectus muscle with the peritoneum. (5)

The method was at once used for all wounds of the abdominal wall, including herniotomy wounds, modifying slightly the operation in accordance with the anatomical conditions to be dealt with. In the beginning mattress sutures of silkworm gut were used to close the aponeuroses. Since introducing the method he has used it constantly, modifying the details somewhat, but never the principle involved.

In 1898 silkworm gut mattress sutures were abandoned and a continuous chromicized catgut suture for the rectus muscle and for the aponeuroses was substituted.(6) With the adoption of catgut it became feasible to make some further improvements in the method. Care was taken to suture the posterior sheath of the rectus muscle together with the peritoneum when the median incision was high enough to divide that structure. In operating for appendicitis the incision through the outer border of the rectus muscle was adopted, and a fine chromicized catgut suture was employed to close the posterior sheath of the rectus together with the peritoneum. In this way not only the anterior but the posterior aponeuroses were carefully united. The same method of suturing was employed for inguinal hernia and for Alexander operations. (7) (8).

Having traced the development to the method of overlapping the aponeuroses in its general aspects, a reference to some of its special applications is in order. His original paper, "A New Method of Suturing the Abdominal Wall in Celiotomy" (1897). opens with the following paragraph:

"I desire to report a new method of closing the wound in celiotomy, which I believe will give good results in all cases, and will enable the surgeon to deal successfully with cases of diastasis of the recti muscles, which heretofore have been most difficult to cure."

Since that time the method has been employed repeatedly for the cure of diastasis of the recti, and so far as is known in no case has there been a recurrence or the development of a ventral hernia.

In the cure of herniæ the method of overlapping the aponeuroses is especially important and valuable. It was first employed by him in the closure of an umbilical hermia in 1894. Since that time the method has been employed in almost all operations for hernia, whether umbilical, ventral or inguinal. In operations for umbilical hernia at times there is less tension when the aponeurosis is overlapped from above downward instead of from side to side. If good surface to surface aponeurotic union can be secured, a permanent cure will be effected even though the recti muscles remain separated. He first made use of the plan of overlapping the aponeuroses from above downward February 14, 1898. In this case it was impossible to approximate the recti, and as there was far less tension from above downward than laterally the transverse suture was adopted.

The principle of overlapping the aponeurosis in the cure of inguinal hernia was first applied by Lucas-Championniere in 1892 or earlier. (9) In 1901, in his brochure on the radical cure of inguinal hernia, (10) he reported a series of seven hundred and fifty-nine operations. He

devised what he calls a U-shaped suture, which is a modified mattress suture, by means of which he overlapped the outer segment of the aponeurosis upon the inner segment, and then by means of interrupted sutures made the approximation neat. The method of suturing which he used accomplishes the overlapping of the aponeurosis very satisfactorily, but it is much more complicated and more tedious in its application than the method which Noble devised.

E. Wyllys Andrews was the next surgeon to make use of the principle of overlapping the aponeurosis in the cure of inguinal hernia. He called the method which he devised the "imbrication or lap joint method." (11) He refers to the work of Championniere which he regards merely as an improvement on the usual method of closing the inguinal canal. His own operation accomplishes two purposes: First, the overlapping of the aponeurosis; and second, the transplantation of the cord into an artificial canal. He sutures the inner layer of the aponeurosis to Poupart's ligament behind the cord to the inner layer. From the standpoint of the universal use of the principle of overlapping the aponeuroses, Andrews' article is of special interest, as he states that "the principle of imbrication or overlapping the several aponeurotic layers of the abdominal wall may enter into other abdominal operations to advantage, as I have repeatedly shown." In a second article on the radical cure of hernia, (12) in 1897, after discussing his own and other methods for the cure of inguinal hernia, he concludes with the following:

"I can not refrain from stating that I have found the principle of imbrication applicable to other purposes such as uniting abdominal wounds after ordinary celiotomy near the linea alba and linea semilunaris; but in this part of the subject I can not hope to interest you at the present time."

It is thus evident that Andrews appreciated the value of the principle in suturing all wounds of the abdominal wall, and, therefore, it is probable that he made more or less systematic use of it.

In Noble's own work the development of the principle of overlapping the aponeuroses in the closure of wounds of the abdominal wall grew out of his experience with the other methods of closure previously used, and was the natural consequence of recognizing the shortcomings of these methods. The application of the principle to the cure of inguinal hernia, to the cure of umbilical hernia, and to the cure of diastasis of the recti muscles, was a natural development from the use of the principle in the usual celiotomy wound, and for operations for appendicitis and for movable kidney. He was not aware of the work of Championniere and Andrews in the cure of hernia, as not being a general surgeon and having no occasion to operate for inguinal hernia in men, he had given no critical study to the special literature concerning inguinal hernia.

The best evidence which he could give as to the practical merit of the method in the prevention of post-operative hernia was the fact that during the nine years in which the method had been in use, but a single patient had presented herself with post-operative hernia. Others may have occured of which he had no knowledge, but it was quite clear that post-operative hernia played an unimportant role when the aponeuroses were overlapped in the closure of celiotomy wounds.

Book Notices.

Diseases of Infancy and Childhood. By L. EMMETT Holt, M. D., Sc. D., LL. D., Professor of Disease of Children, College Physicians and Surgeons (Columbia University), New York, etc. With 241 Illustrations, including 8 Coloured Plates. Third Edition. Revised and Enlarged. New York and London. D. Appleton & Co. 1906. Large 8vo., Pp. 1174. Cloth. $6.

The successive editions of this work have resulted in apparently a perfect treatise on diseases of infancy and childhood, so far as the wants of students and general practitioners are concerned. Revisions of chapters on diseases about which advances have been made, brings the book up to date. So that the young graduate or the older practitioner who seeks to keep up his information on pediatric subjects should at once provide himself with this book. One who reads its pages cannot fail to be impressed with the general simplicity of description of disease, made more intelligible by the numerous plates and illustrations, for the most part photographs of cases as they really occur. In etiology, pathology, etc., the text is based upon per-

sonal observations in great part, to which is added the well defined observations of other authors. As to questions of treatment, we know of no book that can be considered more authoritative. An excellent feature of many sections on treatment consists in the full detail of measures advocated. For the practitioner who has not the opportunities of doing independent investigation, but who must be dependent upon authority in the making of diagnoses and in the planning of lines of treatment, this book fills the wants as nearly as it is possible for any book to do so. Beside the well systematized table of contents, a very complete double column index of twenty-six pages is added.

Laboratory Manual of Physiological Chemistry. By ELBERT W. ROCKWOOD, M. D. Ph. D., Professor of Chemistry and Toxicology and Head of Department of Chemistry University of Iowa, etc. Second Edition, Revised and Enlarged. With One Colored Plates and Three Plates of Microscopic Preparations. Large 12mo, 229 pages. Extra Cloth. Price, $1.00 net. F. A. Davis Co., Publishers, Philadelphia, Pa.

Everyone nowadays recognizes the essential importance on the part of the practitioner of a knowledge of physiological chemistry. This *Manual* deals with the subject in the simplest, plainest way possible to describe the methods of examination of the various secretions, excretions, etc. While over 80 pages are devoted to urinalysis, etc., sufficient space is given to the other secretions, the saliva, the gastric juice, pancreatic juice, blood, bile, etc. The simplicity of detail is the commendable feature of this work. A number of blank pages are interleaved throughout the book for the purposes of memoranda or notes. The price is small in comparison with the merits of the book, or its general utility to the doctor. Beside the Table of Contents, a good Index is appended.

Nasal Sinus Surgery With Operations on Nose and Throat. By BEAMAN DOUGLASS, M. D., Professor of Diseases of Nose and Throat, New York Post-Graduate Medical School and Hospital. Illustrated with 68 full-page half-tone and colored plates, including nearly 100 figures. Royal 8vo., 256 pages. Extra Cloth. Price, $2.50, net. F. A. Davis Co. Philadelphia, Pa.

The excellence of this book consists chiefly in the profusion of illustrations, which makes the teachings almost graphic. While nothing is said in the Preface as to this special fitness, it is a work also of great service to dentists—many of the drawings showing the relation of the roots of teeth to the floor of the antrum, etc. The descriptions are all good of the frontal, the ethmoidal, the maxillary and the sphenoidal sinuses, the diseases affecting them, and the operative treatment required. After a chapter on the deflections and deformities of the nasal septum, etc., is a chapter on external nasal operations for relief of deformity. Then comes a detail of the several turbinectomies. The tonsils, adenoids and uvala come in for their share of surgery, as do exostoses and synechiæ. A chapter on laryngotomy and tracheotomy concludes the book, which has no Index. It is too strictly surgical for the book to be of much use to the physician, however, valuable it may be to the specialist, who will appreciate the details of operations, etc.

Editorial.

The Office of City Bacteriologist, Richmond, Va.,

Is in full operation. Physicians in this city now have the opportunity of having bacteriological examinations made *free of charge in all cases*, and not in indigent patients only, as was stated inadvertently in a previous issue. Dr. Ernest C. Levy, who has charge of the laboratory, recently mailed a circular letter to each local doctor, in which it was mentioned that the purpose of his office was to assist them in making a prompt and accurate diagnosis in diphtheria, tuberculosis and typhoid fever, and to determine when cases of diphtheria are past the period of contagiousness.

Seven stations for the distribution of outfits for the collection of material have been established at drug-stores in various localities throughout the city, and directions for use, blanks for data, etc., accompany each outfit. Reports will be sent to the attending physicians the following day. Dr. Levy requests that each Richmond doctor will make the fullest use of the facilities placed at their disposal by his office.

State Hospital Commissioner of Virginia.

We venture the assertion that relatively, only a few of the doctors of Virginia knew that there is such an office under Gubernatorial patronage in this State. It seems strange that the State Hospital Commissioner during the past term, whose duties pertain to the supervision of the several State Hospitals, has been simply a "good old Virginia gentleman," who, so far as we are advised, in no way claims to be a medical man. The proper discharge of the duties of such a Commissioner requires so intimate a knowledge of the medical affairs of these State institutions that one is surprised to learn that less than an eminent, able physician was ever so commissioned.

In recognition of an error in the law relating to this matter, Senator Wickham, of Hanover county, on February 12, 1906, introduced a bill in the Senate of Virginia, providing that the State Hospital Commissioner shall be an expert alienist and a practising physician of reputation. Among other things, this Commissioner is to take cognizance of the medical affairs of each of the four Virginia institutions for the care and treatment of the insane or mentally diseased, and such other like institutions as may be hereafter established by legislative enactment. It appears needless to attempt to persuade doctors that no less than the ablest available man in the profession should be thought of in connection with such a post of trust and usefulness.

It seems to be commonly understood in the Virginia Legislature that the advocates of the measure as proposed by Senator Wickham strongly favor the appointment of Dr. William F. Drewry—now Superintendent of the Central State Hospital at Petersburg, but who has recently been elected as Superintendent of the Western State Hospital at Staunton—as such State Hospital Commissioner for Virginia, if the bill becomes a law. And we are sure that if he is commissioned, the profession of the State will commend the selection most heartily.

License Taxes on Richmond Physicians Removed.

Some weeks ago, a resolution was adopted by the Board of Aldermen of the city of Richmond exempting licensed practitioners of Medicine from city license taxes. In due time, the measure also passed the lower branch of the City Council. However, other features were grafted on the resolution which led the Mayor to veto it. So that the resolution came back first to the lower branch of the City Council, and it was passed over the Mayor's veto by a vote of 26 to 2. At the meeting of the Board of Aldermen, February 13, the same question came up, and the original resolution exempting practitioners of medicine from city license taxes was also passed over the Mayor's veto by a vote of 14 to 7. This vote places Richmond as the first of the cities or counties of Virginia to repeal the heretofore unjust license taxes on doctors.

It is due to the Mayor of Richmond to state that his veto was not because of the exemption of doctors from city license taxes; but because some features which he regarded as objectionable were grafted on the original resolution which he had no power to except.

Now that practitioners of medicine in the city of Richmond, who have passed the State Board of Medical Examiners, or those who were in practice prior to the date that that Board became operative, are exempt from city license taxes, it may be well for the doctors of other cities and counties of the State to agitate the question in their several localities, and thus rid themselves of the objectionable city or county license taxes.

We trust the measure will have its due influence with the State Legislators and persuade them to abolish State license taxes on practitioners of medicine in Virginia.

The committee of the Richmond Academy of Medicine which so vigorously pushed this measure to a successful issue was composed of the following members: Dr. J. Allison Hodges, Charles V. Carrington, J. Shelton Horsley, Stuart McGuire, R. D. Garcin, Mark W. Peyser and McGuire Newton.

License Tax on Virginia Practitioners.

We are not politicians enough to understand why—not that the House bill exempting practitioners of Medicine and Surgery in Virginia has been favorably reported on by the Committee—the measure is not vigorously pushed to

a vote, especially as a canvass of the Legislature indicates that a majority of the General Assembly are in favor of the special exemption. The delay is in no way due to the Committee of the Medical Society of Virginia, who, through its chairman, Dr. J. B. DeShazo, of Ridgeway, Va., has done all in its power to secure a settleemnt of the matter. It seems to us essential that the bill should be promptly acted on, as it is yet to go before the Senate of Virginia, for confirmation. And unless the term of the present General Assembly is extended beyond March 1st, by special call of the Governor, there is no time to lose.

Eastern Virginia Hospital Doctors Under Charges.

A peculiar secresy seems to be hanging over the examination of the Superintendent and other medical officers connected with the management of the Eastern Virginia Hospital, at Williamsburg. It seems to be leaking out, little at a time that a displeased former member of the Board of Visitors of that institution thought he had grounds on which to base an investigation of supposed present mismanagement. It was charged that with reference to the illness and death of a recent State patient, insufficient consideration was shown the widow; when, in fact, it is developed in the examination that very special attention was shown her. If there were grounds for other charges when the ex-member of the board was an active member, it reflects severely on him that he did not then demand an investigation instead of waiting for some time after his removal from the Board. If there is no better foundation for those charges than there was with reference to the recent case above referred to, it is plain that much ado about nothing has been undertaken by the complainants.

Epileptic Colony for Virginia.

The Legislature of Virginia has passed a bill establishing an Epileptic Colony for Virginia. The Colony is to be a branch of the Western State Hospital, at Staunton, but the location of the Colony will be on a three-acre lot in Amherst county, on a bluff just across James river from Lynchburg. The lot was given the State for the purpose, by the late S. R. Menkland, a former Lynchburg merchant. While no distinctive appropriation is made for the support of the Colony, the appropriation to the Western Virginia State Hospital, it is understood, will be sufficient to meet temporary expenses. It is understood that Gov. Swanson will approve the bill, and thus make the Epileptic Colony an established fact.

Typographical

The date of the last issue on first reading page was inadvertently made February 26, when it should have been February 9, 1906.

Obituary Record.

Dr. Oscar Wiley Woods

Died at Roanoke, Va., February 10, 1905, age 35 years, from tuberculosis. On breaking out of the Spanish-American War, he enlisted as a private in the infantry, but shortly afterwards was made surgeon. At the close of that war, he retained his rank; but on account of ill health he was sent to New Mexico, where he remained until he was brought home about two weeks before his death. He graduated in medicine from the University of Virginia, 1893, and the same year passed the Medical Examining Board of Virginia. While on a trip home, he was elected a Fellow of the Medical Society of Virginia, 1904. He was unmarried.

Dr. James C. Deaton

Died at his home in Richmond, Va., January 16, 1906. He graduated as Doctor of Medicine from the Medical College of Virginia, 1871, and joined the Medical Society of Virginia, 1875, of which he was a member until his death. For a short time, he was Adjunct Professor of Obstetrics in the University College of Medicine, Richmond. For the past two or three years, his health was bad, which caused him to gradually to give up the practice of his profession. He was never married.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 23. Whole No. 239. RICHMOND, VA., MARCH 9, 1906. $2.00 a Year. 10 Cents a Copy.

Original Communications.

GASTRIC LAVAGE.*

By W. BROWNLEY FOSTER, M. D., Richmond, Va., Gastroenterologist to the Memorial Hospital, etc.

In the last twenty-five years, the use of the stomach tube for both diagnosis and therapeutic purposes has become firmly established. It is generally acknowledged that the use of the tube in conjunction with test meals furnishes information of great diagnostic value and of practical applicability—information, moreover, obtainable in no other way. And, similarly, the therapeutic use of the tube in lavage is recognized as of inestimable value in the management of gastroenteric disease.

The simplicity of the necessary apparatus and of the technique, and the immediately evident results of its proper use recommend it forcefully. The only apparatus necessary is the common soft rubber stomach tube with a funnel, a pitcher for the solution and a waste basin.

The easiest tube to introduce is a fairly stiff one, with no terminal opening, but with a closed, conical end. Such tubes are not as easily cleaned as those with the terminal opening, since food residues lodge in the tube beyond the eyelets and are not readily dislodged. A very flexible tube is less liable to injure the stomach than a stiff one and is to be used where injury by the tube is feared. The eyelets should be well rounded, as their edges, if sharp, are prolific sources of injury to the mucous membrane. With a very soft and flexible tube, more difficulty may be experienced in passing from the pharynx to the oesophagus and in passing the cardia. The occasional coiling of a soft tube in the mouth and stomach is productive of much discomfort to the patient and annoyance to the operator. A large tube is desirable for the early removal of a mixed meal, and in any case in which tough mucus or large food masses, like unchewed meat, solid fruits, etc., are likely to be encountered. When the food masses are very large, the end of the tube should be wide open, though a very large terminal opening making it impossible to give the tube a conical end, makes its introduction more difficult and increases the liability to injury of the stomach wall thinned by ulcer or softened by other disease. A tube of very large size produces more discomfort than a small one, and for this reason, the large tube cannot always be used satisfactorily in untrained patients.

For general use, the tube should be of medium size and fairly stiff, should have a terminal opening and two large oval, lateral openings about three inches apart. The tube should be fitted with a window of glass tubing, twenty-nine or thirty inches from the end. This will prove of great assistance in observing the flow of the contents. A bulb near the middle of the tube will afford useful means of freeing the tube of large food masses which may obstruct the flow, and will be of aid in starting the flow without compelling the patient to make disagreeable straining efforts to expel the stomach contents. The bulb is also of use in securing thorough mixing of the washing fluid with the contents. For this purpose, the tube should be pinched tightly beyond the bulb and the bulb sharply compressed and released a sufficient number of times to secure thorough mixing of the contents with the washing fluid. This causes a jet of water to impinge on the stomach wall with more or less force, cleansing it of mucous and other adherent matter, and produces more or less active churning of the contents enabling us to cleanse the stomach more thoroughly and quickly and with a smaller amount of washing fluid. This process seems also to add to the tonic effect of lavage.

For the so-called stomach douching, we should

*Read before Richmond Academy of Medicine and Surgery, December 12, 1905.

employ a tube with several small (1 mm to 2 mm) openings and one larger hole of 3 to 4 mm, or else use Turck's sprinkling tube. This is a double tube. The inflow tube is shorter than the outflow tube, and has its end perforated with numerous small openings which serve to divide the stream into as .many smaller jets The outflow tube has large openings and keeps the stomach comparatively empty so that considerable water pressure may be used with the instrument. It is an efficient and useful appliance.

It is very rarely necessary to cocainize the pharynx before passing the tube, though it may me necessary in cases in which it is important to avoid retching, such as arterio sclerosis and ulcer. No other lubricant is to be used than water in which the tube is dipped.

When introducing the tube, have the patient sitting, while the operator stand behind or to the right of the patient with the left arm around the patient's head. This position gives the operator considerable control of the patient's movements should he resist the passage of the tube or attempt to withdraw it. The head will be held firmly by the operator's arms, and both hands are free to manipulate the tube or control the patient's hands. It must not be inferred from this that a physical contest is a common incident in the introduction of the tube, for nothing would be more untrue.

No guide for the tube, such as the finger in the patient's mouth, is necessary. Simply introduce the tube, instruct the patient to swallow a few times, say a few reassuring words and gently slide in teh tube. No difficulty will be experienced, except rarely at the esophago-pharyngeal junction and possibly at the cardia where slight resistance may be felt. This resistance yields in a few moments, provided no deformity be present.

When the tube is fully inserted, before introducing any fluid, it is well to procure some of the stomach contents for examination, by having the patient express it by straining movements or by aspiration. Then, pour in through the funnel from a few ounces to a pint of irrigating solution and mix the fluid with the stomach contents by repeatedly lowering the funnel and allowing it to fill with fluid, then raising it that the fluid may flow back. When the mixing is accomplished, depress the funnel that the contents may flow out. Straining efforts by the patient will start the flow. Several causes may interfere with the flow, such as blocking of the tube with solid matter, the viscidity of the stomach contents from mucus, etc. The end of the tube may not be introduced as far as the surface of the liquid in the stomach, or it may be introduced too far so as to be deflected above the surface of the stomach contents. A plugged tube may be opened by squeezing the bulb after pinching the tube beyond it; or by introducing a little more water. In cases of gastroptosis and dilatation, it is necessary to introduce varying lengths of tube until the proper level is reached. Fresh portions of fluid are introduced and withdrawn until it returns perfectly clear. Be careful to withdraw all the fluid before introducing more. Do not overdistend the stomach.

In withdrawing the tube, hold it occluded by pinching it with the fingers so as to prevent strangling the patient or soiling the room furnishings with any contents remaining in the tube. The tubes are not injured by steam sterilization or boiling.

Lavage is not a cureall. It is not indicated in all gastric diseases, and is not necessary in all in which its use sometimes proves beneficial. Its radical curative properties are not as important as the fact that it relieves the stomach of impossible tasks while nature's recuperative forces accomplish the cure. Its beneficial effects are due to three chief actions: 1st. Mechanical and chemical cleansing and antiseptics; 2nd. Securing rest for the stomach; 3rd. Tonic effects.

Mechanical cleansing rids the stomach of indigestible or decomposing food and excessive mucus. Cultures of active micro-organisms are removed mechanically. Those germs left in the stomach have their food supply removed temporarily, and are treated with active antiseptic agents.

Absolute rest is secured for the stomach from the time lavage is performed until the ingestion of the next meal. Rest for the stomach is as necessary for its welfare as it is for the organism as a whole, or for any other organ. Its importance cannot be over-estimated; and its beneficence is shown by the striking results of abstinence from food in acute gastritis. In severe motor insufficiency, pyloric stenosis, etc., when the stomach is never free from food, it can secure rest only by the stomach tube or by

gastro-enterostomy or by abstinence from food by the mouth aided by the weak crutch of rectal alimentation.

Tonic effects may be secured by the use of sprinkling tubes, by varying the temperature of the solution used and by the employment of certain medicaments.

By lavage we remove noxious matter. Only in cases of poisoning or of acute gastritis from indigestible or tainted food, does lavage actually remove the prime cause of the disease. Yet, in many cases of gastric and intestinal disease, the putrid, fermenting, acrid, indigestible stomach contents are the chief agents prolonging the trouble and causing distressing symptoms. In such cases, the removal of the contents of the stomach may give almost instantaneous relief from suffering, and repeated lavage be the means of restoration to health. A small amount of fermenting matter left in the stomach from the last meal, containing, as it does, active bacterial ferments, will leaven each succeeding meal, so that bacterial action will not only continue but increase. Lavage promptly abolishes the resulting toxemia. The mechanical action of the fluid impinging on the stomach wall with more or less force is akin to the highly stimulating effect of a jet of water directed on the cutaneous surface of the body. This effect may be readily modified by producing a number of fine jets with a sprinkling tube. The alternate distension and emptying of the viscus as the water is admitted and withdrawn, is akin to massage and exercise.

By using solutions of different temperatures, the effects of lavage may be varied much in the same manner as hot and cold baths differ in effects. The maximum of thermal stimulation is produced by the alternate use of hot and cold solutions, the temperatures being about 115°F. and 45°F., respectively; and the least, by solutions of body temperature. The use of hot solutions may be necessary in severe hyperchlorhydria. The temperature, at first, should be about 110°F. and be gradually increased, but never above 140°F. Due regard must be had for the patient's sensations. A return flow tube is convenient for this purpose. Care should be used in the employment of very hot or very cold solutions, and appropriate hydriatic procedures may be used to combat any untoward general effect. In particular, a cold compress over the precordium may be used to counteract the excited heart action which may result from the use of hot solutions in the stomach.

If our sole intention in washing the somach is to remove fermenting, poisonous, indigestible matter—simply, to cleanse the stomach—plain, lukewarm water will serve the purpose. But there are cases in which great benefit will accrue from the addition of other substances to the water. When much tenacious mucus is present, the addition of sodium bicarbonate (one teaspoonful to the quart), will greatly aid in its removal. Dilute hydrogen peroxide is also efficient for this purpose. Normal saline solution is an excellent cleansing agent and is less irritant than most solutions. Stronger salt solutions (from a teaspoonful to a tablespoonful to the quart), are of some value as stimulants of secretion; and dilute hydrochloric acid (about 0.2%) is also of value for this purpose. This twentieth normal hydrochloric acid is of use in motor insufficiency with hypochlorhydria; and if about half a pint be left in the stomach, it will have an appreciable influence in ridding the stomach of those micro-organisms whose presence is due to the deficiency of hydrochloric acid in the secretion. The solution may be prepared by diluting the official dilute hydrochloric acid with about fifty volumes of water.

A great number of antiseptic drugs are recommended and efficient in ridding the stomach of objectionable micro-organisms and so stopping bacterial fermentation. Many of those agents, while efficient, are objectionable because of their toxicity. To this class belong phenol, lysol, creolin, etc. Such agents are to be strongly condemned for general use. If any drug of marked toxicity be used in lavage, it is well not to use over times the safe internal dose of the agent. It is conceivable that a fourth of the solution used, may either pass through the pylorus into the intestine during the operation, or else be left in the stomach because of the difficulty of withdrawing all of the solution through the tube. Another precaution of self evident importance is to wash the stomach with a non-toxic agent immediately after the use of a toxic one. This non-toxic agent need not of necessity be plain water, as we may use some of the milder drugs with the desired action. To remove a toxic antiseptic, we may use a non-toxic antiseptic; to remove nux vomica, we might use some simple bitter. If the local use of the more toxic drugs is necessary, they may

be applied with the intragastric spray apparatus, smaller amounts being effective than are requisite by irrigation.

The most useful antiseptics are salicylic acid, boric acid, thymol, and hydrogen peroxide. Menthol has both antiseptic and analgesic properties. Salicylic acid is one of the best of these. It dissolves in water with difficulty, but the solutions may be prepared with ease if the acid is first dissolved in alcohol. One ounce of salicylic acid may be dissolved in enough alcohol to make about four fluid ounces, and one to three fluid drams of this solution added to each quart of water. The solution will then contain about one to three parts per thousand. This is one of the best agents for combatting gaseous fermentation.

Silver nitrate, in the proportion of about one part per thousand, is of great value in hyperchlorhydria. Irrigations with this drug often markedly decrease the acidity and soothe the mucous membrane. Staining of the hands by silver solutions may be prevented by anointing the hands with petrolatum before the lavage. Silver solutions injure rubber goods and increase the necessity of cleansing the tubes immediately after use. The organic silver salts may be used instead of silver nitrate.

In sensory neuroses, lavage with chloroform water may be productive of great good. Its analgesic effect is marked.

In the atonic conditions, motor insufficiency, hypochlorhydria and hyposecretion, irrigations with nux vomica and other bitters, especially cinchona, gentian and condurange, have given me highly gratifying results. Probably the best technique is to perform a cleansing lavage with warm, normal saline solution. Then, with some sprinkling tube, introduce a pint of water containing one fluidram of tr. nucis vomicæ allowing it to remain a few minutes; and then wash out this solution with an abundance of a solution of tincture of cinchona, one fluidram to each pint.

The time to be chosen for the performance of lavage must vary, according to circumstances. In general, the best time is about half to one hour before the evening meal, the next choice being bed-time and, lastly, before breakfast. Each time has certain advantages and disadvantages. The hour before supper is most convenient for the physician, though a capable nurse, if accessible, may perform lavage at any desired hour. Morning lavage has the disadvantage of not assuring rest from the stomach during the night. The usual reasons assigned for choosing the morning hour, are that at this time, less nutritive matter will be removed than at any other period, and that the stomach is cleansed and partly strilized in preparation for the day's digestive task. The reasons for performing lavage at bed time are that by it, the stomach is emptied and cleansed for a long period of rest and recuperation from the fatigue of the day's digestive work. But, to me it seems that the sum of these various advantages is in favor of the washing before supper. The washing is done at a sufficiently long period after dinner for gastric digestion to have run its normal course. If the meal be allowed to remain longer in the stomach, stagnation and fermentation ensue. The mass of food, mucus, etc., becomes so acrid and foul that its removal cannot be regarded as a curtailment of the body's available food supply, but, rather as the voiding of useless, noxious, effete matter. Furthermore, the nutritive material removed by the tube may be replaced by a suitable and greater portion of fresh and healthful food. If the foul remains of the dinner be allowed to remain, they will contaminate the pure supper so that its digestion cannot be normal. Rest for the stomach during the night, may be secured by the administration of a supper of such quality and quantity as the crippled organ can easily dispose of in a few hours.

If food be found in the stomach in the morning after the administration of such a meal, or if the evening washing prove insufficient from any cause whatever, the lavage may be repeated before breakfast. If the lavage is indicated for relief of insomnia, caused by fermentation or acidity, it should be performed at bed-time.

If the patient lose weight under lavage before supper, and the loss of weight seems to be continued by removal of food by lavage, we should change the time to the morning hour.

Lavage should not be reserved for those severest cases of gastric disease in which the stomach never is free of food but should be used in every case in which the stomach is unable to dispose of a reasonably full dinner before supper time—that is, in six or, at most, seven hours.

Stasis, fermentation, gas formation, the presence of excessive mucus, of active cultures

of yeast, sarcinæ, Boas-Oppler bacilli and other micro-organisms are also indications for lavage. They occur in such conditions as motor insufficiency, atonic dilatation, mucous gastritis, pyloric stenosis and cancer. Lavage, if properly performed for these indications, will surely give good results. It is also of great use in acute gastritis, poisoning, acute alcoholism and the crises of hyperchlorhydria and locomotor ataxia. It is seldom needed in uncomplicated hyperchlorhydria; but when this condition is complicated by atony, it may be necessary.

Occasionally, though rarely, the stomach tube must be used in cases of gastric ulcer, or of varicose gastric or esophageal veins, such as occur in conditions obstructing the portal circulation. In such cases, we must use the softest, smoothest and most flexible tube obtainable, and one without the terminal opening. Even with such a tube, the greatest care and gentleness are necessary to avoid injury. It is quite possible that perforation of the ulcer-eated area may occur as the result of careless handling of the tube, or that high-grade hemorrhage may result from an abrasion of a dilated vein. It is of the greatest importance that the tube should not be removed from the stomach nor inserted further, while aspiration is being used, or while fluid is flowing from the stomach.

I have seen portions of healthy mucous membrane torn off, with the production of considerable hemorrhage, by moving the tube during aspiration; but it is my experience that none of these mishaps have been alarming or productive of trouble. Most of the fragments of membrane brought forth by the tube are not healthy tissue, and are the evidence of an exfoliative gastritis or Einhorn's gastric erosion. Occasionally, when the tube is withdrawn, a few small blood clots are found in the eyelets. They are without significance.

The contra-indications to the use of the stomach tube are such local conditions as active gastric ulcer, gastric hemorrhage, local peritonitis or other local inflammation. Among the general contra-indications are severe valvular heart disease, fatty degeneration of the heart and arteriosclerosis. Fatal accidents from the use of the tube are, happily, very rare indeed, and are usually results of violent retching—such, for example, as rupture of the stomach or rupture of aneurysms, etc., from high blood pressure incident to the strain of severe retching. Cases in which such accidents are likely, may usually be recognized at a glance, and calamitous accidents from the intelligent practice of lavage are rare indeed.

6 *East Grace Street.*

A CASE OF GASTRO-DUODENOSTOMY.

By J. SHELTON HORSLEY, M. D., Richmond, Va.,
Professor of Principles of Surgery in The Medical College of Virginia; Surgeon to Memorial Hospital, etc.

The case reported below was operated upon by me at the Protestant Hospital, Norfolk, Va., during the recent meeting of The Medical Society of Virginia. The patient was a negro man upon whom Dr. E. T. Hargrave kindly invited me to perform an operation for obstruction of the pylorus. For more than ten years the patient had suffered from stomach trouble and had undergone various forms of medical treatment, including stomach lavage. He had often vomited, and on one or two occasions had vomited some blood. The stomach was slightly enlarged. The presence of food brought on severe pain a few minutes after its ingestion.

The operation was performed with the assistance of Dr. Hargrave and Drs. Smith, Bell, and Tucker of the house staff. The pylorus was found constricted and bound down by adhesions. It was liberated and an incision of about four inches made with the constriction at the pylorus as its center. The lips of this wound were united after the method of Finney, so that the outlet of the pylorus was not only greatly enlarged but lowered several inches.

The principle of this operation consists in suturing the lower lip of the wound in the stomach to the lower lip of the wound in the duodenum, and the upper lip of the wound in the stomach to the upper lip of the wound in the duodenum. The effect is the same as though a kink were made by folding the duodenum sharply over on the stomach and then dividing the spur or kink produced by the angulation.

In letters received from Dr. Hargrave I learn that the patient made a perfect convalescence, his temperature never going above 100°. A month after the operation Dr. Hargrave wrote as follows: "He left the hospital about the 14th day after operation, very much

improved. I saw him a few days ago (thirty days after operation), and found him still improving. He is able to walk around and is slowly regaining his weight and strength." Dr. Hargrave also wrote that within a few days after the operation food caused very much less pain than it had before operation.

I venture to report this case because some who saw the operation may be interested in its outcome.

In conclusion I wish to thank Dr. Hargrave not only for his skilful assistance in the operation, but for undertaking the after treatment, which is such a large factor in the success of the case.

MENTAL THERAPEUTICS.*

By HENRY ALFRED ROBBINS, M. D., Washington, D. C.

Doctor Oliver T. Osborne, President of the American Therapeutic Society, at the annual meeting held in Philadelphia, 1905, made use of the following language, in his address on "The Therapeutic Art," "All successful quackeries succeed because of their ability to relieve symptoms or to cause such mental suggestion as will relieve over-taxed minds, and many a loyal patient is driven to employ quackery by scientific neglect. * * * Until recent years the treatment of disease was the most studied branch of medicine. It was first surrounded by mysticism of all kinds, but embodied, even in earlier times, management as well as the actual giving of drugs. All good results, however, were accredited to the ingested or applied remedy, and, like the "lack of sufficient faith" plea of the Christian Scientists for their unsuccessful cases, failure to cure was ascribed to the special devil or special devilishness of the disease. Leaving this period of amulets, talismans, and elaborate mixtures of almost everything available, and the wonderful panaceas and cures by all kinds of mental impressions, through the chemical age to the age of wonderful cures by multitudinous dilutions of nothing, and its wonderful success on the mind, we come to Majendi, the Nestor of physiologic investigation of drugs and to scientific medication."

Dr. George M. Gould, in an editorial in *The Medical News*, April 21, 1894, on Hypnotism and Suggestions in Practice, wrote: "whether hypnotism be itself a hysteric manifestitation and adapted only to a restricted class of cases, as taught by Charcot and his followers, or a psychic condition phyiologic in character, and therefore capable of therapeutic application in many diverse conditions, as believed by Bernheim and the Nancy school, it remains a fact that the customers of its successful clinical use are rapidly increasing in current medical literature.

Nearly a generation ago, Esdaile, in India, employed hypnotism as an anesthetic agent and reported some twelve hundred surgical operations performed with its aid. It is probable that the introduction of ether and chloroform diverted the attention from this valuable resource by rendering it unnecessary under ordinary circumstances: but from time to time cases are reported which show that under unusual conditions or in exceptional cases it still remains a source which is not to be despised. It is probable that the method of producing temporary anesthesia by rapid respiration, as introduced by Dr. Bonwill, may be explained in great measure at least, by hypnotic suggestion. Even in the administration of ordinary anesthetics, operators occasionally see instances of rapid anesthesia which are clearly hypnotic in character. Some years ago a physician of Philadelphia, Dr. Barr, described a method of administering ether in obstetric cases, in which he succeeded in inducing a state of partial unconsciousness, during which he would describe an imaginary excursion or a drive in the park, which the patient would afterward refer to with expressions of pleasure, and also with astonishment that she had felt none of the pangs of labor. This was undoubtedly a mixed anesthesia of ether and hypnotism, and is analogous to other instances reported from Europe, in which hypnotism alone was used in parturition with the same happy effects.

To the instances of use in surgery and obstetrics must be added numerous medical cases in which equally good results have been obtained. A case in point is furnished by an article in the *Australasian Medical Gazette,* furnished by Dr. Creed, in which the symptoms of asthma were entirely relieved by hypnotic suggestion. The patient proving rebellious to ordinary treatment and all the ordinary reme-

*Read before the District of Columbia Therapeutic Society.

dies being tried without relief, was hypnotized daily for ten days and appropriate suggestions made. On the third day he was much relieved, and after the tenth, became entirely free from dyspnoea, and he could then walk with considerable speed, without respiratory distress. It was found that he still had occasional modified attacks of asthma, and he was accordingly provided with a written order to sleep when he read it, and to wake up after five minutes, breathing freely. The report states that this was entirely successful; that the patient always carries his prescription with him, and that it never fails him.

What makes the case of still greater interest is the supplementary statement that there are numerous polypi in both nostrils, which have not been removed for fear of making the cure by hypnotism questionable. Such an instance of therapeutic devotion and self denial on the part of the attending physician is remarkable, and would hardly be matched in this country, where the polipi would undoubtedly have been removed early in the history of the case, and certainly before concluding that "all" the ordinary methods of treatment had been employed without affording relief."

Therapeutic suggestion had also been used in overcoming bad habits and vices, and some valuable results have been recorded. The noteworthy report of Dr. Bushnell (*Medical News,* 1894), is a valuable contribution to this aspect of the question. It is possible in the cases in which genuine and lasting reformation of inebriates has been obtained through the so-called "gold cures," that suggestion has been called into play with good effect. * * * Sexual abnormalities, such as onanism, spermatorrhœa, and impotence, have been successfully treated in this way, and erotic dreams have been banished." Bramwell has reported a case of anæmic amenorrhœa, in which the menstrual function in a young woman was restored upon the day appointed during a hypnotic seance.

We know at the present day, that expectant attention exerts powerful physiologic effects, and by adopting this in his therapeutics the careful physician is frequently able to secure a decided advantage over the mere routine prescriber.

Dr. St. Clair Thomson, in a letter from London, published in the *Therapeutic Gazette,* October, 1896, says: "Mental therapeutics are every day receiving more attention of a discreet character, doubtless stimulated by the researches without the excesses of the school of hypnotism." Many interesting points are touched on in an address given by Dr. Schofield, before the Harveian Society. He suggests that the conscious mind is a very small part of the whole of the psychic force in us, and that it bears the same proportion to the vast sub-conscious mind which the surface of a coral island bears to the stupendous structure hidden away below the ocean, and of which it forms only the topmost layer.

Of the workings of this subconscious mind, many interesting examples are given. An authoress has remarked that the pen of a ready writer seems to dip itself into the ink at the right moment, to form of itself all the words, and even to select different words to begin each sentence and to avoid terminating them with prepositions, while all the time the conscious mind is deeply occupied with the plot.

The marvels of playing a brilliant piece on the piano, while at the same time conducting a vigorous flirtation, show also the greatness of our unconscious powers, especially when we remember, that Sir James Paget has pointed out that in rapid playing, the finger moves twenty-four times a second, each movement involving at least three muscular acts, which if multiplied by ten, gives 720 muscular impulses per second for both hands.

This sub-conscious mind is often deepening impressions, when we least suspect it; so that it has been well said in Germany that skating is learned in summer, and swimming in winter. An oft-heard tune we will unconsciously hum, whereas if we try to hum it consciously, it goes from us.

For the same reason we can often remember things better when we cease to make the effort to do so with our conscious minds.

Now, mental therapeutics can be applied to the body in one of three ways; (1) by the unconscious mind indirectly—in spiritual or physical influences or surroundings; (2) by the unconscious mind acted on by the conscious indirectly—in raising faith in persons, remedies, etc.; and (3) by the unconscious mind acted on by the conscious by direct effort—in determination to get well, to shake off illness, ignore pain, etc. With regard to the ailments in which mental therapeutics are useful, they are a pow-

erful means of cure in all disease processes, while in hysteria and allied neuroses they are the only reliable means of permanent efficacy.

It is still much too commonly imagined that hysteria is simply a form of malingering, and the very word "hysteria" is uttered with contempt.

A disease due to the imagination, is not necessarily an imaginary disease, but can produce functional and every organic disturbance. The late Dr. Sutton once remarked: "If a man is so ill as to say he is ill, he must be very ill indeed." Indeed, it has been well said, "We think as we feel, or think we feel, and we feel as we think. If we feel a pain, we think we are ill, and if we think we are ill, we feel ill."

As to the employment of mental therapeutics, we must strive to wrap up our suggestions in objective treatment, directed ostensibly and vigorously to the simulated disease.

Schofield says, "Does any practical physician doubt these powers? Is he aware of the ingredient "faith," which if added to his prescriptions, makes them often all-powerful for good? Does he not know the value of strongly asserting, that the medicine will produce such and such effects, is a powerful means of securing them? Has he never witnessed the therapeutic value through the mind of the dentists' waiting room in curing tooth-ache, or of the distinguished consultants spacious receiving rooms, with its mythical pictures, bric-a-brac, etc., combined with the physician,s august presence? And had he not seen how much more efficacious, the very same drugs had proven when prescribed in such solemn surroundings, than in his own humbler enviroment and less august presence.

It has its laws of action, its limitations, its powers for good and evil; would it not greatly help the medical student if these were indicated to him by his lawful teachers instead of his being left to glean them uncertainly from the undoubted success of the large army of irregulars?

I have looked through many leading books on medicine and therapeutics, but neither in Ziemssen nor Hare, nor in any other standard work, can I find this subject fairly considered and discussed. A volume called "Suggestion in Therapeutics" from Nancy, shows the use of the mind as a curative agent when under hypnotic suggestion, but we want far more than this. The subject is of a size, and growing importance to deserve far fuller and more serious consideration than it has yet received. Here and there great masters in medicine have seen the enormous value of mental therapeutics, but the subject has never been followed up.

Unzer, in 1771, says: "Expectation of the action of a remedy often causes us to experience its operation beforehand." Schofield says: "I have just received a remarkable illustration of this, however, that goes far beyond this statement. A colleague of mine gave a woman the other day some opium pills to produce sleep but forgot to tell her their object. Last week she told him the pills had opened the bowels well each morning, but had griped her a little. On inquiry he found she had no better sleep. Another woman thought she had taken a large dose of rhubarb as a remedy for constipation, and soon had five or six movements of the bowels. She discovered afterwards that she had forgotten to take the medicine."

Dr. W. E. Robertson, of Philadelphia (*London Lancet*, 1894) stated: "I should like to be permitted to add my humble testimony to that of Dr. Schofield, on mental therapeutics. Unless an indiivdual has his bump of self-esteem inordinately developed, he cannot practice long without realizing that his success is sometimes attained and often augmented by accompanying his prescriptions with asseverative remarks. * * * Dr. Gordon Sharp, in his article on "Therapeutic Progress," says: "Much depends on the man himself, and the confidence which he can inspire into his patient." This simply bears out the idea that suggestion, either verbal or through the personality of the physician, is frequently part or even all that is necessary to effect a cure.

About a year ago, while attending an Englishwoman, aged forty-four, who was well advanced in convalescence from muscular rheumatism, she was suddenly attacked with asthma. She never had it before—nor has she since—Her father had been a victim of it, and his sufferings had made a great and lasting impression upon her. One evening several loquacious old dames discussed the subject in her presence, and predicted that in her weak state she would surely develop asthma, because it ran in the family. She was terribly wrought up over it, and some hours later, I was sent for, when I found her with orthopnea, I was sent for,.

I found her with orthopnea, bilateral sonorous and sibilant rales, and evidently much distressed. By exclusion I was led to regard the case as neurotic, gave a placebo, and assured her, that her "friends" had no foundation for their remarks, and that the condition would speedily pass away, which it did, and, as I have before said without any return. Another very marked case of mine was reported by Dr. Judson Daland in the *University Medical Magazine,* April, 1893." "A few days ago I gave a patient some three grain quinine pills. This morning he volunteered the statement that his "bowels have not moved so well since he stopped taking the pills."

Sir Samuel Wilks, President of the Royal College of Physicians, said in a paper, read some years ago: "I was reading a day or two ago in a popular journal of the success of a so-called "six penny doctor" at a cheap dispensary, where he saw on an average seventy patients during one evening. His favorite and almost universal medicine was a mixture composed of sulphate of magnesia, burnt sugar, and infusion of quassia. The merits of this were that it was cheap and provided an appreciable effect, for he went on to say, "You must always give medicines which produce appreciable effects; then, also, the mixture must taste like medicine, and if it have a bad smell, the patient will be better satisfied."

Schofield writes: "Let me illustrate the medicinal, or at any rate the therapeutic value of the common mantelpiece striking clock. I say "clock" in preference to "watch," because it is distinctly of greater value, and I say "mantelpiece instead of "eight day" or "hall clock," for the same reason. I shauld also say "striking clock," with the half hours and quarters, if possible, as being of still greater efficacy. It is perfectly astounding to see the cures that can be assisted, and in some cases altogether effected, by this agency, the power of which is obviously purely mental. Sir Dye Duckworth, without dwelling on the value of mental therapeutics, has pointed out an instance of their valuable use by means of the clock in urging the great efficacy, in cases of persistent vomitting, of giving the liquid food in teaspoonfuls every five minutes *by the clock.* There can be no doubt that food thus given is readily retained, and still more so if the clock can be clearly observed by the patient from the bed. At the exact time the mind, acting through the brain, enables the stomach (perhaps some inhibitory power over the vomiting centre in the medulla) to retain the food.

The value of the clock in labour is not universally known, but it is very marked. In a large proportion of cases, when the pains are tedious and irregular in force and frequency, they can be made quite regular, to the great advantage of all concerned—patient, infant, and medical attendant—by the aid of the clock. The law has only to be firmly laid down of "a pain every five minutes, of two minutes duration, with a three minutes interval," for it to be obeyed in a majority of such cases. When by the clock the time arrives for the pains to begin it should be clearly announced to the patient, and the fundus should at the same time be gently pressed by the hand on the abdomen, the nurse being meanwhile ordered to give officiously, any needed assistance; and the pain, being thus expected and prepared for, commences, and should be kept up for the two minutes, complete rest being then given for the remaining three, when the process is renewed. After two or three pains are thus regularly induced the routine is established, and there is no difficulty in continuing regularly till the close of the second stage. The essence of success lies in invoking the therapeutic aid of the clock. Of course, there are patient's who are not amenable to this form of treatment, as there are others who cannot tolerate quinine or opium.

Again, when the child is born what a boon, what a fountain of health, the clock may become to both mother and child! The nursery, where the value of the clock is unknown, is a scene of confusion and bad management, however full the little cupboard may be of drugs. What peace and comfort, on the other hand, reign when mother and nurse have learned that the child must be nursed in the day every two hours *by the clock,* whether awake or asleep, and every four hours at night, for the first two weeks at any rate, and never nursed between times or when it cries, or in order to put it asleep. The real value of the clock in this, and in all other cases, is truly scientific and lies in its potent aid towards rapidly forming *psycho-physical* habits or artificial reflexes in the brain.

Few people, and possibly not all physicians, know what a potent aid to sleep a clock (in this

case, a non-striking one) is by enabling a person to go to bed at exactly the same hour each night, regularity in this respect being a powerful hypnotic.

I will not touch on the importance of the clock in administering medicine, given as they are so often now in small divided doses every fifteen or thirty minutes, because this does not strictly illustrate its therapeutic value.

Hunter stated: "I am confident that I can fix my attention on any part till I have a sensation in that part;" while Johannes Miller affirms that, "it may be stated as a general fact that any state of the body which is conceived to be approaching or expected with certain confidence to be approaching, will be very prone to occur, *as the mere result of that idea*, if it does not lie beyond the bounds of possibility."

Schofield says, "Now this is true with regard to producing cures as well in producing diseases; and, though I desire to write impersonally and suggestively, I may, perhaps, be allowed to adduce briefly the following remarkable instance of this. A girl aged sixteen was brought to me with strong left convergent strabismus and diplopia and slight ptosis, with total bilateral loss of taste and smell for years, proved to be complete by careful experiment, with deafness (watch not heard at three inches from either ear) and strong spastic contraction of the left arm and hand, proceeding to rigidity and wasting of some months standing, and some stiffening of the left hip joint. This girl had had for months every possible ocular and general treatment, including massage, with absolutely no improvement of any symptom, the arm especially becoming more and more rigid. Confidence being gained, simple methods, inefficient in themselves, but forming vehicles through which the mind could act, proved perfectly efficacious in completely restoring taste and smell, in entirely restoring the use of the arm and leg, in removing deafness, so that the patient's hearing became unusually acute, and in curing the strabismus and diplopia. I therefore, submit that a therapeutic agent that can effect such results which has defied regular treatment directed by skillful specialists deserves a recognized place in our teaching, and in all hospital clinics, for there is scarcely a single disease where it may not be advantageously used."

Freudenberg (*Frauenarzt*, Leipsic, June, 1900), says: "The influence of the mind on the vasomotors, that is, on the nerves that determine arterial tension, is a fact beyond question to-day, and the physician should not hesitate to utilize this science when other means fail. As vasomotor disturbances are the chief element in gynecologic affections, suggestion may prove a valuable therapeutic measure in these cases, which are so often rebellious to medical means." Freudenberg cites several recent cases of miracle cures, and regrets that the physician first in charge of the case had neglected to utilize suggestion which might have proved as successful in his hands as in those of the miracle-worker. He describes an interesting personal case, a teacher whose intense dysmenorrhœa incapacitated her for several days every month, seriously interfering with her profession. Nothing pathologic or hysterical could be discovered, and as it was a question of morphine or suggestion during hypnosis. Freudenberg ventured on the latter. She was influenced in profound hypnosis, and amnesia of the suggestion commanded. A lasting impression was induced in the third seance, and since that time the menses have recurred without pain, and normal in every respect.

[TO BE CONCLUDED IN NEXT ISSUE.]

SYPHILIS.*

By ROBERT ALLEN GAMBLE M. D., Petersburg, Va.

The history of syphilis is veiled in obscurity and involves much contention. Most authorities agree that syphilis was first recognized in Italy during the 17th century. The fact is, venereal diseases embrace all periods of man's existence. It existed long before the Christian era, and all through the period of classical antiquity. It flourished in the free republics of Greece, and under the corrupt sway of the Roman emperors.

It is strange with what pertinacity and universal acceptance stories of the spontaneous birth of syphilis remain in the mind of man. Astruc and Gutanner put forth the childish fiction of the origin of syphilis being in the cohabitation of Columbus' men with the Indian maidens, but they forgot to tell us where the maidens contracted the disease. P. G. Klein

*Read before the Medical Faculty of Petersbug

shows from annals of Malabar that long before the discovery of the West Indies, venereal disease was known in the East Indies, for the Malabar physicians, Sangarasiar and Aless Iauambi, who lived more than 900 years ago, and other physicians before them, make mention of the disease and its cure by mercury.

Ricord of Paris, in the beginning of the last century, pointed out the difference between the venereal diseases and laid the foundation of our venereal knowledge. Formerly, syphilis, gonorrhea and chancroid were supposed to be very much alike and that one would run into the other; but they are widely separated pathologically and have nothing in common, except, that they are all found at the same place. Sutherland says, "Syphilis is more a disease of luxury than of poverty. If we compare a hundred cases of venereal disease in the leisure classes with a hundred cases among the laboring classes, we will find a higher percentage of syphilis in the higher than in the lower social strata. This is obviously due to the fact that the young women who dispense syphilis are more accessible to men with money *in the early part of their career* (when they have syphilis in a violently contagious form).

Later the contagiousness of syphilis wanes, and as the woman descends in the scale, the more economical gentlemen are comforted with gonorrhœa and soft chancres. Syphilis is a contagious, inoculable disease, transmissible by heredity. The first lesion of syphilis is a chancre; this is followed by general lymphatic enlargement, by eruptions of the skin, usually superficial and symmetrical and associated with similar lesions of the mucous membranes; later by chronic inflammation and infiltration of the cellulo-vascular tissues, the bones and the periosteum, and finally by the formation of small tumors called gummata which may appear in any portion of the body, but which commonly develop in connective tissue. (White and Martin.)

A microbe known as Lustgarten's bacillus is generally accepted as the specific cause, but convincing proof is yet wanting before this can be taken as the true microbe.

The Chancre. Hardness is inseparable from the conception of a chancre; in fact, we speak of the chancre as the initial sclerosis of syphilis. Now, this hardness has something peculiar about it—it is more than thickness or toughness; it is a distinct hardness or sclerosis. It corresponds to the hardness of cartilage. Other venereal sores are often rendered dense or resistent by caustic applications, but they never acquire the characteristic hardness of chancre. The chancre may be located on any part of the body. The method of contagion may be either immediate or mediate. In some cases the physician is never able to locate the initial leison and often an innocent person is affected with syphilis by mediate contagion, who can give you no possible aid in your search for the manner of acquiring it. In 80% of cases the chancre is found located on the genitalia.

The period of primary incubation or the time intervening between the exposure to contagion and the appearance of the chancre is on an average of 3 weeks; then in from 3 to 10 days the chancre develops fully and the anatomically related glands become enlarged. This period of incubation, however, may vary from 10 days to 3 months; and, in support of this, I can cite an instance in my practice during the year where the lesion did not appear for 10 weeks after exposure to contagion. The chancre begins as a spot of erythema, soon becomes a superficial papule; gradually extends in circumference and depth, loses its epithelial or epidermic covering, and in the course of a few days is surrounded by an area of induration. Frequently it occurs as a fissure, or an abrasion; or, if located on a mucous membrane, as a superficial ulceration covered by a grayish or yellowish false membrane.

The chancre is usually single, but when the virus has been inoculated at the same time in several places a number of sores may appear, but they all develop at the same time, and they are not due to autoinoculation, as may be the case with a chancroid or soft chancre.

White and Martin say, as to the differential diagnosis of genital chancre: Since ulcerative lesions of the genitalia may be due to a variety of causes and since the difference in their nature, they may present some features in common, the question of differential diagnosis becomes one of great importance. To distinguish between a "mixed chancre" and a chancroid or simple venereal ulcer is often impossible. Even should a chancroid be absolutely typical in all its clinical features, it is not safe to make positive statements that syphilis will not develop. If in spite of the favorable course of a simple

ulcer, often in two or three weeks, characteristic induration develops, and in another week the inguinal glands on both sides painlessly enlarge one after the other, the probability of syphilis and chancroid having been inoculated at the same time are great. *Per contra,* if a non-inflammatory indurated sore appears at an interval of more than 10 days after exposure, and in consequence of further exopsure, rapidly assumes an inflammatory type, sloughs and extends beyond the area of induration destroying the latter, and presenting on examination only the features of a simple venereal sore, the probability is, that the lesion is a chancre—the chancroidal virus having been inoculated upon the primary lesion. This probability is made still stronger, if painless multiple enlarged lymphatic glands are found in the groins. Even if a suppurating bubo form, this should not influence the diagnosis in regard to syphilis, since each disease will run its course, independent of the other.

The differential diagnosis between chancre, chancroid and herpes will depend on the following:

CHANCRE.	CHANCROID.	HERPES.
Origin. Due to inoculation with the blood or lesion discharges of syphilis.	Due to inoculation with the discharge of a chancroid sore.	Due to mechanical irritation as in sexual intercourse; chemical irritation and to neurosis.
Incubation. Generally on genitalia. Often on lips, nipples and hands.	No definite period, usually 2 or 3 days.	None.
Situation. Generally on genitalia. Often on lips, nipples and hands.	Generally on glans penis and prepuce.	None.
Number. Single. At times simultaneously multiple.	Often multiple.	Multiple, sometimes confluent.
Beginning. As an erosion papule, tubercle or ulcer.	Begins as a pustule or an ulcer, always ulcerates.	Begins as a group of vesicles, which may ulcerate singly.
Shape. Round, oval or symmetrically irregular.	Round, oval or unsymmetrically irregular.	Irregular.
Depth. Usually superficial cup or saucer shaped, or may be elevated.	Hollow, excavated or punched out.	Superficial.
Surface. Smooth, shining dusky-red glazed diphtheritic membrane or scab.	Rough, uneven, worm-eaten; grayish pultaceous slough.	Bright red, superficial granulations.
Secretion. Scanty, serous, not auto-inoculable.	Abundant, purulent readily auto-inoculable.	Moderate secretion, thin serous. Same as local ulcer.
Induration. Almost always present.	Exceptionally present. Boggy. Often painful.	Same as local ulcer.
Sensibility. Very rarely painful.	Often painful.	Often painful.
Course. Progressively towards cure.	Irregular, may cicatrize rapidly and may extend.	Easily and quickly cured.
Bubo. Constant, painless multiple, generally bi-lateral.	Appears only in $\frac{1}{3}$ cases. Painful inflammatory. Single or a single one on each side.	Rare.

Typical chancre may develop about the genitalia, yet from the fact that it is so placed as to be concealed from view it may not be observed. Thus chancres of the cervix uteri and of the urethra are not usually recognized as such until constitutional symptoms develop.

Extragenital chancre. Buckley in *A. M. A. Journal,* gives a number of cases during 1900, seen by himself, as 21 located as follows: Lip 9, finger 5, anus 2, hand 1, nostril 1, hard palate 1, eyelid 1. Of these 16 were males and 5 females. Curiously all cases seen in private practice were males, 12 in number.

Of the 5 cases of chancre of the finger, 4 were in physicians, with also a 5th physician who received an infection on the ulnar side of the back of the left hand, during an operation. He cites one case as follows: "One of these cases, which has only very recently come under my care, has had such severe and distressing results that it merits particular description. Five years ago Dr. ———, aged 47 ,injured the skin near the nail of the right index finger, with a nail cleaner, and very soon after the part was exposed while treating a chancre of the vulva. A few weeks later there was a slight sore on the end of the finger, under the nail, which in a week or two became a rather painful, small ulcer. The nature of the trouble was not suspected until a general macular eruption appeared, and under anti-syphilitic treatment the eruption disappeared very promptly and the finger healed; at the same time the severe general malaise, with fever, ceased. Five or six months later, subjective symptoms appeared again, but as there were no external manifestations of syphilis, the cause was not suspected, and specific treatment was not used. For the two years following, the patient was miserable, long periods of rest and much treatment for stomach and other troubles being necessary. There was a severe and steadily increasing pain in the lumbar region and about eighteen months after the finger was infected he found it difficult to go up and down stairs, and to get into a carriage; the patient's legs dragged and he felt weak and tired, and yet there was no suspicion of the cause, it being all attributed to over-work.

After retiring one night in March, 1898, two years after the infection, he became delirious and for the following five days was insane. It was then suspected that the cause was syphilis, and iodide of potassium administered freely. During the next three months, there was increasing motor disturbance in the lower limbs, until in June, when on attempting to leave the bed, the lower limbs were found to be totally paralyzed; this paralysis lasted for about five months. Power in the limbs then returned very slowly and he can now walk with difficulty, with the aid of two canes, but he can not stand for more than a minute. The bladder and rectum are both partially paralyzed, requiring the use of the catheter and high rectal injections. He is at present improving rapidly under very active mixed treatment."

Chancres of the anus are much more common in women than men. This is due, not necessarily to unnatural practices, but rather to the fact that in dorsal decubitus the vaginal discharges flow downward over the perineum and the anus, and thus inoculate the cracks or abrasions which may exist in these regions.

The Period of Secondary Incubation. The period between the appearance of the chancre and the development of the secondary lesions varies from 2 weeks to 3 or even 6 months. The average period is 42 days. The primary lesions often remain during the whole of the period. And during this period the virus is becoming disseminated through the entire system. Enlargement of the lymphatic glands not anatomically connected with the primary sore, are the earliest positive symptoms of constitutional syphilis.

The period of secondary symptoms is characterized by 1. Alterations of the blood; 2nd. General lymphatic enlargement; 3rd. Moderate fever, temperature reaching 100° to 101°F. in the P. M., often associated with malaise and anorexia; 4th. Muscular and articular pains located about the chest, back and upper extremities, usually moderate, but sometimes very severe; 5th. Alopecia involving the hairy surfaces of entire body; 6th. Eruptions of the skin and the mucous membranes. Simple synovitis, rheumatism and gonorrhœal arthritis are the affections for which secondary syphilitic affections are likely to be mistaken. Tertiary leisons may be confused with osteoarthritis or tubercle. The knee suffers from syphilitic arthritis oftener than all the other joints together. Attention is called to the fact that absolute rest is in many cases not wholly necessary, but may do actual harm. E. P. Paton (*Brit. Med. Jour.*, Nov. 28, 1904).

The term secondary syphilis has been applied to those leisons which appear during the first two or three years of the constitutional disease, and which are for the most part superficial. One of the commonest secondary symptoms is syphilitic neuralgia, and the 1st and 2nd branches of the trifacial are especially affected. Iritis is the commonest manifestation of secondary syphilis and it may assume the plastic or serous form.

I will not enter into the many different and varied skin lesions, but will take it for granted that all present are familiar with them; and owing to the short time allotted will touch lightly on several different aspects of the subject with no regard to regularity in so doing.

Syphilitic recrudescences. The fact that the disease may give rise to repeated relapses years after its beginning and that serious sequelæ not infrequently develop after even years of apparent health, is sufficiently curious to account for the circumstance that medical science has not been able to furnish unassailable explanation for the phenomena. Virchow considered that the spasmodic character of the outbreaks indicated an irregular outpouring of actual virus into the blood, thus giving rise to virtually fresh infection. The lymph nodes were to be regarded as the depository of the latent virus which from time to time was set free, entered the blood, and brought about a renewal of the symptoms. Lesser summarizes his conception of the matter by stating that in the eruptive stages the entire body is flooded with with syphilitic poison, and that this is deposited more or less uniformly in numerous foci, which serve as sources of relapse during the course of the disease. As the length of time after infection increases, more and more of the persisting germs perish, and they may finally disappear completely. The practial bearing of this assumption lies in its application to the therapeutical management of the disease. In order to hasten the diminution and neutralization of these deposits of latent virus, frequent repetitions of the course of medication are necessary, and the advocates of intermittent mercurial treatment should find a potent argument for their cause in this theory of the pathogruesis of the syphilitic manifestation.

Ocular affections secondary to syphilis. Dr. Randolph Brunson, Hot Springs, Ark., read a paper on this subject, in which he said that syphilis is probably responsible for a greater number of ocular affections than any one disease known. Secondary syphilitic ulcers may occur on the eyelids from the breaking down of a gumma originating in the skin or in the sub-cutaneous tissue and cartilage. The most frequent location of the lesion is in the skin near the lid margin or below the inner canthus, although it may occur on the conjunctival surface of the lid. The conjunctiva is very rarely affected primarily, but inflammation usually occurs when the iris and ciliary body are involved —the edema observed in these cases being caused by an obstruction of the return flow of circulation.

The lachrymal sac and duct are frequently invaded by syphilis through the nose. In all cases of stricture of the lachrymal canal, due to syphilis, which had come under his notice, he had always been able to find the cause in the nose. Syphilitic rhinitis, both acute and chronic, is very common, and when there is great destruction of the nasal bone and membranes, dacryo-cystitis usually occurs with varying severity. The iris and ciliary body are perhaps more often invaded by syphilis than any one part of the globe, and syphilis is frequently the common predisposing cause of iritis. About 70 per cent. of all the cases of iritis are caused by this disease. The author has found in examining the histories of 1,500 cases of syphilis that iritis occurred in over three per cent. of all cases.

He mentioned a number of characteristic signs which enabled one to recognize the etiology of the disease, the most conspicuous of which are the papules, small raised masses in the iris, usually not exceeding three in number and generally located in the pupillary zone, but may be seen at the periphery of the anterior chamber, or elsewhere.

Interstitial keratitis has its origin in syphilis, and in perhaps sixty per cent. or more of all cases of this variety of disease of the cornea it is hereditary. He had never seen a case caused by acquired syphilis, and believes the cases reported as such have simply been produced by irido-choroiditis which has involved the deeper layer of the cornea. Disseminated choroiditis is caused by syphilis in perhaps eighty per cent. of all cases.

Cerebral Syphilis. Hammond of New York,

says: Syphilis is a form of microbic infection, and as in all other similar processes, inflammation is the natural and almost inevitable result. In the nervous system, and probably in other parts of the body, the inflammatory process generally begins in the blood vessels and extends from them to the meninges of the brain and cord, and to the connective tissues in the brain and cord. Syphilitic gumma and exudates can only be regarded as the products of the inflammation. The inflammation in the vessels tends to destroy their function. The periarteritis and endoarteritis which ensue, degenerate the walls of the vessels and partly or completely obliterate the lumen. As in the former case, the impairment in the blood supply leads to degeneration and to foci of softening, which in turn are succeeded by reparative inflammation. He cites a case of a man 28 years of age, who denied positively that he had ever had a chancre but was suffering from arterial fibrosis, and says: "A man at his time of life suffering from arterial fibrosis, and to such a degree that arterial rupture takes place, must necessarily have been brought to that pass from disease. It could not possibly have occured from natural causes. Excluding other infectious processes, I know of no adequate causes except syphilis and alcoholism. These two conditions either separately or together, are responsible for more cases of arterial fibrosis than all other causes combined. He must have had syphilis whether he ever knew it or not. This and many other cases lead to the conclusion that when young and apparently healthy adults develop grave diseases of the brain and cord, and when other infectious processes, tumors and trauma can be excluded, syphilis should be suspected, whether there is a history of syphilis or not.

One other point in the diagnosis in the degenerative syphilitic diseases may not be out of place here. I refer to the symptom known as the "Argyll Robertson pupil." When this symptom exists, it is a clear indication that the individual is suffering either from paresis or tabes. There may be no other symptoms discernible, but if this symptom is present even in a mild degree, other symptoms of either one of these diseases will inevitably follow. It is claimed that this is sometimes observed in a few cases of alcoholism. I do not believe this. In my opinion, it is a symptom of no other diseases except the ones mentioned.

The main signs which suggest cerebral syphilis are: Headache and vertigo, nausea and vomiting, optic neuritis, cranial nerve palsies or paralysis, apoplectiform attacks or more gradual attacks, somnolence or coma, with partial hemiplegia, irritability or general mental failures, polyuria and polydipsia, marked remittant character to all the symptoms and their changeability (A. E. Brounig, Boston).

Acute Syphilitic Nephritis. A case is described in detail, observed at Ebstein's clinic, which confirms the experience of Dieulafoy, Hoffman and others, that acute nephritis may occur as one of the very earliest manifestations of syphilitic infection. The onset was severe, and in three cases on record it terminated fatally, but it is possible that a syphilitic nephritis may run an insidious and unrecognized course. In his case the specific infection was three weeks old; edema, ascites and hydrothorax followed the appearance of condylomata and a painful throat affection. The urine was scanty, contained much albumen and numerous hyaline and granular casts. The patient was a robust working man, 31 years old, but the symptoms described had made him keep his bed for a week. He was rubbed daily with 5 gr. of gray ointment, and all the kidney symptoms, ascites, edema, &c., rapidly disappeared; the albumen in the urine dropped from 13.5 to 1.6 gm. in two weeks. The urine was normal when finally dismissed after seven weeks of treatment. The other manifestation of syphilitic infection did not respond so promptly and effectively to the specific treatment as the nephritis. Karvonem has observed cases permanently cured for 8 to thirteen years, but in Hoffman's patient the nephritis recurred later.

Transmission of Hereditary Syphilis. The father's sperm cell may contain the syphilitic virus and convey it to the child without participation of the mother. The maternal generative cell may contain the virus and result directly in a diseased fœtus. The placental circulation permits the passage of the infectious matter either way from mother to child or *vice versa*. Several or all of these factors may combine, and, the more of them that are present, the less probable the escape of the child. The probabilities of the transmission of syphilis through the mother are greater because of more ways of possible influence on the fœtus. The writer considers the probability of the appearance of hereditary syphilis to be reservedly proportion-

ate to the time of infection of the parents, and to the length and thoroughness of the specific treatment. As to whether or not syphilis can be transmitted to the second generation, we must have positive evidence (1) of acquired syphilis of either or of both of the grandparents; (2) of hereditary syphilis in either of the parents with the absolute proof that no new syphilitic infection of the patients took place, and (3) of hereditary syphilis in the grand-children.—*Jour. A. M. A.* A. Schalek, May 6, '03.

Congenital Syphilis. Malnutrition in children is attributed by Kerley to syphilis in many cases when other symptoms are lacking. In cases, where parents are of average health and strength with negative family history and the child or children show low vitality, indifferent food capacity and poor appetites, he adds bichloride of mercury or iodid of potash to the treatment, regardless of the standing of the patient, and is usually gratified, but never surprised by the satisfactory outcome. He has learned to look with suspicion upon puny delicate children of parents with average good health, when there is no discoverable reason for the mal-nutrition and resisting well-directed hygienic supporting measures.

Hypertrophy of spleen early sign of hereditary syphilis. In 40 cases of chronically enlarged spleen in children syphilis was unmistakable in 31, or 77.5 per cent. Only 9 were free from the taint of hereditary syphilis. Of 4 with the syndrome of pseudoleukæmic anæmia, all were rachitic, and in 2 the rachitis was associated with syphilis. In the others, without evident anaemia, syphilis was marked in 19 and associated with rachitis in 10. In 4 there were signs of rachitis alone; in 1 the splenomegaly was due to tuberculosis, and in 2 to some other unknown cause. The figures suggest the possibility of the existence of a syphilitic rachitis. In any event, in presence of a case of rachitis wthout appreciable signs of syphilis, the possibility of the latter should be considered. Even in very severe cases of hereditary syphilis of this splenomegalic type the patient may recover under prompt mercurial treatment, though the stage of pseudoleukæmic anæmia may have been reached. The writer has examined 376 children under two years of age, and found, among those with spleen of normal size that 59 had rachitis, no syphilis; 23 syphilis, no rachitis; and 8 rachitis plus syphilis, while there were 40 with splenomegaly included, as mentioned above; 12 with rachitis, plus syphilis, 6 with rachitis, no signs of syphilis; and 19 with syphilis alone. The splenomegaly may be accompanied by a certain amount of enlargement of liver and glands. The coexistence of splenomegaly and rachitis does not, therefore, exclude syphilis, but rather renders it more probable, as in 66 per cent. syphilis was certain or probable. The same is true of splenic pseudoleukæmic anæmia for 50 per cent. A. B. Marfan (*Revue Mens. des Mal. de l'Enfance,* Vol. XXI, No. 5, Jour. Amer. Med. Assoc., June 20, 1903).

Immunity to syphilis. Does there exist an individual, natural immunity to syphilis? The answer to this question cannot yet be given, according to the writer. A more practical question, and one more readily answered, is whether or not immunity follows an acquired or inherited attack of syphilis. The belief was long current among practitioners that acquired syphilis, imparted immunity to reinfection for a prolonged period. Cases were frequently cited in which reinfection had occurred; but, unfortunately, the evidence was never beyond criticism, and the belief in acquired immunity remained. Furthermore, it has been assumed (the so-called law of Profeta expresses this view) that the descendants of syphilitics possess a certain degree of immunity. As a matter of fact, Profeta did not make the sweeping generalization which is nowadays ascribed to him, but merely said that a symptom-free child, born of a syphilitic mother, can be suckled by its own mother or by a syphilitic wet nurse without becoming infected.

The author flatly contradicts the existence of inherited immunity, as expressed in the law of Profeta, as commonly quoted. He observed epidemics of syphilis among school children in villages in Asia Minor, notwithstanding the entire adult population of these villages bore signs of previous syphilitic attacks. In many instances fresh syphilis occurred in children whose parents were unquestionably syphilitic before the children were born. In children presenting saddle noses and other marked signs of advanced syphilis (probably hereditary), there frequently was present fresh, newly acquired, contagious specific disease. Assuming that the first attack was acquired and hereditary, these children at any rate suffered two

separate attacks of syphilis. Of their re-infection the writer has no doubt, and he therefore announces himself as unequivocally opposed to the hypothesis of immunity. Van During (*Medical News;* from *Berliner Klinische Wochenschrift,* Jan. 5, 1903).

Statistics of Tertiary Syphilis. Weber's article is the result of five years study of syphilis at Jadassohn's clinic at Berne, and supplements the latter's communication in regard to tertiary syphilis among the prostitutes of Breslau. The figures show that tertiary manifestations occasionally develop even after several courses of thorough mercurial treatment. Weber tabulates the statistics of 185 cases of tertiary syphilis in the clinic, and of 49 in private practice. No treatment had been applied in 77.3 per cent. of the former, nor in 40.8 per cent. of the latter. Applying the principle followed in the Breslau statistics, he collated all the cases of syphilis at any stage, and found that 51, or 34.7 per cent. of 147 private patients had been insufficiently treated or not at all, presented tertiary symptoms; while only 13, or 5 per cent. exhibited them out of 261 who had taken more than one course of treatment. There was thus a difference of 29.7 per cent between the two groups. This difference amounted to 54.6 per cent. in those who had been under observation for one year, and 58.5 per cent. in those under observation for two years and more. He groups his material in various ways, and the result is always in favor of thorough treatment as materially reducing the tendency to tertiary manifestations later. The cases of recurrence of tertiary accidents also shows that a third of the patients had not been treated for their primary affection; also that those treated with iodid alone were in the majority.

In regard to treatment I have nothing to offer save that I wish simply to mention the injection treatment which has attained a great deal of prominence lately and to say that I am very much in favor of it, as I think it does away with a great many gastric troubles which we have to deal with in treating the disease with mercury per orem.

6 *West Tabb Street.*

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE XVI.

Aseptic Surgical Technique—Preparation of Patient for Operation—Preparation of Operating Room and Accessories—After Care of Patient—Technique in Country Practice.

The principles of aseptic and antiseptic surgery are fixed. The methods adopted for the application of these principles to practice, vary with the environments of the surgeon, the character of his work, and his conception of what is essential and what is not essential to success. Lack of space prohibits a description of the various ways by which different men endeavor to accomplish the same object; hence the following is simply an outline of the methods followed in St. Luke's Hospital, of Richmond, Va. No claim is made for originality, as almost every detail has been derived from outside sources, nor is it believed that perfection has yet been reached, as changes from time to time are still found advisable. All that can be said is that results are very satisfactory.

An earnest effort has been made to fulfill the requirements of Ochsner who states that to attain the best results a technique must be (1) *simple* so that defects may be readily detected, (2) *uniform* so that assistants may be drilled to do the same thing in the same way, and (3) *reasonable,* so that the end desired is always understood and nothing is done without a purpose. What Price calls "fuss, feather and foolishness" has been discarded.

The subject will be divided for discussion into the preparation of the patient, the preparation of the operating room with its accessories, and the after care of the patient and the wound.

I. PREPARATION OF THE PATIENT.

If practical the patient is admitted to the hospital several days before the operation, and for the last forty-eight hours is confined to bed. This gives the surgeon an opportunity to study

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his Class at University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

the case and allows the patient to become accustomed to the new surroundings. The heart and lungs are carefully examined to determine the safety of the anesthetic, and the urine analyzed to ascertain the condition of the kidneys. The bowels are carefully regulated, and the patient is urged to drink abundantly of water. A daily tub bath is ordered, also an antiseptic douche, if the case be a gynecological one. The regular use of the tooth-brush and of antiseptic mouth wash is directed. The diet is simple and nutritious and of a character to leave little residual matter in the intestines. If the bowels contain gas a tablet is prescribed composed of resorcin, rhubarb, bismuth and sodium sulphate, known locally by the druggists as "C. R. Tablets." The night before the operation the part to be operated on is cleanly shaved and the patient given a warm tub bath. The site of incision is then disinfected by thoroughly scrubbing with hot water and green soap, bathing first with a 70% solution of alcohol, then with a 1-1000 solution of bichloride of mercury, and finally a moist bichloride compress is applied which is retained in place by a bandage or binder. In shaving a sharp clean razor is used, and in scrubbing a mop of soft gauze employed. It has been found that a dull razor and a stiff brush cause pain and roughens or excoriates the skin so as to make it readily susceptible to infection.

After the foregoing is completed the patient is put in a clean gown and made comfortable in bed. If there is any evidence of exhaustion a cup of beef tea is given. Before going to sleep a purgative is administered. Castor oil is the one preferred, but if the patient objects to it two compound blue pills are substituted. They are known locally as "C. B. Pills" and consist of aloes, rhubarb, blue mass, and colosynth.

If the patient is restless or nervous fifteen grains of chloretone is given which not only induces sleep but seems to have some effect in lessening or preventing nausea after the anesthetic. Next morning as soon as the patient wakes, a saline aperient is given, usually Apenta water, and this is shortly followed by a soap suds enema. No food is given by mouth for four hours before the operation, and the bladder is emptied immediately before the administration of the anesthetic. When the hour for the operation arrives the nurse pins a blanket tightly around the patient's limbs from pubes to heels, securely fastening it so as to make a neat, compact roll. The gown is then pulled down over it. A wheel stretcher is brought to the bedside, a second blanket thrown over it and the patient placed on it and transported to the anesthetizing room. It is a bad practice to begin the anesthetic in the patient's bed room, for while it removes one of the disagreeable features of an operation, it is attended by a prolongation of anesthesia and consequent increased liability to shock and nausea. The anesthetizing room adjoins the operating room and is furnished with two small tables. One table is for the anesthetist and contains chloroform, ether, masks, towels, vaseline, gag, tongue forceps, pearly of amyl nitrite and two hypodermic syringes, one loaded with $\frac{1}{4}$ gr. of morphia, the other with twentieth gr. of strychnia. The other table is for the materials to be used in the second sterilization of the site of the incision. On it are sterile mops for scrubbing, a fenestrated sheet, five sterile towels and four glass flasks, containing respectively tincture of green soap, 70% solution of alcohol, sterile water, and 1-1000 bichloride solution (the last two warm). As soon as the patient reaches the anesthetizing room the anesthetic is commenced. After unconsciousness has ensued the operating table is brought in, placed alongside of the wheel stretcher and the transfer from the one to the other effected. Now all should move quickly and smoothly, for rapid, systematic work will reduce the time of anesthesia by many minutes, a matter of importance in most cases. The patient is fastened to the table by two cotton bandages, one just above the knees and the other just above the ankles. The arms are extended by the sides and fastened by broad bandages about the wrists, care being taken not to constrict them. Thin rubber pads are pushed under the elbows to prevent them chafing against the table. All knots used in fastening the patient are half bows which can be readily loosened. The protecting dressings are removed from the site of operation. Light oil cloths are placed so as to protect the gown and blankets and the field is again prepared as on the night before. A clean assistant scrubs it with green soap and sterile water, going wide and including all land marks which the surgeon may desire to locate. Undue wetting and chilling of the patient are carefully avoided.

The soap is washed off, then completely removed by free use of 70% alcohol, after which it is washed with a 1-1000 bichloride and covered with a towel soaked in the same solution. Sterile towels are placed over the rubbers and a sterile fenestrated sheet over the whole. The patient is now rolled into the operating room. This second sterilization of the site is a step of extreme importance, for the itching induced by the early preparation often impels the patient, even though asleep, to seek relief by thrusting a hand beneath the bandages and thus contaminating the skin.

II. PREPARATION OF THE OPERATING ROOM AND ITS ACCESSORIES.

The operating room is the heart of every surgical hospital. On it are lavished more time and money, and to it are given more care and thought than to any other part of the institution. And rightly so, because on it and its proper management depend the life of the patient and the reputation of the surgeon. A graduate nurse is in control of the operating room and she is alone responsible for its management. There is no division of authority, for here as elsewhere success can only be achieved in its highest degree when there is one head. Assistants are sub-ordinates, but loyally, faithfully and conscientiously do their part. They are not changed too frequently as good work is essential and efficiency only comes with experience. The operating staff are drilled until they know how to get clean and stay clean. They are made to feel the great responsibility entrusted to them. In them is inculcated the "Belief in the Aseptic Idea," which leads to the development of the "Surgical Conscience." A well trained assistant should feel instinctively a contaminating touch, or a break in technique, as the musician feels the rasp of a false note, or the teacher the jar of a double negative.

DESCRIPTION OF THE OPERATING ROOM.

The operating room has a tiled floor, tiled wainscoting and waterproof walls, which can be washed or wiped down. In addition to a bountiful supply of daylight coming from a sky-light above and a large window on one side, it has electric lights and it so heated that its temperature can be easily maintained at 80°F. It has large porcelain wash-stands, with hot and cold water, the flow controlled by foot pedals. These basins are used exclusively for washing the hands. There is a porcelain sink in one corner for emptying waste water, etc.

The furnishings of the operating room are rigidly simply. There are no shelves with bottles for solutions or jars for materials, to catch dust. There are no cases for instruments as they occupy space and their contents rust in the steam charged atmosphere. In short, there is nothing in the room that is not to be actually used in the operation, and nothing that would prevent the room from being quickly and thoroughly cleaned and disinfected.

The necessary equipment consists of: (1) an operating table, (2) a glass or metal topped instrument table, (3) a sponge table, (4) a stand for solution basins, (5) two light stands for hand basins (6) water sterilizers for hot and cold water, (7) a glass irrigator with rubber tube and hard rubber or glass nozzle, (8) a small metal stool. In an adjoining room easy of access there are (9) an autoclave sterilizer, (10) an instrument boiler, and (11) a utensil sterilizer for boiling basin trays, etc. The last three are purposely located in a separate sterilizing room, because an open flame cannot be used in the operating room during the administration of an anesthetic, owing to the fact that the vapor of ether is inflammable, and that of chloroform is decomposed, liberating chlorine, which is extremely irritating to the lungs of both operator and patient. The various tables and stands enumerated are coveerd with white enamel paint, which protects the metal and can be re-applied whenever needed.

PREPARATION OF THE OPERATING ROOM FOR AN OPERATION.

Sterilization of Linen. On the morning of a cup of beef tea is given. eBfore going to the operation the sterilizer is packed with all gowns, caps, sheets, table covers, towels, dressings and sponges that are to be used. These are placed so loosely that the steam can readily gain access to all parts of every article. In an autoclave thus packed thirty minutes of steam at 15 pounds pressure has been found by actual test to be sufficient to completely exterminate all organisms and their spores.

Sterilization of Basins, Pitchers, etc.

The agate and porcelain basins, instrument trays and pitchers are boiled in the utensil sterilizer for ten minutes before each operation. As disinfection by hot water is much the simplest method, in the absence of a regular utensil sterilizer, one should be improvised by putting an ordinary tin wash boiler on a gas stove.

Cleaning and Arrangement of the Room.

Every one or two weeks, the time depending on the character of the work done, the operating room is filled over night with formaldehyde gas. This is done to exterminate germs that may have collected in inaccessible places. The morning of the operation, the walls and floor of the room are washed, and the tables and other furniture are wiped with a 1-1000 bichloride solution. Any dust in the air is precipitated by allowing an escape of steam from the water sterilizers. The nurse in charge arranges all furniture and sees that everything is in the proper place. She puts the basins and trays in the utensil sterilizer, the instruments in the instrument boiler, and opens the door of the autoclave. Having, as far as possible, done everything that could be done before sterilizing her hands, she next proceeds to disinfect them and put on her sterile gown and rubber gloves. She now unpacks the autoclave, covers the instrument and sponge tables with sterile sheets, places the instrument trays, solution and hand basins in place, and sets out every article to be used in its assigned position. She is aided in this work by an assistant who fills the solution and hand basins, makes up the salt solution and performs every duty that would require the soiling of the other's hands. The clean nurse quickly performs her task without once contaminating her hands. A technique, broken by frequent rushes to the solution basin to re-sterilize hands, is faulty and dangerous. The instruments, sutures and ligatures are now brought in and arranged ready for use, with as little handling as possible. Finally, the patient is rolled in from the anesthetizing room and and the operation begun.

Duties of Assistants. The number of assistants varies with different operators, and with the same operator under different circumstances. The following is a convenient division of the work.

The Anesthetizer stands at the head of the table. A tank of oxygen fixed for inhalation should be in easy reach. His duty consists solely in administering the anesthetic, which requires his undivided attention.

The First Assistant stands to the left of the table opposite the surgeon. He sponges the wound, catches bleeding vessels, and assists the operator in any way possible. He should anticipate the needs of the surgeon and direct the work of the other assistants.

The Instrument Assistant stands behind and to the right of the surgeon, at the instrument table. He hands instruments, ligatures and sutures to the surgeon as needed, keeping instruments in place, and assist otherwise when requested.

The Sponge Nurse stands behind and to the left of the first assistant. She has charge of the sponges, diaphragms, dressings, drainage strips and sterile towels. She hands sponges to the first assistant and supplies diaphragms wrung out of hot salt solution. Of these she keeps accurate account so that none may be accidentally left in the abdomen or wound. At the completion of the operation she recounts them to see that all are in hand.

Extra Assistant, or "Dirty Nurse." The assistants who have been designated have all to work with sterile hands, and should they in any way contaminate them they must immediately clean them again. The extra assistant performs all such duties as would necessitate soiling the hands and skin of the patient, to irrigate intient on the table, emptying and re-filling solution basins, openings or closing doors, attending to wants of the anesthetizer, and the innumerable little duties that promote harmonious workings of all the staff.

Preparation of Water. An abundance of water is needed for preparing the site of the operation, making and replenishing solutions, and supplying fresh water for the hands of the operators. Water should first pass through a close filter to remove any organic or inorganic matter suspended in it. Boiling for ten minutes renders it sterile. Two tanks are kept in the operating room, one of cold and one of hot sterile water, so the extra nurse can make a solution of any desired temperature by mixing them, at a moment's notice.

Preparation of Solutions. To disinfect the hands and sikn of the patient, to irrigate in-

fected wounds and cavities, and to warm and moisten gauze diaphragms that are to protect exposed viscera, many solutions are used.

Normal Saline Solution is prepared by dissolving three drachms of sodium chloride in one-half gallon of water. As this often has to be quickly done during the progress of an operation, it is necessary to have sterile salt in readiness. This can be done by sterilizing the salt in an open mouth bottle in the autoclave, or by having a concentrated solution (3 drachms to the ounce), that has been boiled for ten minutes.

Bichloride Solution. This is used in strengths varying from 1-1000, employed in sterilizing the hands and skin of the patient, all the way down to 1-10,000, used for irrigation of wounds and cavities. It can be quickly prepared by dissolving in a given quantity of sterile water the number of tablets of bichloride of mercury specified on the bottle by the manufacturer to make the desired strength. When used in large quantities it is cheaper to keep a concentrated solution; say thirty grains of bichloride of mercury, 2½ minims of hydrochloric acid, and a small quantity of methylene blue, to the ounce of water. One ounce of this solution to one-half gallon of water makes a 1-1000 solution.

Thiersch's Solution is used especially for irrigating the bladder. It is prepared by dissolving one drachm of salicylic acid and six drachms of boracic acid in one-half gallon of water.

Carbolic Solution. Carbolic acid is a most effective germicide and at one time was much used. Numerous accidents, however, have occurred by mistaking it for alcohol or water, and these have lessened its popularity. For irrigating wounds, and vaginal douches, a solution is prepared by adding one ounce of carbolic acid to one-half gallon of water. It is well to remember that alcohol is an effectual agent to neutralize it in case of burns.

Analyses, Selections, Etc.

The Diseases, Diagnosis and Treatment, of the Right Upper Abdominal Cavity.

Dr. Benjamin Merrill Ricketts, Cincinnati, Ohio, in an address before the Davis County Medical Society, Washington, Ind., December 14, 1905, said that journals and societies have been the most universal means of disseminating knowledge. Without them progress would indeed be slow.

The best medical and surgical thoughts have been utilized in perfecting the treatment of disease in the upper abdominal cavity. Here is to be found the pancreas, liver, biliary tract, stomach, duodenum and jejunum, all of which have been attacked by the surgeon with equal success.

Pancreas.—Bruner, 1662, removed the pancreas from a dog without causing death. De Graaf, 1664, made a pancreatic fistula and collected secretion therefrom. Mikulicz has shown that manipulation of the pancreas increases mortality.

Liver.—Clark, 1863, inserted a trocar into an hepatic abscess. This is the first recorded attempt of the kind. Harley, 1882, said in no case would he recommend the scalpel or large trocar—only a very small trocar to evacuate an abscess. McLeod had, however, incised an abscess of the liver, 1879, November 14.

Gall Tract.—Babbs, 1867, was the first to remove gall stones by operation, little knowing that he was laying the foundation to such a monumental structure. In consequence of having removed these concretions, he reasoned that it would be a routine work. Padget and Harley, 1879, had a patient who on March 15, 1877, passed biliary concretions through the abdominal wall by abscess. Harley, 1882, says, "In my opinion, judging from my experience in operations of choleo-cystotomy, it is not one whit more dangerous than that of lithotomy, and ought, if proper precautions are taken, to be infinitely less so."

Gastrostomy—Was first done in 1602, but was not heard of again until late in the last century. Incising the stomach has been done for many purposes. Had it not been for Alexis St. Martin, the physiology of the stomach would not have been so rapidly developed. Removal of hair balls and foreign bodies has been done many times. Division of pyloric and oesophageal stricture (Abbe) and cauterizing ulcers of the stomach has been done several times. Exploring the stomach through an incision is an established procedure.

Pylorectomy.—Resection of the stomach for

disease was first done by Pean, 1879, who did it for ulcer. The case of Czerny was living at the end of ten years. Since then it has been done many times but is now obsolete. Weir says the mortality is 52 per cent. Pylorectomy for cancer had a mortality of 50 per cent. until Mayo began his work. Since then the mortality in his hands is but 5.8 per cent. This lessening of mortality is due to improved technique.

Pyloroplasty was done first by Heineke, March, 1886. A longitudinal incision is made in line of scar on pylorus. Mortality about 70 per cent. Now obsolete.

Divulsion.—(Loreta's operation). Divulsion of the pylorus does not cure; only relieves for a short time. Now obsolete.

Gastrectomy was first done by Conner, of Cincinnati, December 7, 1883, on a woman with cancer of stomach; died on table as he was uniting the pylorus to the oesophagus. To his Spartan courage is probably due much that has been accomplished in this kind of work. Schlatter, 1897; Brigham, 1898; MacDonald, 1898; Richardson, 1898; and Bernays, 1898—each made a complete gastrectomy.

Partial Gastrectomy had been done for prolapse. Several complete gastrectomies have been done giving a mortality of 33⅓ per cent. but the operation cannot be advised owing to the high mortality and want of care. Mayo says that one-third of cancers of the body are in the stomach, and that all are operable at some stage of the disease.

Gastroplication.—(Bircher's operation) is done by folding the wall of the stomach upon itself and securing it by suture. The greater curvature of the stomach is brought half way to the lesser curvature. Weir reports such an operation.

Gastro-Gastronomy.—This is for hourglass stomach, to unite the two stomach cavities. If necessary, also for making a gastro-enterostomy.

Gastrolysis is severing adhesions about the stomach; it has been done for several years. Ricketts had such a case in 1899, resulting from a pistol wound causing several bands.

Gastropexy about to be relegated for more scientific and rational methods. A stomach hanging low probably has pylorie stenosis and thereby becomes overweighted. It demands gastroenterostomy.

Gastro-enterostomy was first done by Wolfler, September 28, 1881, by uniting the stomach with the jejunum in a case of carcinoma. Dunin had, however, suggested such a procedure. Bilroth was second to do this operation; patient dying from constant emesis. Courvasier, 1883, inserted a loop in the jejunum through a slip in the mesentery into the posterior wall. Von Hecker 1883, raised up the colon and the mesenteric jejunal loop to the posterior wall.

Gastro-enterostomy has undergone many evolutions, having been done first by suture, then Senn's decalcified plates, Murphy button, McGraw ligature and many other mechanical devices, only, however, to again be done by suture. The oblong Murphy button will probably supplant the round button. This Murphy fully advises, owing to the rapidity with which it can be secured and perfect proximity of the parts. Then, too, it has not been retained in the stomach or gut.

My own experience has been limited to the use of the Murphy button and various kinds of suture. The use of the oblong button will probably be given preference in cases of great debility, where rapid work is necessary.

Murphy says in a recent personal communication, that he has never seen the work of gastro-enterostomy done so rapidly and well by suture or otherwise as when done with the oblong button; while McGraw in a personal communication received about the same time, advocates the rubber ligature. Mayo reports 157 stomach operations with the Murphy button. Benign, 72; 6 deaths (8%); 54 anterior; 4 deaths (8%); 4 reoperations (8%); 18 posterior, 2 deaths (11%); 4 reoperations (22½%); malignant, 85, 15 deaths (18%), including pylorectomy and partial gastrectomy. Four deaths were due to pulling apart of attached surfaces in from six to ten days after button had passed into the bowel. This is now overcome by four or five matress sutures. In two cases it was necessary to remove the button at a subsequent operation.

Moynihan says that all such mechanical devices for intestinal anastomosis have served their purpose and that they now are of but historical interest.

McGraw Ligature. Ochsner has made 156 gastro-enterostomies by this method. Of 124 at Augustina Hospital, 28 were cancer, 5 died (17%); 96 ulcer, 5 died (5%). The disadvantages of this method are that it is slow

to cut through, sometimes does not do so because of breaking and insecure knotting and does not make opening at once for drainage.

Haberkant cites 58 gastro-enterostomies for cancer; 12 lived longer than one year.

Mayo gives conditions indicating gastroenterostomy, gastric-pyloric duodenal and jejunal ulcer; pyloric stricture due to cicatrices or neoplasms malignant or benign, gastric dilatation due to any cause, without pyloric stricture and peripyloric adhesions causing contraction of the pylorus.

Niles says 5 per cent. of all persons have gastric ulcer, that the average age is 38 years; that the greatest number is between 38 and 48 years and that sex is about equal. Autopsy findings in chronic ulcer have been instituted in many hospitals giving per cent. of gastric ulcer varying from 1.32 per cent. to 20 per cent—the higher per cent. being in deaths of more recent date and by more skilled observers.

It is fair to conclude that ulcer of the stomach is more common than generally supposed and that many of the so-called cases of gastritus, indigestion, &c., are cases of gastric ulcers. Such cases are common in every community and they are being recognized more and more every day.

Five years' work leads Mayo to believe that ulcer of the stomach precedes cancer in about fifty per cent. of the cases, and that cases of carcinoma with long histories speak for preceding ulcer with short histories, against ulcers as a precursor. In 52 cases of cancer during the first half of 1905, by him, 26 were cancer upon ulcer.

Distance of anastomosis from pylorus varies. Von Hecker.—20 to 25 cm. from duodeno-jejunal flexure. Keppler.—40 to 60 cm. from flexure. Mikulicz.—Three or four inches from flexure, and Peterson, as near the flexure as possible—same as Czerney's no-loop method.

The latter is now the selection of choice done on the posterior surface of the stomach by suture. Make the opening proportionate with the size of the stomach and at the most pendant portion. The mortality is less than five per cent. In 2 cases recently operated upon by me, a posterior anastomosis was made with suture from three to four inches from the duodeno-jejunal junction. In one case, 60 years old, that had been confined to his room for 90 days, the weight increased 22 pounds within sixty days after the operation.

Perforating Gastric and Duodenal Ulcers.—Moynihan made his first operation April 30, 1897. Since then he has made 22 operations, 8 deaths (36%); in 7 duodenal cases perforation had occurred, and 15 in which a gastric ulcer had perforated. In the first ten cases, there were 6 deaths; in the last twelve there were 2 deaths. Of the gastric ulcers two were male and twelve were females. Of the seven duodenal, four were males and three females (one not accounted for). Mikulicz, 1903, is in favor of both gastro-enterostomy for drainage and jejunostomy for feeding for six to ten weeks; then the latter is allowed to close. Hemorrhage may be from an ulcer, fissure or varicosity, and death may result from the smallest lesion.

Pathology.—Gastric ulcer is of two kinds, indurated and non-indurated. In the first, all coats are involved and can be felt from without. In non-indurated cases, only the mucosa is involved and cannot be felt from without. Either may be acute or chronic. The acute is more rapid, involving the entire wall, with sharp edges. The chronic ulcer is slower, broader, more irregular in shape, and terraced or funnel shaped. Either may perforate a blood vessel or the entire thickness of the stomach wall. The two forms may heal spontaneously, but the chronic form is associated with more cicatricial tissue and consequent deformity. Of 231 ulcers reported by Mayo, 80 were peptic, 56 females and 24 males.

The symptoms and differential diagnosis of the following diseases are given in detail:

Gallstones, gastralgia, gastric ulcer, perforation of gastro-intestinal ulcers, perforating duodenal ulcer, distended gall-bladder, bilious or acute gastric-duodenal catarrh, movable kidney with twisted ureter, nephritic colic, pyonephrosis, tumors of kidney, ureteritis, obstruction and atonic dilatation of the stomach, appendicitis, acute indigestion, intestinal colic, acute enteritis, intestinal obstruction, typhoid fever and acute pancreatitis.

Editorial.

The Piedmont Medical Society

Held its annual convention at Culpeper, Va., February 17th, at the Waverly Hotel. Interesting papers were read, especially in connection with the treatment of appendicitis, by Dr. R. M. Slaughter, of Alexandria. The discussion of this and other papers took a wide range.

There was a large attendance of doctors from all that section of the State. Dr. W. J. Strother, of Culpeper presided, and Dr. A. T. Holliday, of Orange, acted as secretary. The local physicians entertained handsomely.

Dangers of Cold Storage of Undrawn Game, Fowls, Fish, etc.

In the June 23, 1905, issue of the *Semi-Monthly*, editorial attention was called to the importance of this subject, and reference was made to an article in the *Maryland Medical Journal*, June, 1905, by Dr. J. C. Hemmeter, of Baltimore, in which the necessity was shown for laws by all State and local governing bodies that would abate or controll this danger to the general public. The subject referred to does not seem to have met with the special attention that its importance merited; however, we note that the wide-awake Chicago Department of Health, after much persistent effort, has at last had its proposed ordinance for the sanitary regulation of the cold storage industry favorably considered by the committee from the City Council, and it is now recommended for enactement.

The proposed measure forbids the sale of any slaughtered poultry, fish, game, or any animal used for food purposes, refrigerated or otherwise, which has not been properly drawn and prepared by removing the entrails at the time of slaughter. Cold storage ware-houses are required to be kept in a sanitary condition, this to be guaranteed by regular inspections. These ware-houses are to pay an annual license fee of $500, and are to be licensed only after a strict compliance with the regulations. Among other things, every article is to be tagged permanently so as to show the date it is put in storage, while retail grocers will be required to exhibit storage meats in original packages in order to show its age, etc.

Continuing, the *Bulletin* of the Department of Health for Chicago, from which we gather the above gist of the ordinance that has been recommended for enactment, says: "The body in which the viscera are permitted to remain undergoes decomposition much more rapidly than when such viscera have been removed. Decomposition is further hastened by leaving the blood in the animal."

"Cold storage and freezing may limit the rotting process, but do not stop it. When poultry or animals are taken from cold storage and thawed out for exhibition and sale the decomposition continues with renewed energy, impregnating the flesh with poisons."

Surely no argument is necessary further than a plain statement of facts to convince one of the need of such laws as will tend to mitigate or altogether do away with the objectionable as well as dangerous features known to exist—especially in cities—with reference to marketing of slaughtered poultry, fish, game, etc., which have not been dealt with as before suggested. The question of health affects not Chicago or Baltimore alone, but every community, and it is but natural to expect that those who have charge of matters pertaining to the health of communities should see to it that laws are advocated and strenuously urged until they become enacted for the public good.

Special Licence Tax on Virginia Physicians.

As we go to press with this issue, it appears that the aboveiniquitous special license tax on Virginia doctors will remain with us as a law for the next two years—owing to the inability of the patron of the measure to get it up before the Legislature in ti emfor repeal.

THE
Virginia Medical Semi-Monthly.
(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 10, No. 24.
Whole No. 240.

RICHMOND, VA., MARCH 23, 1906.

$2.00 a Year.
10 Cents a Copy.

Original Communications.

MENTAL THERAPEUTICS.

By HENRY ALFRED ROBBINS, M. D., Washington, D. C.

(Continued from last issue.)

Volumes have been written on animal magnetism or mesmerism. The subject can be found in a condensed form in Chamber's *Dictionary of Universal Knowledge.*

It is a supposed influence or emanation by means of which one person can act upon another, producing wonderful effects upon his body, and controlling his actions and thoughts. It was fancied to have some analogy to the magnetism of the loadstone, and hence its name. The term has been used to group together a multitude of manifestations deemed of a wonderful kind, and which have given rise to an amount of delusion and credulity hardly exemplified on any other subject. Electro-biology, oitylism, table-turning, spirit rapping, table talking, spiritualism have been classed as only modifications of the same phenomena.

Mesmer caused the greatest excitement of his day—equal to if not greater than Giuseppe Balsama, the notorious imposter, who posed as the Count Alessandro di Cagliostro, the King of quacks, as Alexander Dumas portrays him. Mesmer used an apparatus—the *bagnet* or magnetic tub, iron rods, etc., but the more common means have been *passes* made by the hands of the magnetiser from the head of the "subject" fix his eyes on the operator. He then generally feels a creeping sensation stealing over the surface, and shortly falls into the mesmeric sleep, a state more or less resembly somnambulism. While in this state, the functions of the body are liable to be much affected; the pulsations of the heart and the respiration are quickened or retarded, and the secretions altered, and that chiefly at the will of the operator; as his discretion, the limbs are made rigid, or become endowed with unnatural strength; one liquid tastes as any other, and is hot or cold, sweet or bitter, as the subject is told; in short, every thought, sensation, and movement of the subject obeys the behest of the mesmeriser.

According to the mesmeric theory, the nervous energy of the operator has overpowered that of the subject, as a powerful magnet does a weak one, and the two are in *rapport,* as is termed. In some cases, the mesmeric trance assumes the form of *clairvoyance.* We have all seen Carpenter and others in performances, interesting to spectators, and possibly dangerous to the subjects.

The first to give a really scientific direction to the investigation of appearances of this class was Mr. Braid (in 1853), a surgeon of Manchester, England. He gave the name of Hypnotism—from the Greek word *hypnos,* sleep. He detached them altogether from the semblance of power exerted by one individual over another, or by metallic discs or magnets, and traced the whole to the brain of the subject. acted on by *suggestion,* a principle long known to psychologists, though never made so prominent as it ought to be. Dr. Carpenter wrote an able book on this subject in the Quarterly Review, Sept., 1853. The reviewer traces the operation of this principle up to the most miraculous of the so-called "spiritual" manifestations." I will not give Braids method of inducing hypnotism, as it is so nearly related to the methods of Charcot and Bernheim, which I propose to give later on. Braid, in conclusion to an extremely interesting article, stated: "From the careful analysis of a large number of experiments, we find that by a continual fixation of the mental and visual eye upon an object, with absolute repose of body and general quietude, a feeling of stupor supervenes, which renders the patient liable to be readily affected in the manner already described." As the experiments succeed with the blind, he considers that "it is not so much the optic, as the sentient, motor,

and sympathetic nerves, and the mind, through which the impression is made. Many of the minor operations of surgery have been performed on patients in the hypnotised state without pain, and hypnotism has been successfully employed as a therapeutic agent in numerous forms of disease, especially such as have their seat in the nervous system."

It was not my intention to dwell on the subject of hypnotism, but it may prove interesting to state what Charcot of the Paris school, and Bernheim of Nancy have agreed upon. The following I quote from the special correspondent from Paris, of the *Medical Record* (May 23rd, 1896). "Both of them divided hypnotism into different states or conditions—Bernheim into nine and Charcot into three. As the divisions are essentially the same, we will give Charcot's division, as being more concise; also the rules for the application of hypnotism, as upon this point they really agree.

The first is the lethargic state. It is obtained either by the fixation of an object or by pressing gently upon the eyeballs through the lower lids. The lethargy thus obtained is characterized by the appearance of a deep sleep, muscular relaxation, anæsthesia, often complete, with abolition of the intellectual life. In this state suggestions are impossible. There exists a muscular hyperexcitability and contractions are made readily, by slight pressure or friction.

The second is the cataleptic state. In order to make a subject pass from the first to the second state, it is sufficient to raise the eyelids. If only one eye is open that side only enters into satalepsy, the other reamining in lethargy. The cataleptic remains fixed in every attitude given him or her; the muscular hyperexcitability has disappeared. In this stage suggestions can be produced in the muscular sense; for instance, if the hand of the subject is approached to the lips as if to send a kiss, the face becomes smiling; if the hands are joined together as if in prayer, the subject kneels. By a retrograde process it is possible to pass the subject back again from the cataleptic to the lethargic state by closing the eyelids. Finally, this state can be produced at once and directly, without the primary lethargic period, under the influence or nervous shock caused by an intense light or violent noise.

The third is the somnambulistie state. This also can be produced primitively by fixation of the look or by different procedures. Lethargy or catalepsy can be transformed into somnambulism by exercising gentle or prolonged and repeated frictions on the vertex of the subjects. This state is characterized by an habitual anæsthesia more or less decided, by a sensorial acuity, and above all, because the subject is essentially amenable to all suggestions, the neuromuscular excitability no longer exists. This state can also by a retrograte process be transferred back to the cataleptic state by opening the eyes of the subject, or into lethargy by closing them and compressing mildly the eyeballs.

These three stages comprise what is ealled the grand hypnotism, or the grand hypnotic neurosis."

In dealing with so dangerous a therapeutical measure as hypnotism—dangerous morally and physically in almost every respect—the physician, in order to safeguard his conscience and professional honor, ought to adhere strictly to the following rules.

(1) Never put to sleep any patient without his or her formal consent or the consent of those having authority over them.

(2) Never provoke hypnotic sleep except in presence of an authorized person—father, husband, brother, etc.—who guarantees the hynotiser and the hypnotized.

(3) Never give to the subject, without consent other suggestions than those necessary for the cure. The physician should limit himself to therapeutic suggestion only.

The following case, which I take from an old number of the *British Medical Journal,* shows what harm hypnotism can do: "A Hamburg practitioner was consulted by a young married lady, who complained of terrible hallucinations driving her to suicide. She came to him unknown to her husband, who she said was devoted to her, and whom she could not bear to distress by the knowledge of her affliction. Beyond the hallucination complained of, there seemed nothing to indicate mental disease, but a sudden light dawned on Dr. D——, when in the course of further conversation his patient told him of two facts—one that her husband had lately insured her life for a large sum, and the second that he was fond of making hypnotic experiments. Dr. D—— found it easy to hypnotize his patient, but met with obstinate resistance when he commanded her to divulge what had been suggested to her. He did not,

however, relinquish his efforts, but continued the hypnotic seances in the presence of a witness, and at last overcame the resistance of his patient, who acknowledged that her husband had ordered her to commit suicide after two months and to keep his command secret from every one. The insurance company is one that pays—even in cases of suicide, if the suicide be committed more than two months after insurance."

Doctor Saint Clair Thomson, says: "To those of a psychological turn of mind, I would recommend as well worthy of perusal a small work of 230 pages entitled *"The Crowd;" a study of the Popular Mind,* by Gustave Le Bon, and published by F. Fisher Unwin. The subject is interesting to every one, and particularly to legislators and statesmen at the present time when "the voice of the people" is the final court of appeal on numbers of points on which they are just now utterly unable to form an opinion. The power possessed by a crowd is thus accounted for by Mr. Le Bon: "An isolated individual knows well enough that alone he cannot set fire to a palace or loot a shop, and should he be tempted to do so he will easily resist the temptation. Making part of a crowd he is conscious of the power given him by numbers, and it is sufficient to suggest to him ideas of murder or pillage for him to yield immediately to temptation." This feeling may be worked up for good or evil, and is the basis upon which "suggestion" operates when applied *en bloc.* How the orator makes use of it, is well shown in Emerson's essay on "Eloquence," and the peculiar contagium of a crowd is charmingly and perfectly described—though not psychologically analyzed—in Guy de Maupassant's exquisite little work, entitled "Sur l'Eau."

Jules Verne, the great novelist, who died at Amiens, France, on March 24th, 1905, said: "I am second to no living man, in my admiration of the greatest psychologist the world has ever known—Guy de Maupassant—and like all true geniuses, foresaw the trend of human ideas and needs and wrote his stories in the smallest possible compass. Each one of De Maupassant's soul studies is a concentrated lozenge of psychology."

AUDIBILITY OF CARDIAC MURMURS.*

By GEORGE K. VANDERSLICE, M. D, Phoebus, Va.

Certain lesions affecting the valves of the heart and the valvular rings or orifices in a large percentage of cases present, on systematic auscultation, certain adventitious sounds inaptly called murmurs, of varying time, duration, pitch and quality, and very difficult to describe and account for. And in certain other conditions sounds similar in nearly every other respect are produced and likewise called murmurs.

This paper is an attempt to study cardiac murmurs, some phases of their production, their character, the manner and difficulty of hearing them, and some of the conditions that affect their audibility, and incidentally to present some study of the prevalence of heart diseases. The figures presented are not conclusive as to the prevalence of heart diseases, but illustrate in some measure both the prevalence, and the existence of heart diseases probably overlooked.

Discovery of heart disease at one examination:

		Examined.	Rejected for heart dis
U. S. Army (1)	1861-1866	2,252.007 (enlisted)	34.6per 1000, (Cir dis.)
U. S. Army (2)	1896 1901	156,391	24.6
Eng. Army (3)	1894-1900	400,727	16.5
Pruden'al (7-8)	Ord'y	212,166	28.5 (15.5 ac.val'v. dis)

Mortality: U. S. Census, (4), 1900, for registration area, population 28,800,00.

Deaths	per 100,000 population 155		per 100 deaths from all causes 7.6 1900 5.8 1890		
			Deaths	From heart dis.	Per c.
Mutual Life (5)	1843-1898	both sexes	46,525	4.839	10.5
Mutual Life (5a)	1899-1901		12.018	1,567	13
Prudential (7-8)	1891-1898	Industrial	217.018	16,881	7 8

		per		per		per		per
U. S. Army (1)	Reject	1000	Treated	1000	Deaths	1000	Discharge	1000
1861-1866		34.6	5,581	2.5	1,156	.5	10,946	5.
1890-1899 (2)		25.6	1.574	4.8	118	.4	391	11.8
1901 (2)		27.4	346	5.3	21	.3	53	1.

The deaths given occurred in army hospitals and does not refer to those occurring in prisons, on the battlefields, and those discharged at end of enlistment.

In the English Army (2) from 1894 to 1901, 400,727 men were examined for enlistment, 6,625 were rejected for heart disease, 16.6 per 1,000, and then 317 or .8 per 1,000 were discharged within three months as unfit for duty from heart diseases.

And the Mutual Life Insurance Company (5) has had:

44,985 total male deaths from 1843 to 1898; of these 99 or 2.3 per 1,000 occurred in the first year of insurance, 466 or 10.4 per 1,000 occurred between 2nd and 5th years, 565 or 12. per 1,000 occurred in first 5 years of insurance.

For a clearer idea of the valvular diseases, the figures of N. S. Davis, (6) from a large

*Read before the Seaboard Medical Association in Newport News, Va., December 6, 1905.

number of cases studied by him, give a fair estimate of the average duration for the different valves:

Mitral regurgitation, 5.1 years. After loss of compensation, 2.6 years.

Mitral stenosis, 11.5 years. After loss of compensation, 3.6 years.

Aortic stenosis, 7 years. After loss of compensation, 3.8 years.

Aortic regurgitation, 2.3 years. After loss of compensation, 2.2 years.

The average age at death:

Mitral stenosis, 50 years.

Mitral regurgitation, 40 years.

Aortic stenosis, 36 years.

Aortic regurgitation, 36 years.

Sudden death occurred in:

25 per cent. of all cases of aortic regurgitation.

4 per cent. of all cases of mitral stenosis.

If then the general mortality aries from 3.6 to 13 per cent., and examination reveals 1.5 to 3.5, and in the experience of insurance men the general prevalence (7-8) of heart disease among adults is 5 per cent.; and if we take into consideration the average duration of valvular heart diseases, from 2.3 to 11.5 years, then there may be a suggestion of something more than the mere prevalence and seriousness. But, considering also the large numbers involved and the widely scattered examiners, this also should emphasize the case with which such conditions may be overlooked, and the fact that many cases exist without a clew in the heart itself, at one examination, that should lead to their detection. The murmur may be absent in so many cases that this one indication upon which we depend so much should be reconsidered.

A murmur is caused (9), (10), (11), (12), by the passage of a stream of blood under a certain degree of pressure through a narrowed or constricted orifice into a relatively large cavity, and is produced by vibrations in the current of the blood. These vibrations throw the walls of the cavities into vibrations, which in rare cases may be so strong that sound waves are produced at the surface (auto-audible) Some hold that the murmur is due to the lateral vibrations of the walls of the heart or vessels, and a roughened, crinkled, or constricted edge of a valve; and vegetations, "strings of fibrin," (11), etc., are in many cases, the real causes.

This does not take into consideration the sounds produced in hæmic disorders, anæmia, etc., nor the cardio-respiratory sounds, nor those produced by a roughened arch of the aorta, nor by vegetations alone, nor by ruptured chordæ tendineæ, nor by variations in the tension of the choræ tendineæ, nor by continued perforations of the ductus arteriosus and the foramen ovale.

If we consider theoretically the mechanical construction of the heart, the valve lesions seem clear and apparent, and there would seem to be no real difficulty in arriving at a clear understanding of what should result from the existence of the lesion in any and in each case. But when we have to reason back from the results and the condition of the patient before us, and arrive at a correct conclusion as to the cause, the matter is more difficult, and adds to the significance of the minutiæ of clinical experience.

The following general considerations from teachers everywhere are matters of general knowledge: (9), (10), (11), (12), (13), (14), (19).

Murmurs may be loud or soft, high or low in pitch, long or short in duration, blowing, musical, smooth, rough and vibratory, sharp and harsh, may be auto-audible, or may be inaudible under ordinary conditions, or appear or disappear.

A loud murmur, other things being equal, is less serious than a weak and soft, relatively obscure, and hence, easily overlooked, murmur.

Roughness, vibratory character, etc., may be diagnostic, but do not indicate the extent of derangement.

A pure musical murmur seems inconsistent with serious disease, but may begin or end a more important murmur.

A loud murmur, except in aortic or mitral stenosis, is usually indicative of early and comparatively slight disease.

A short murmur is very frequently indicative of ruined valves and failing heart.

Accent and persistence of the aortic second sound in aortic incompetence is favourable.

When the heart sound is heard distinctly as well as the murmur the lesion is probably slight.

When it replaces the entire sound, probably severe.

Pulmonic second sound is more intense than aortic up to 30 years.

Aortic second sound is more intense than pulmonic after 40 years.

Retarded systolic and retarded diastolic murmurs are not of equal significance.

Pulmonic second sound accentuated indicates pulmonic pressure.

Pulmonic second sound diminished indicates weakened right ventricle.

Reduplication of second sound indicates pulmonic pressure.

Reduplication of first sound indicates failing ventricle, though not uncommon in health.

Irregularity of pulse is more common in mitral incompetence.

Intermission, when due to valvular disease, is less frequent and more serious, and indicates a faltering heart action.

No diagnosis is satisfactory that rests upon the evidence of the murmur alone. (10)

Marked dilatation may present no murmur.

Murmurs should be timed by the carotid pulse and not by the radial.

There are many influences that modify the audibility of murmurs, which cause them to be more or less readily heard, sometimes to disappear, sometimes to be heard at one time and not at another; and beyond this, of course, in rare cases they may disappear from a correction of the lesion (12) in the valve; the enlargement of the lesion (12) in the valve; the enlargement another leaflet, or a roughened valve may be repaired, or a dilatation (10) may be corrected, or a stenosis may be overcome by the dilation of the valve ring.

The ear of the examiner is an important factor, since, other things being equal, the more acute the hearing the better the sounds are heard, and this applies especially to ears acute to sounds of low pitch, and some valvular disorders require the interposition of a stethoscope of so-called magnifying capacity to render a murmur audible.

The pitch of the murmur; and this is especially true of regurgitation at the aortic valves, where the amount escaping is small and the pitch is low. Cabot (10) says that some murmurs of this class that are inaudible with any other stethoscope can be heard with a Bowles' stethoscope. And this question of pitch applies to the detection of murmurs occurring in dilatation of the heart with dilatation of the valvular ring, and certain cases where with regurgitation, the whole first sound or the diastole is replaced by a murmur more or less audible—a condition sometimes carelessly described as absence of the first sound, (14) indistinct first sound, second sound, etc., and where the heart muscle is weak, in the later stages of any valvular disease.

The strength of the heart muscle and the force of the blood current. Often with weakening of the heart muscle no murmur can be heard on first examination, but on rest and the use of cardiac stimulants (10) to restore and strengthen the force of the heart and increase the impact of the current a murmur may be heard, and the disappearance of a murmur under such conditions will be an ominous sign towards the end of the course of the case. The use of extraordinary exercises to elicit the murmur in such a suspected case, by reason of the danger of acute dilatation, is not advised.

On the other hand certain feeble murmurs (10) may altogether disappear when the patient is at rest and such a case may easily be made audible by light exercise. These are usually slight lesions.

The pressure of the chest piece of the stethoscope, may render vibratory murmurs (14) of which mitral stenosis is the type, entirely inaudible, and a blowing murmur may be quite inaudible with only light pressure and distinctly audible if pressure is increased.

Musser (12) quotes the studies of Sewall saying: Firm pressure removes:

1. Haemic murmurs over base of heart (exc. Jenner's Pulm. Mur.).

2. An aortic obstructive murmur at the apex.

3. Aortic regurgitant murmur over second right intercostal space.

4. When aortic and mitral regurgitant murmurs co-exist, the aortic murmur is diminished in the greater degree.

Pressure does not markedly affect:

1. Mitral regurgitant murmurs heard over apex.

2. Mitral obstructive murmurs heard at the same spot.

3. Tricuspid regurgitant murmurs over area of greatest intensity.

4. Aortic regurgitant murmurs over apex.

Respiration and respiratory movement of the lungs influence the audibility of murmurs at least so far as they interpose a non-conducting layer of lung tissue between the heart and chest wall.

Organic murmurs are best heard at the end of expiration. (10) And functional murmurs

at the end of inspiration. This seems to be due to the increased overlapping of the heart by the anterior border of the lung, but this rule seems not without variation. Milner Mothergill (15) advised that the heart be examined after taking a deep breath, and also after forced expiration, holding the chest walls in such positions, and he states that an aortic stenosis inaudible otherwise may be heard at the end of inspiration.

Heart murmurs which are functional (16) are most of them cardio-respiratory; they do not constantly follow anæmia and are most frequently heard over the pulmonary region. (10)

Talma and Van Dorsten produced oligæmia and hydræmia, and found in the latter a murmur quite clearly limited to the area of the conus arteriosus.

But Musser (12) states that murmurs in anæmia are usually heard at the second costal cartilege or third interspace on the left, and are generated at the pulmonary orifice or in the cone of the right ventricle; they are soft and low in pitch, louder when recumbent and increased by exercise; they are loudest at the end of expiration; they are not transmitted; are systolic in time and are associated with murmurs in veins.

Posture. Change from vertical to horizontal causes changes (17) in the postion of the heart, elevating apex and drawing up the diaphragm, and changing the relative position of the skin and nipple. The heart is thus more completely covered by the lungs when standing, and thus the cardiac sounds, except aortic, are better heard when the patient is horizontal. Also in the horizontal posture, the venæ cavæ empty more rapidly and increase the engorgement of the right side of the heart in some cases.

Almost all cardiac murmurs (10) are affected by the position which the patient assumes while being examined, and there is marked difference in areas of transmission of murmur. Some diastolic murmurs which are inaudible when the patient is in sitting or standing position may be quite easily heard when the patient is lying down. On the other hand, a presystolic roll which may be heard when the patient is sitting up may entirely disappear when he is lying down.

Diastolic murmurs (10) are relatively little affected by posture, but the majority of cases are somewhat louder in the upright position. Thus in the early stages mitral stenosis may give no murmur when recumbent, or again when audible in the vertical, may entirely disappear with the recumbent posture. Greene (14) says the murmur of mitral stenosis is often absent when the patient is recumbent and present in the same individual when erect; the murmur of mitral regurgitation is often absent when erect and present when recumbent; these conditions may be reversed. Gordon (18) states that in recumbency there is:

Increase of murmur of mitral regurgitation.

Increase of murmur of aortic stenosis,

Decrease of murmur of mitral stenosis.

Unaffected, the murmur of aortic regurgitation.

Thus while there is some difference, or apparent divergence of opinion, the main point holds with regards to the practical phase of the matter; most of our office patients and insurance applicants are examined in the vertical position, and they should also be examined recumbent.

Cabot (10) calls attention to the fact that where the chest walls are thick and heart sounds are feeble, it may be difficult to hear them at all, and that they may be heard more distinctly if the patient is made to lean forward and towards his left, bringing the heart closer to the chest wall.

Valve lesion. There are some variations in the readiness with which the different valvular lesions may be discovered by murmurs. Some are heard much more constantly and regularly than others.

Tricuspid stenosis, one of the rarest valve lesions and rarely diagnosed during life, though Osler (19) seems to think the signs characteristic, are murmur, thrill, and cyanosis. Gibson (10) and other writers believe that temporary tricuspid regurgitation is the commonest of all valve lesions, acting as a safety valve, and yet it is rarely recognized during life.

Aortic stenosis is rare as an uncomplicated valvular lesion. A murmur is heard much more frequently than the lesion actually exists, (10) being due to:

1. Roughening, stiffness, fenestration, congenital malformation of the aortic valves.

2. Roughening or diffuse dilatation of the aortic arch.

3. Aneurism, functional murmurs, pulmonary stenosis, open ductus arteriosus.

4. Mitral regurgitation.

No diagnosis can be made by the murmur, which may readily be absent or difficult to hear, but by the pulse and second sound.

Aortic regurgitations. There is no murmur which more often eludes detection (18) than aortic regurgitant murmur. Of course, this applies to a low pitched, soft aortic murmur which often accompanies, but does not replace the second sound at the aortic valve and which is of evil significance. Low pitched murmurs due to aortic regurgitation may be inaudible with any ordinary stethoscope, and may require the interposition of some of the magnifying stethoscopes.

Thayer (20) states these are sometimes the very hardest to hear. Of course, the amount of blood regurgitating may be slight, and the point of origin of the murmur, just on the ventricular side of the aortic valves, which are situated far back behind the sternum and really in part behind the pulmonary valves, is a very unfavorable one for the transmission of the murmur to the stethoscope. With a feeble heart and low peripheral tension one may entirely lose an aortic regurgitant murmur which has been heard before.

In rare cases (10) there may be no murmur, and the diagnosis may be impossible during life, though it may be suspected by reason of the signs in the peripheral arteries. But though seldom entirely absent, it may be so faint as to be easily and entirely overlooked. This is especially true in cases occurring in elderly people and when the patient has been for a considerable time at rest.

This lesion was discovered ante-mortem in only 49 of 73 cases in a series of post-mortems of heart cases from the records of the Mass. Gen. Hospital, reported by Cabot. (21)

It has been suggested that the patient be given some light exercise and be examined sitting or standing, and the intensity of the murmur will be increased if the patient be examined while he holds his arms vertically above his head. (14)

Mitral stenosis—the most variable of all the valvular murmurs. It may be heard at one examination (10) and not at another; it may be heard in one posture and not in another; and frequently when heard, it is limited to a spot no larger than the bell of the stethoscope (10) in area and very difficult to find. Of the three stages of this disease as given by Broadbent,"(11), the second only is the stage in which the murmur is constant. In the first stage, the murmur is variable and affected by posture, exercise, etc., and in the third stage the murmur disappears and the disappearance may be the result of weakening of the heart muscle or it may be due to the disappearance of the stenosis by dilatation of the valve ring or orifice. Shattuck (13) says that in many cases all auscultatory evidence of stenosis may be absent, or that the murmur may come and go. A presystolic murmur was heard sometime during the course of the case in 76 per cent. reported by Thayer, 60 per cent. Samways, 52 per cent. Cabot.

Mitral regurgitation: This valvular lesion is the most common and the one most regularly and most readily heard. The murmur is wide in its area of diffusion and transmission, and in the series of cases reported from the post-mortem records of the Mass. General Hospital by Cabot was heard in 76 of 82 cases. (21)

Shattuck (13) says, however, the murmur is often heard with great difficulty and exertion may be necessary in order to develop it; and I have seen rest and stimulation make it appear where it could not be discovered before. For if compensation fails, the murmur may decrease and even disappear—a certain amount of heart strength and current force being necessary for its production.

In some cases the lesion may never be correctly diagnosed, (10) when examined first after compensation has failed, and the murmur has disappeared from weakness of the heart muscle which does not improve. The very worst cases are those in which there is no murmur at all.

Cases. *Influence of posture*:

L. H., 12 years old, history of shortness of breath and fainting; heart hypertrophied, area from two inches to right to four inches to left of midsternal line. A systolic murmur, a variable whiff, transmitted but little to the left towards the axilla; in the recumbent posture the murmur is markedly increased, louder and clearer, and more widely diffused.

E. M. H., 65 years old, heart much hypertrophied, and mitral regurgitant murmur, soft but distinct, heard when sitting or standing, but disappears when lying down, and first sound indistinct and distant.

J. J., 38 years old, enormous heart, mitral systolic murmur, sharp and harsh with musical note; area of murmur from right nipple to beyond the axilla on the left, but on lying down much decreased and area limited from right border of the sternum to the left nipple and up to the third cartilage.

Rest and digitalis. Mrs. B., 48 years old, white, history of pulmonary embarrassment and suspected phthisis, condition bad; patient very weak and easily distressed, condition was believed to be largely due to the heart, which was moderately enlarged. There was a sharp first sound with something of marked shock at systole; the pulse was small. I believed this to be a case of pure mitral stenosis, and so stated. On rest in bed and the administration of digitalis and strychnine, a clear mitral systolic murmur appeared. I still believe this was a case of mitral stenosis, with a relative insufficiency. Termination was by sudden death while in bed.

Murmur inaudible.

Mr. Y., 52 years old, white, office work, history negative, of vigorous habits ordinarily, began to fail about the time of severe strain connected with increased work at the time of the Spanish War, and then became readily exhausted, could not walk up stairs without stopping to rest, embarrassed cough, urine normal on repeated examination. Heart very little enlarged, three and a half to four inches to the left of the mid-sternal line; second sound much accentuated; no murmur heard in any posture or after exercise, pulse rather full and collapsing though not at all characteristic. I believe this an aortic regurgitation, but I cannot elicit a murmur.

Flint murmur and digitalis.

A. W., colored, 63 years old, watchman, history of attacks of shortness of breath and fainting for more than ten years; heart enormously enlarged; apex 8½ inches from the mid-sternal line, in the mid-axillary line, much œdema of legs and scrotum, shortness of breath, cannot lie down at night; digitalis used in emergency for œdema. A mitral systolic murmur harsh and slow, lasting through the whole of systole, widely transmitted. Aortic regurgitant murmur, there was a long disastole, and this was divided about equally into three parts: a harsh short or immediate diastolic murmur, then an interval, then a presystolic rumbling murmur up to the systole with its regurgitant mitral murmur. This case is mainly of interest because of the bad effects of digitalis in this stage, prolonging diastole and producing a Flint murmur and increasing œdema and general embarrassment. On the use of strychnine, sparteine and diuretin the œdema cleared up and the patient could sleep lying down, and the Flint murmur entirely disappeared though the other murmurs remained the same.

Acute dilatation.

H. P., 33 years old, under treatment for alcoholism, heart much hypertrophied, mitral regurgitation, albuminuria; during the convalescence he began to cough and then retched and tried to vomit but turned black in the face, and died after a few stertorous efforts at breathing, in less than one minute, while I was standing at his bedside.

Conclusions.

It has not been the purpose of this paper to consider anything but the auscultatory phenomena accompanying valvular heart diseases; not the condition of the heart muscle nor other important signs and symptoms; and it must be recalled that no diagnosis is satisfactory that rests upon the evidence of murmurs alone. "The signs elicited by auscultation and percussion are purely physical signs. There is little or nothing specific in any sound brought out by percussion or heard on auscultation, and one must study and learn as far as possible by personal observation the physical basis upon which these phenomena depend." (25)

"No one can hope to learn to recognize intelligently in the living that with which he is unfamiliar post-mortem. It is especially important that the student should see necropsies performed upon cases which he has studied clinically; this is the only method by which one can safely count upon improving his diagnostic abilities." (25) And in heart diseases the post-mortem records will be full of surprises.

In private practice it may seem possible to wait, and one might be content with the simple diagnosis of "heart disease," but for the loss there would be in therapeutic value, Musser (12) states that "if the heart muscle is healthy, chronic valvulitis yields but few symptoms. Valvulitis of the aortic leaflets admitting regurgitation is the only lesion which may cause symptoms independent of the state of the myocardium."

When we consider the extent to which we de-

pend upon auscultation in the diagnosis of heart disease, and the presence of the murmur, it should make the consideration of the phenomena of murmurs and the conditions that modify the character of the sounds, more important; and the other symptoms and signs should receive relatively more attention—especially when we consider that in many cases we examine the heart, but once in the office, in consultation and at an insurance examination. We should not wonder, but find instruction in the fact, when an insurance company rejects a man whose pulse is reported irregular or intermittent and the heart recorded normal.

The Medical Director (7-8) of one of the great insurance companies wrote me that 55 per cent. of the unsatisfactory hearts were distinctly diagnosed as valvular lesions, but that a great many more of the remainder reported under the indefinite headings of heart disease, hypertrophied, dilated, irregular or intermittent heart, abnomal pulse, etc., should have been reported as actual diseases of the valves.

References.

(1) Records of the Rebellion, Surgeon General's Report.

(2) Surgeon General's Report (for years named.)

(3) Supervising Medical Officer, English Army. Report for years named.

(4) U. S. Census 1900.

(5) Mortality Statistics, Mutual Life, 1843 to 1898. 5a. Annual Reports.

(6) N. S. Davis, Med. News, June, 1899. Analytical Cyclopædia.

(7-8) Personal letters. F. L. Hofman, Statistician and Dr. R. L. Burrage, Med. Director, Prudential Life.

(9) Butler, Diagnostics of Internal Medicine.

(10) Cabot, Physical Diagnosis.

(11) Broadbent, Diseases of the Heart.

(12) Musser, Medical Diagnosis.

(13) Shattuck, Auscultation and Percussion.

(14) Greene, Diagnosis of Heart Diseases, Ins. and Com. Mag., Nov., 1901.

(15) Milner Fothergill, Aids to Diagnosis.

(16) Gould's Medical Year Book, 1900. (Quoting.)

(17) Zeehuisen, quoted in Year Book, 1900.

(18) W. Gordon, Br. Med. Jour., Mar., 1902. Anal. Cyclopæd.

(19) Osler, Practice of Medicine, 1901.

(20) Thayer, Personal letter.

(21) Cabot, Personal letter.

(22) Thayer, Observations on the Frequency and Diagnosis of Flint Murmur Trans. Amer. Phys., 1901.

(23) Samways, Br. Med. Jour., Feb., 1898. Analyt. Cyclopæd.

(24) Cabot, Occurrence of Diastolic Murmurs without lesions of Aortic or Pulmonary Valves, Johns Hopkins Bull., May, 1903.

(25) Thayer, Teaching of Physical Diagnosis, Boston M. and S. Jour., Dec., 1902.

(26) Sayers, Br. Med. Jour. Jun., 1901. Analyt. Cyclopæd.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M.D., Richmond, Va.,
Professor of Principles of Surgery and Clinical Surgery University College of Medicine, Richmond, Va.

LECTURE XVII.

Aseptic Surgical Technique (Continued)—Preparation of Patient for Operation—Preparation of Operating Room and Accessories—After Care of Patient—Technique in Country Practice.

Sterilization of the Hands. The hands of the operator and his assistants are the more frequent sources of wound infection, hence their proper sterilization is the most important feature of the technique. The arms are bared above the elbows, the skin free from abrasions, the finger nails closely trimmed, and rings removed if worn. The practice of washing a little for minor operations and more for graver ones should not be tolerated, for such lowering of the standard of cleanliness is sure to lead to slurring of other details of technique, which some day will end in humiliating disaster. The operating room with the highest standard uniformly maintained will show in the long run the fewest number of infected wounds.

In the choice of an antiseptic solution for the hands it is not only necessary to choose one that will quickly and thoroughly sterilize them, but

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

it must also be capable of doing this over and over again many times a day without so damaging the skin that subsequent sterilization of them is made difficult or impossible. Hands that are cracked and fissured, with split and hang nails upon the fingers, are unsurgical, for they are too stiff for easy dexterous movement and too rough to be readily cleaned. There are many methods of sterilizing the hands, some simple and some complicated. The following will be found an effectual process.

1st. Wash the hands in warm water and green soap. When the nails are softened, pare and clean them with a sharp, clean knife. Scrub vigorously with a nail brush, taking them systematically finger by finger, palm, sides and back, soaking them from time to time in warm suds. Rinse them in running water, and repeat the process until fifteen minutes are thus consumed.

2nd. Immerse in 70% alcohol, rubbing the arms with it until all trace of the soap is removed. This should consume two minutes.

3rd. Soak them for two minutes in 1-1000 bichloride solution.

4th. Wash them in warm sterile water to remove the bichloride.

Should a sterile hand at any time during an operation come in contact with any article that is not surgically clean, it should immediately be immersed in the bichloride solution.

Rubber Gloves. An effective method of securing sterile hands is to encase them in rubber gloves which have been disinfected by being boiled. The hands should be sterilized as described above before putting on the gloves, else an unseen hole or accidental tear may liberate infected sweat into the wound. The rubber glove has many advantages and but one disadvantage. With them we present hands as clean as though they had been boiled. Not only do they prevent infection of the wound, but they also prevent infection of the hands from dirty wounds, a matter of extreme importance when other cases are to follow. The one disadvantage is that it is difficult to do fine and delicate work with them, for they obtund the sense of touch and make difficult the handling of the slippery abdominal viscera. Practice will, however, rob them of many of their objections. All assistants should wear them in an operation, and the surgeon should also wear them whenever they would not materially interfere with the quality of the work or unduly prolong the operation.

As previously stated, rubber gloves should be boiled for ten minutes before each operation. When the day's work is over, they should be washed, dried and carefully inspected for defects—Needle pricks and other small holes can be repaired by patching with a piece from and old glove and Goodrick's cement No. 4.

Soap and Nail Brushes.

Green soap as purchased on the market is usually infected. Even if sterile it soon becomes contaminated if placed in an open bowl on the washstand where the surgeon and staff have access to it. Soap should therefore be sterilized by boiling and guarded against subsequent infection. There is a soap container for sale by Powers & Anderson, of Richmond, that fulfills all requirements. In its absence a number of mugs should be partly filled with soap, sterilized in the autoclave, and a fresh one used for each operation, the soap being removed with a spoon, by the different individuals requiring it. Nail brushes are essential for the proper mechanical cleaning of folds of the hands and the spaces around the nails. An inexpensive type should be bought, so that each member of the staff may have a separate one for each operation. Nail brushes should be sterilized in the autoclave before using. Immersion in a bichloride solution so softens them that they soon become worthless. They should be placed on a sterilized towel convenient to the wash basins and after being used should be thrown in a receptacle provided for them. After the day's work is over, they should be washed, boiled and dried.

Instruments and Their Sterilization.

Instruments should be simple in construction so that they can easily be taken apart and cleaned. They should be kept bright and free from rust. They should be washed, boiled, and dried after each operation. Just such instruments as are necessary should be selected for any operation and no others. The table should not be crowded with instruments that will not be used, nor should the patient be subjected to delay while forgotten instruments are sterilized. All instruments including knives and needles should be sterilized by boiling for ten minutes. It is unnecessary to put bicarbonate of soda in the water, for if the water is

boiled for five minutes before the instruments are put in the free oxygen of the water will be driven off and there will be no rusting.

Knives should be sharpened on a whetstone and leather strop before each operation, just as one sharpens a razor each day before shaving. The temper of the steel will not be materially affected by boiling, and this will be found far more satisfactory than the old method of immersing them in pure carbolic acid, which is at best a dangerous antiseptic.

Preparation and Sterilization of Ligatures and Sutures.

Ligatures and sutures naturally divide themselves into two classes: (1) absorbable, and (2) non-absorbable. The absorbable suture is the ideal suture, for it disappears when its mission is accomplished. It has, however, a great practical disadvantage. It is extremely difficult to sterilize, for it cannot be boiled in water. Non-absorbable sutures are readily sterilized by boiling in water, but do not disappear when the wound is healed. If on the surface they must be removed, and when buried they remain as foreign bodies to be encapsulated by the tissues.

Absorbable Ligatures and Sutures. By the term absorbable suture we mean catgut, for while kangaroo tendon belongs to the same class it has no special advantage over catgut.

Methods of Preparing Catgut. The problems to be met are three. 1st, to render it absolutely sterile without injury to its tensile strength; 2nd, to preserve it in this state until it is needed; 3rd, to harden it so that it will resist absorption for a definite time. This latter step is only necessary for certain special operations, and, as chromic acid or some chromate is usually the hardening agent, such catgut is called chromicized catgut, while the other is termed plain catgut. Both plain and chromic catgut can be purchased in sealed glass tubes, numbered according to size, all ready for use, and unless it is prepared under favorable surroundings by competent persons it is better to depend on some reliable manufacturer, who has a business reputation at stake, than to attempt its sterilization.

The following is the method employed at St. Luke's Hospital.

(1) Take German catgut of any desired size, cut into convenient lengths—say thirty inches—and make into little coils about as large as a silver quarter. These coils are then strung like beads on a thread so that the whole quantity can be conveniently handled by simply grasping the thread.

(2) The string of catgut coils is next baked in a hot air sterilizer to remove moisture and fatty matter. The shelf on which it rests should be covered with gauze or blotting paper. The temperature should be slowly and gradually raised to prevent charring. Beginning at the temperature of the room the thermometer is raised by regulating the burner to 140° F. at the end of the first hour, to 160° F. at the end of the second hour; to 180° F. at the end of the third hour; to 200° F. at the end of the fourth hour, and to 220° F. at the end of the fifth hour.

(3) The catgut is placed in liquid albolene, where it is allowed to remain until perfectly "clear," in the sense that the term is used in the preparation of histological specimens. This is accomplished in a few hours, though it is usual to allow the gut to remain in the oil over night. The transfer of the catgut from the hot air sterilizer to the liquid albolene should be made as soon as the baking is completed to prevent re-absorption of moisture. The albolene should be warmed to temperature of 220° F. before the gut is put in it to prevent sudden cooling.

(4) The vessel which contains the albolene is usually a glass specimen jar. It should have an inner cage made of wire gauze to prevent the catgut from coming in contact with the sides or bottom. After the gut has become clear, the vessel containing the oil is placed on a sand bath and the temperature rapidly raised so that at the end of an hour and a half the thermometer registers 317° F. The flame is then turned out and the jar left on the sand bath to cool to room temperature.

(5) The thread is then seized with sterile forceps, the catgut is lifted out of the albolene and allowed to drip until the excess of moisture is removed. It is then put in a jar containing a solution of iodine crystals, one part, and Columbian spirits (deodorized methyl alcohol), one hundred parts. The thread is then cut and withdrawn, leaving the coils free. Care should be taken not to over-crowd the solution; else white spots will show in the gut where pressure prevented the iodine from reaching it. The catgut is permanently stored in this solution. It is

ready for use in twenty-four hours and will keep indefinitely.

The profession is indebted to Dr. Willard Bartlett of St. Louis for this method. The heat to which the gut is subjected makes the sterility absolutely certain; the oil with which it is saturated makes it soft and pliable; the iodine with which it is permeated makes it antiseptic, prevents its becoming infected, and acts like chromic acid to increase the time taken for its absorption. The advantage of the method over the iodine process introduced by M. Claudius is that no water is employed; hence the gut does not deteriorate and lose strength. The advantage over the Cumol method is greater resistance of the gut to absorption and freedom from danger incident to the employment of an inflammable fluid.

(2)*Non-Absorbable Ligatures and Sutures* are silk, linen, silkworm gut, and horse hair. These can all be sterilized by boiling in water. Silk is one of the oldest suture materials, and from a mechanical standpoint it is the most dependable of the list. It is small, strong, pliant, inelastic and will not slip when properly tied. For fine, accurate work, such as intestinal anastomosis it is indispensable, and is still used even by the most ardent supporters of the absorbable suture. Since it remains permanently as a foreign body it should not be used in pus cases when it can be avoided, for, once infected, it remains as a "dead ligature," keeping up the suppuration until removed or extruded. Catgut, which will soon be absorbed, is far preferable in such cases.

Linen, or Flax, is similar to silk and is used for the same purposes. There is a preparation of linen much in favor at present known as Pagenstecher thread. It is impregnated with celluloil, which destroys its capillarity so it will not act like a wick.

Sterilization of Silk and Linen Sutures. It is easy to sterilize silk and linen sutures as they can be boiled. The difficulty is in keeping them sterile until they are used. The secret of success lies in avoiding any undue handling of them. There is no time during an operation for threading needles, for with wet needles and wet silk it is a tedious and difficult task. The assistant should anticipate the surgeon's need and thread them beforehand.

Take an ordinary operating towel and fold it down the middle longitudinally. Thread the suture into the needle and tack it to the towel at three points, leaving the needle in the last. When four to six threads are thus pinned to the towel a quarter of an inch apart, skip an inch, proceed with the next size and so on till all are in. The towel now contains all the sutures that are to be used, with their needles in a row at the top and the sizes separated by broad spaces so they can neither become mixed nor tangled. The towel is now folded across and rolled up and pinned. This package is sterilized by boiling any left after an operation should be discarded.

Silkworm Gut. This is known to fishermen as grass and is seen as the long, transparent leader on fish hooks. It is the immature silk taken from the cocoon, drawn out into wire-like threads of different sizes and from 14 to 16 inches in length. They are small and pliant, with no capillarity and great tensile strength and make excellent external sutures. To sterilize them, three strands are taken and made into a coil, just as was done with the catgut. These coils are strung on a thread. The string of coils is then boiled in water for ten minutes. Finally the thread is seized with sterile forceps and the coils transferred to a jar containing a solution of 1% scale iodine, 40% water, and 60% alcohol, in which they are kept until used. The iodine stains the white translucent strands, thus rendering them more easily seen. In addition it makes the suture antiseptic. This is an important feature now recognized as desirable in all sutures. It is not sufficient for a suture to be simply aseptic because in its passage through the skin it is liable to become infected with the staphylococcus pyogenes albus ever present in its deeper layers. In order to inhibit the growth of this germ and prevent suppuration and the development of a stitch abscess the sutures should exert a germicidal or antiseptic action.

Horse Hair makes a good skin suture where neat, accurate plastic work is to be done, as in wounds on the face. Either hair from the tail or mane may be used. It is prepared by washing thoroughly with green soap and warm water to free it from dirt, then soaking in ether for twenty-four hours to remove the oil, then making it into coils, disinfecting it by boiling and storing and rendering it antiseptic by putting it into a solution of iodine water and alcohol just as was done with the silk worm gut.

Drainage Materials and Their Preparation. Drainage is employed for two purposes, to remove infected material from wounds or cavities; or to remove such fluids as blood or serum which offer an inviting soil for bacteria and mechanically interfere with the proper healing of wounds. For these purposes, rubber and glass tubing and strips of gauze are used.

Rubber tubing can be purchased from any surgical supply house in sizes ranging from that of a goose quill to as large as the thumb. It should be disinfected by boiling for ten minutes and kept in jars containing 1-1000 bichloride solution. If it is known that it will be employed in a given operation it should be reboiled with the instruments. Fishing it out of the jar at the last moment causes delay and endangers infection from contact with unclean edges. Before placing the rubber drain in position small holes should be clipped in the sides by doubling it on itself and cutting away the corner with scissors. It is usually better to bring the drain out through a separate stab incision in the skin. This enables the surgeon to locate the outlet of the drain at the most dependent part, an important point, as the tube cannot drain up-hill, and also permits of the complete and immediate closure of the primary incision, a procedure which prevents complications and hastens the patient's recovery.

Glass Drainage Tubes are especially designed for draining the peritoneal cavity. They are from four to six inches in length and from one-fourth to one-half an inch in diameter. The upper end is flanged so it cannot slip into the abdomen, while the lower inch or two is perforated with holes. When occasion requires the tube is placed so that the lower end reaches the most dependent point in the pelvis and its upper end emerges through the abdominal incision. It is aspirated as often as the cul de sac fills by a glass syringe with a rubber tube on its tip. Glass drainage tubes should be disinfected by boiling.

Gauze Drainage performs a function which the others cannot do. It drains up hill. It does this by capillary attraction like a lamp wick. If dry gauze or cotton is packed around a lamp wick and replenished as often as it becomes wet it will empty the lamp of oil more quickly than a flame. This must be borne in mind in using gauze drainage. Keep dry gauze and cotton on the upper end of the drain. When the gauze gets choked with pus it stops draining and must be replaced with fresh strips. Gauze drains are made by taking strips of plain aseptic gauze, or of iodoform gauze, and laying them parallel with each other until a drain of the desired size is obtained. The strips may be cut by a nurse but can be bought ready made on the market with woven edges so that there are no ravellings or loose threads. The strips vary in width from one-half to three inches. The advantage claimed for the iodoform gauze over the plain is that the iodoform prevents the development of saprophytic organisms and the decomposition of wound secretion. Certainly it will be found that a wound drained with iodoform gauze has less offensive odor than a similar one drained with plain gauze. Gauze strips should be sterilized by packing lightly in a glass ignition tube plugging the mouth with absorbent cotton, and subjecting to heat under pressure in the autoclave.

Rubber Tissue. One of the objections to gauze drainage is that granulations grow into its meshes from adjacent tissue and render its removal at times difficult and exceedingly painful. This objection may be overcome by encasing the bundle of gauze strips with thin rubber tissue, wrapping it about it as a cigarette smoker wraps the paper about the tobacco. The ends of the gauze are allowed to extend an inch or more beyond the rubber tissue. This prevents adhesion of the gauze to the surface of the wound and does not interfere with its function as a drain. Rubber tissue can be brought from any dealer in surgical supplies. It does not withstand heat, hence cannot be boiled. It should be prepared for use by cutting in squares 4 by 6 inches, washing with soap and water, and then stored in 1-1000 bichloride solution. When needed for use it is taken out of the jar with sterile forceps and rinsed in plain water. Only a limited amount of rubber tissue should be prepared at a time, as in a few weeks the solution causes it to lose its strength and become friable.

Sponges are used principally to remove blood from a wound. The name is a relic of the time when marine sponges were used. Now all surgeons employ gauze as not only cheaper but safer. Sponges are made by taking a piece of gauze ¼ of a yard square, turning in the edges and folding it into a square about 4 by 4

inches. These are put up in loose packages and sterilized in the autoclave.

Diaphragms or Gauze Towels are used to wall off or protect parts of the abdomen, to dam back the intestines out of the pelvis, and to keep exposed viscera and raw surfaces warm. They consist of four thicknesses of gauze, hemmed at the edges. They are about 18 inches square, and have a piece of tape sewed to one corner. When put into the abdomen this hangs out and is clamped with forceps as an additional precaution against leaving it in after closure.

Dressings should be cut in convenient sizes and shapes, ready for use, so there will be no delay in applying them. If gauze is cut into rectangles 7 by 8 inches, by folding four or five thicknesses across, pads 7 by 4 inches are made which are convenient for use. The frayed ends, when packed against drainage strips rapidly disseminate fluids through the entire dressings. A padding of these $\frac{1}{2}$ inch thick is placed over the incision and fastened in position with adhesive strips. This is then covered with a pad of cotton and the whole secured with a binder or roller bandage.

Abdominal Pads are used in dressing abdominal wounds. They are made of cotton $1\frac{1}{2}$ inches thick and 8 inches wide by 10 inches long. They are covered by a double thickness of gauze to prevent the cotton flying and to facilitate handling.

Perineal Pads are made the same way, only they are 8 inches long by 3 wide and one inch thick. With each is a T bandage to hold it in position.

Dusting Powders for clean wounds have been practically discarded. Those with iodine as a basis at times decompose, making an irritant. Others form a crust, which keeps in the secretions of the wound or prevents their removal by clogging the drainage. As good results are obtained without their use, and the powder box is simply one more source of possible contamination in the operating room.

EHRLICH'S THEORY: ITS EXTENSION TO PHYSIOLOGY.

By CHARLES M. HAZEN, M. A., M. D., Bon Air, Va.,
Professor of Physiology, Medical College of Virginia.

All departments of science and of thought have a certain relation to each other. When, therefore, new facts or theories are brought to our attention we must consider what their bearing may be in reference to other departments of knowledge than those to which they immediately belong. By such consideration it is frequently the case that wide reaching generalizations result, which may be of the utmost importance in solving vexed questions and in lighting up obscure regions of thought.

This is especially true of the great fields of comparative anatomy and physiology. Indeed, it may be said that no fact of biology exists which does not have a bearing on human physiology.

Medicine is an unfinished science. It is unlike *astronomy*, in which coming events can be foretold for ages to come; or *logic*, of which Aristotles' works are a complete treatise; or *chemistry*, in which almost all the reactions possible between known substances have been worked out. There are many things surprising us daily in the study of medicine and it will not be until we collect more facts and submit them to more complete classification, that we will be able to avoid surprise, to foretell results, and to raise medicine to the rank of a true science.

The stupendous work of laboratories and hospitals during the XIXth century has assembled a mass of facts which requires the exercise of scientific imagination to arrange and co-ordinate. And it is true especially that in the border land of pathology and physiology, a great deal is to be done to use this material, furnished by studies in bacteriology and pathology, for the benefit of the science of medicine. This is necessary because all medical facts must be stated in terms which give their physiological value. Physiology is the basis of medicine; "nature (physis) heals;" to heal is to restore to the natural, or physiological condition. Besides this the facts of pathology and bacteriology, regarding these sciences as pure sciences, are physiological in the broad sense, or, at least, biological; and, as noticed above, require to be correlated and interpreted in the light of human physiology.

The side-chain-theory of immunity is one of those far reaching generalizations that bear not only on the immediately related field of thought in which it has been elaborated. It has a much wider application than to the ex-

*The author assumes that there is such a thing as "vital action," whether or not it may be reduced to purely physical or chemical force.

plination of immunity. It pervades, in fact, the very sub-structure of cellular biology and of physiological chemistry.

Twenty years ago Ehrlich announced, as an explination of certain digestive problems, the idea of "side-chains." In the present theory as used in pathology, it is stated that the cell has a strictnre which is stable throughout its varions activities, but that this structure has associated with it more or less mobile parts which may be lost, replaced, substituted, changed, added to, without essentially affecting the real condition and nature of the cell; these side bodies may be used for various purposes, such as combining with substances from without and neutralizing them: or, under the stimulus of such action, more side bodies of a suitable character are formed and contribute to the formation of antitoxins, thus bringing about immunization.

It is much more convient and logical to refer to the *living proteid molecule* constituting protoplasm rather than to the cell. We thus eliminate reference to the question of cell—structure, and to the question of "vitalism" as opposed to purely physical or chemical force; we can thus bring together the facts of the new chemistry and advanced physical theory and fit them in with the results of the most recent work in the medical laboratories.

The physicists', Graham and Hardy, have studied the nature of colloid substances, such as albumin, and conclude that the molecule is large; also that it can, like crystalloids, take up and give off molecules of H_2O, by chemical change. In this way a proteid can assume the condition of a *hydro-sol*, containing more water and being in a more fluid condition, or of a *hydro-gel*, containing less water and being in a more semi-solid condition. We are aware also, that the proteid molecule is of variable formula and that considerable differences in composition, or in the percentages of C, O, H, N. S and P, are possible within physiological limits. It seems altogether probable, therefore, that the construction of the proteid molecule is roughly like that of *benzine* (the illustration ordinarily given), with its central ring and side atoms, which can readily be substituted, and by the result of which possible substitution, important properties result. (The groundwork of the proteid molecule seems to be an assemblage of a great number of *cyan-alcohols*, MCN and CH_2O being apparently the basis upon which many organic substances, as proteids and carbohydrates, are built.)

Now in the course of life activity, the foremost charges which organic living material—the living proteid molecule—has to do with are *exidation, deoxidation, hydration and dehydration;* these, with a comparatively small amount of reaction with H_3N and CO_2, as well as with the metallic bases Na, k, Ca, Te, &c., make up practically the sum total of the chemistry of life. *Oxidation, deoxidation, hydration, dehydration*—these are the chemical changes which occur in respiration, alimentation, excretion. And we have reached the threshold of the inner temple of life when we ask, "How are these processes brought about?"

We cannot entirely avoid the intrusion of "vitalism"* into the discussion; but we can dodge the issue by going no deeper than to compare the vital action of the cell with such influence as that exerted by platinum (finely divided in water), in causing decomposition of H_2O_2 (deoxidation), and other so-called *catalytic* or *enzymic* effects. Let us suppose that finely divided platinum has an affinity for O. which enables it to take it up and hold it until some more active affinity exerts itself, it would then be acting as an "oxygen-carrier." Suppose platinum to have a like affinity for the H_2O molecule, and it would have (as it does) an enzymic and digestive action on lævulose.

Now, in the case of platinum, no side-chains are necessary and the union, or separation, is immediately between the metal and the O or H_2O; also the action of the platinum as a "carrier" or enzyme is limited in its variety. But proteid is constructed for a wide range of activities, such as are necessary that there may be that continued adjustment between the life of the cell and the changing conditions of health and disease. It is, therefore, probable, that the enzymic, or carrying action of the proteid molecule, by which oxidation and deoxidation, hydration and dehydration, are occurring all the time around all the cells of the body, by means of which nutriment is used and waste produced (CO_2, H_2O, $(NH_2)_2CO$, &c.), is by the temporary union of O and H_2O with side-atoms or groups of atoms.

This was the view of Ehrlich when he originally projected his side-chain theory from a physiological standpoint. And the development

of this idea will go farther to explain the facts of cell-life and physiological chemistry than any other generalization which has ever been made. This theory does not conflict with the previous theories of Traube and Hoppe-Seyler; but may be stated as an extension and elaboration of them. To state the theory: *The living proteid molecule by virtue of its side-groups of atoms has the power of combining, temporarily or permanently, with* O, H_2O, *and other substances without change in the essential character of the proteid molecule (or of the cell to which it belongs); by means of such union it acts as the "carrier"* (Traube's theory), (enzymic action) *of* O *and* H_2O *to waste* H *and* N (Hoppe-Seyler's theory) *from dead proteid to fast and carbohydrates;* it *brings about in the same way other reactions, such as between the carbonates and phosphates and the alkaline bases.*

Especial applications of this theory to the functional activity of any organ will be found to yield satisfactory explanations of the organ's especial activity. The proteids of the cells of different organs are of such composition and have such side chains as suit them for their especial activity, as in the case of muscle cells, or liver cells.

The very occult subject of *nerve-impulse* is thus explained by Prof. Mathews, of Chicago University: The changes which are successively undergone by the molecules of the nerve-fibre are from a *hydro-gel* to a *hydro-sol* and back again, each successive molecule taking up and giving off to its next neighbor one or more molecules of H^2O. This process is thus a *wave of hydro-gelation.* The nerve pulse may be started, for instance, by a solution of Na Cl, as i nthe common laboratory experiment with the frog, the Na, or perhaps, the Cl, ions are substituted for molecules of H_2O held by one of the side groups of the molecule of the nerve-fibre. This seems to be a satisfactory explanation of what has long been thought to be probably an electrical phenomenon, the difficulty being, however, that electricity travels 185,000 miles per second and the nerve-impulse only 100 feet per second; but the above theory can be stated electrically by comparing it with the slower passage of the electrical charge through the fluid of a battery cell, the anion and leation of the acid (H Cl, for example), being disassociated and recombined from molecule to molecule in a manner similar to that described above; and by remembering that probably chemical reactions and electical activity are always co-existent.

The formation of the gastric juice, may be described after a similar fashion, the molecule for example), being dissociated and recombined from molecule to molecule in a in their *nascent* conlition are much more easily recombined.)

If, now, as physiologists, we extend our field and take in the physiology of abnormal and depraved conditions, we will find it logical to think of the molecule, whether in special cells (Mentschnikoff), or loose in the blood-stream, as having the power, by virtue of side-chains, to meet any condition in which it finds itself, as in the production of antitoxins to resist infection.

This theory lends itself to the study of almost any problem of biology, such as differentiation by development, which is in part, at least, the gain or loss of side groups of atoms needed for especial functions, heredity being the transmission of certain particular side groups (Adami).

Like the nebular hypothesis—still unproven and perhaps sometime to be displaced—the present theory is of the utmost importance, and will yield in the future, much of value in physiological and pathological theory.

PNEUMONIA—SOME VIEWS FROM A PRACTICAL STANDPOINT AS TO THE TREATMENT, BASED ON ADVANCED IDEAS OF CAUSATION AND PATHOLOGY.*

By JOHN N. UPSHUR, M. D., Richmond, Va.

Ex-President of the Richmond Academy of Medicine and Surgery; Ex-President and Honorary Fellow of the Medical Society of Virginia, and the Tri-State Medical Association of the Carolinas and Virginia; Honorary Fellow of the State Medical Society of West Virginia, etc.

The serious nature of pneumonia, as to its mortality, is at the present day of absorbing interest to every man, not only in the medical profession, but to the laity also. The fact is that its mortality is on the increase—that it is in excess of that of consumption, typhoid fever, diphtheria, erysipelas, influenza, measles, puerperal fever, small pox, scarlet fever, and whooping cough. Why should this be so? The old views

*Presented to the Tri-State Medical Society of the Carolinas and Virginia, at its meeting at White Stone Lithia Springs, S. C., February 27-28, 1906.

entertained as to the causation and nature of pneumonia have been superceded by the more modern and advanced ideas, and it is now defined as an *"acute, infectious, self-limited,* disease." This is a radical change from the old view, which regarded pneumonia as a *local inflammation* of the lung, usually caused by cold and exposure. The modern idea is that pneumonia is a constitutional disease caused by a specific germ, and the lesion in the lung simply the local manifestation, just as involvement of Peyer's patches is in typhoid fever. Of course, belief in this later view, of necessity, has caused a radical change in the treatment of the disease.

I ask, is the increased mortality due to the *new, do nothing, expectant* method of treatment? We are told that statistics prove that the treatment is correct, prove the increasing gravity and mortality of the disease. But I ask, if the increasing mortality may not be due both to errors in diagnosis, and to confusion of other forms of pneumonia? We know that catarrhal pneumonia is very fatal, usually occurs in decline of life, and is not claimed to be caused by any germ. In his recent work on Practice, Dr. Hare says (p. 142), that the specific germ, the "micrococcus lanceolatus," has been found by Prochaska in thirty-eight out of forty consecutive cases, and by Rosenow, in seventy-seven out of eighty-three, and has discovered it in the blood, as early as twelve hours after the initial chill. *"On the other hand the mere presence of the pneumococcus in the blood of a patient does not necessarily mean that pneumonia is present, for it has been found in* the blood in cases of *tonsilitis, otitis, arthritis,* and in *pulmonary oedema"* (italics mine). Now I think it will not be denied that the *presence of the bacillus of Eberth is absolutely diagnostic of typhoid fever,* and of no other disease. It is true that the plasmodium of malaria may be found in the blood at the same time, but it is only the existence of a double infection, and the latter is dwarfed in its manifestations by the former. The bacteriologists tell us that the pneumococcus is found almost universally in the mouth and produces pneumonia when the system is depressed by any cause, as for instance, cold. Would the same presence of the typhoid germ have so small a return in the production of cases of fever, acting only when the depressing factor was at work? *Per contra,* is it not true, that the healthiest individual subjected to contaminated food or drink will develop typhoid fever, and, furthermore, the more stalwart and robust the subject, the higher and more dangerous the type of fever developed? Certainly it has been the experience of the writer that subjects considered delicate have usually run a more favorable course of fever.

I would not be dogmatic, and I feel reluctant to set up my views against those of wider observation; but with the facts as stated, I am forced in the direction at least of questions concerning modern ideas of causation and nature of pneumonia. Especially is this true when the all important question of treatment is to be considered. The question of termination by crisis is well to the fore, but it is admitted that it also terminates by lysis, and the time of the crisis is fixed within quite wide limits—*three* to *eleven* days. The question of crisis is only connected with croupous pneumonia; I am not aware that it is claimed for any other variety of pneumonia.

The development of the disease more frequently in men is due to the greater prevalence in men of depressing causes, such as excessive fatigue, exposure, alcoholism. A significant fact in its bearing on the mortality in pneumonia is alcoholism, and incidental to it, high living, ingestion of rich foods, and the consequent tendency to the development of cardiac disease, Bright's, atheroma of blood vessels. Many of the cases treated in hospitals from which we get our statistics are alcoholics who suffer from degenerative changes in the vital organs or some one of them; I would especially emphasize the fact that it is not so much the man who 'sprees' as the steady drinker, who never gets from under the influence of intoxicants; nor does it apply entirely to alcoholics, but drug dopes come under the same class. There are persons who have a common habit of taking patent remedies of all kinds—headache cures, kidney cures, etc., which contain, all of them, more or less active constituents which depress the heart. I am not convinced of the contagiousness of pneumonia, though much has been advanced in proof thereof; but it is always wisdom when a question is raised, and a doubt arises, to err on the safe side, and keep these cases isolated as far as possible, exerting due care, especially in the disinfection and disposal of the sputum.

Based on the most advanced ideas of the cau-

sation, nature and course of the disease, the *treatment* recommended impresses me as being of an expectant, do-nothing, kind. Dr Hare in his recent work on Practice, tells us—"that the treatment varies greatly with the condition of the patient suffering from the disease; when it attacks the stout and robust, the only duty of the physician in a large number of cases is to watch the symptoms of the patient, to insist upon rest in bed in a well-ventilated, quiet room, and to administer a sufficient quantity of Dover's powder, bromides, or morphine, to control pain, if that symptom is excessive. If, on the other hand, the patient is one who has been addicted to alcohol in excess, whiskey or brandy should be given him in amounts varying with the quantity he has been accustomed to injest daily." This, he explains, "is done to prevent the development of delirium tremens." He also enjoins the physician "not to meddle with the course of the disease unless the symptoms are so pressing as to require interference." He recommends alcohol as one of the best stimulants, and says rarely does *the patient require more than eight to twelve ounces* (italics mine). For carliac failure, he recommends "aromatic spirits of ammonia or Hoffman's anodyne." "For cardiac weakness, strychnine should also be borne in mind." He makes a qualified recommendation of tincture of belladonna; and says, *"if the cardiac weakness is due to toxæmia with high temperature,* the *heart should be quieted by the application of an ice-bag to the pericardium."* He says that he has known *"application of ice-bags and cold sponging of the body, followed by manifestation of the digitalis influences."* In collapse, he uses hypodermics of strychnine and atropine and hypodermoclysis of normal salt solution with a drachm of 1-1000 adrenalin solution. To control temperature, he recommends sponging with tepid or cool water, but says it is "not to be carried to the extent that is done in typhoid fever."

I have thus outlined the most modern treatment of pneumonia as given by a very recent authority. I am constrained to have the temerity to differ. I cannot approve of what looks like to me a do-nothing policy. The administration of *suitable remedies promptly* in every case may not, often will, make the difference between life and death. Experience has demonstrated that the "robust and strong" require prompt measures as well as others. The very fact that they are "robust and strong" may be the reason for a high grade of inflammation in the lungs, and damage to a vital organ, fatal in its results. To prevent such a consequence is of the greatest importance. To put the patient to bed in a well-ventilated room does very well, but *simple watching don't help without other more active means.* I cannot approve of the administration of Dover's powder, or morphine, for the control of pain—it is like the ostrich sticking its head in the sand—bromide is only a hypnotic, is not analgesic in its action, tends to upset the stomach, and to cause cardiac depression. The greatest merit in the Dover's powder is its diaphoretic action, which is decidedly increased if combined with quinine. Dr. Hare's suggestion as to alcohol in depressed cases is full of harmful possibilities; far better give the patient sustaining agents, such as caffeine, strychnine, active nutrition in the form of animal broths and hot milk. In "cardiac failure" the suggestion of aromatic spirits of ammonia and Hoffman's anodyne—is a reliance upon remedies of too feeble power; I do most heartily condemn the cold sponging, or local application of ice poultices under any circumstance—such treatment must be harmful. When collapse is profound, I fail to understand how benefit can come from the subcutaneous injection of normal salt solution; absorption is scarcely possible, and the general condition is primarily due to the depressed circulation from an overburdened and possibly enlarged heart.

The method of treatment which seems to me most rational is, first, to open the bowels with a good mercurial purgative, followed by an active diaphoretic of quinine and Dover's powder; then, full doses of five to ten grains of carbonate of ammonia every two hours, in combination with some active expectorant like senega; turpentine stupes locally to areas of affected lung, during the first stage. If pain is very acute, local dry cups over seat of pain. In the second apply dry cups over seat of pain. In the second monia may be substituted for the carbonate; blister of good size (6 by 8 in.), over consolidated area, and strychnine nitrate (1-20 grain) every four or six hours as the condition of the heart may require. Due care must be taken of the stomach, and an abundance of concentrated nutriment—liquid beef peptonoids with creosote, milk, and animal broths, may be given. The tendency to death is by heart fail-

ure. The heart is pumping blood against a solid area, resulting in engorgement and dilatation of the right heart; renal complication is due to insufficient circulation and a condition of passive congestion. Hare says, "the tendency to death is due to relaxation of the blood vessels," but the cardiac condition is back of this. The patient becomes cyanosed and the pulse feeble and rapid; the very common agent used in this condition is inhalation of oxygen gas; why? It does clear up the cyanosis temporarily, but there is no aid to the heart to unload its engorged right ventricle, and relief, if any, is only temporary. The administration of the sulphate of sparteine, on the other hand, acts directly on the heart muscle, tends to aid the ventricle to throw off its engorgement, and improve the condition of the systemic circulation. Sparteine is an invaluable adjuvant to strychnine, and caffeine too is an agent of merit deserving our confidence. Sparteine not only slows the rapid pulse and causes increased tension and tone, but it modifies the function of respiration, making it fuller and slower, and gives the diseased lung some quietude and rest; it also acts upon the kidneys and tends to the relief of the renal, passive congestion. Sparteine has the power of making the irregular pulse, fuller, steadier, and slower than any other known agent. I have had no experience with adrenalin, but would suppose it a very valuable agent in conditions of collapse, used hypodermatically with strychnine. Of the exhibition of digitalis, I do not think very well; it is a remedy of uncertain action, and I would prefer to rely on the remedies already mentioned, for sustaining heart action.

Such are my convictions, based on many, many years of clinical observation and experience; and though I have not the much vaunted statistics as corroborative evidence, my results have been such as to make these convictions the stronger. It is said that nothing lies like figures, except facts. This may, or may not, be so.

210 *West Grace Street.*

SCORBUTUS IN INFANCY.*

By LOREN JOHNSON, M. D., Washington, D. C.

Scorbutus has been known and recognized since the earliest times, in all parts of the world, but it is only recently that it has been differentiated in children from rickets; and today many are still of the opinion that it is simply an acute from of rickets.

In Germany, only a year or so ago, articles were appearing in the journals describing cases of scurvy in children, showing that it had been of recent recognition as a distinct disease.

No exhaustive work had been done until a few years ago. The American Pediatric Society undertook to collect and tabulate all the cases occurring in this country, and even then, after corresponding with all physicians known to be interested in Pediatric work, and after advertising in many Medical Journals for the reports of cases from any source in the country, after all this effort, I believe that they were able to collect only about three hundred cases. This showed, probably, that scurvy was not recognized, rather than that it did not exist, for it is not probable that this disease in infants is a new condition, or that it is as rare as these reports would indicate.

Scurvy in children is one of the most interesting and elusive diseases which the practitioner is required to diagnosed and to treat. It is interesting because of the rapidity with which it yields to the proper treatment, and on account of the various etiological factors. It is elusive in its nature on account of its diagnostic difficulties, as it may simulate so many other conditions; and I suppose that there is hardly a disease which flesh is heir to which, when rightly diagnosed and rightly treated, will give such prompt and apparently wonderful results. Many a physician's reputation is made in a community by clearing up a puzzling and painful train of symptoms by the addition of orange juice to a scorbutic's diet. I presume that there is no disease which is oftener wrongly diagnosed in its early stages than scurvy, and simply the physician, in considering the probabilities in any given case, does not consider scurvy as a possibility. Of course, if the spongy bleeding gums are in evidence, our attention is immediately directed in the right di-

*Read before the Clinico-Pathological Society of Washington, D. C.

rection, for that is the one cardinal symptom of scurvy which we always have in mind. When, however, we are called to see a case of hematuria, we consider some bladder or kidney trouble; when our attention is called to the fretting and crying out during its bath or when handled, we think possibly of its teeth fretting it, of the weather being too hot or too cold, or of some indigestion. When on examination we find a swelling along the thigh or along any of the long bones, which may be tender and which seem to effect the baby's general condition badly, the surgeon may think of an osteosarcoma, and more than one infant has been operated on for this condition under a mistaken diagnosis.

Intestinal and stomach hemorrhages may suggest ulcer. Marked protuberances of the eyeball may suggest some growth behind the eyeball. Purpuric spots over the body may suggest any of the different purpuras, and, finally, probably the most common mistake is to consider the painful and swollen legs as an evidence of rheumatism. Yet scurvy may be ushered in by any one or more of the above symptoms, without any evidence of spongy gums. Hence, the terms "interesting" and "elusive" apply very well to this condition.

Two cases in the same family came under my observation last Spring, and they differed in one important particular from the ordinary invasion of symptoms inasmuch as spongy gums were the first evidence of the disease which, of course, made the diagnosis easy. These were two children aged eight months and two years, respectively, but bottled-fed with boiled milk since birth. They had been perfectly well a few days before I saw them, when the mother noticed that they did not take their food well, were irritable, and that there was a freer secretion of saliva. Upon examination, I found spongy, bleeding gums with no other evidence of any of the signs of scurvy. Orange juice was given, followed by a prompt recovery.

Of course one cannot say postively that these were cases of scurvy, but as they had both been fed on boiled milk entirely, and as both were promptly relieved by adding orange juice to the food, the diagnosis favored scorbutus.

The underlying etiological factor or factors have not been determined. Rotch says that "it has a significant relation to the deprivation of the individual of fresh food." When, however, we consider that breast-fed children develop scurvy, we can only say that there is an absence of some element in the food which is necessary to the infant's welfare, or that some element is present which proves harmful.

In this connection, it may be noted that scurvy, although a comparatively acute disease as compared with rickets, is probably not due to the sudden invasion of any outside infection, or to any sudden change in the milk; but seems to be the result of the use of an improper food over a long period of time—thus showing that at last it has a sort of cummulative action, or, showing that for a long time the tissues can resist the new element, being finally overpowered, or that, if it is an absent element, the body could get along for some time without it. It is interesting also to note how quickly the symptoms disappear on the use of orange juice, rather suggesting that the element of the food which causes the outbreak of scurvy, whether it be something wanting or something introduced, is present in the food in minute quantities. This would account for the fact that the infant can take the food over several months duration before the body tissues feel the change, and also why the orange juice, which evidently supplies in large quantities the missing element, so quickly restores the equilibrium.

To describe scurvy is an extremely difficult thing, for it manifests itself in so many different ways, and perhaps the simplest statement is the best. Rotch says that "scurvy is a constitutional disease, characterized by anemia and a tendency to hemorrhage;" and, with that statement, we have said all that we actually know, and all that may be further said must be theorizing as to its cause.

In the series of investigations by the American Pediatric Society, it was noticed that a large proportion of cases had been fed upon cooked milk and different proprietary foods; hence, the condemnation of this method of feeding. Although many thousands of children are fed in this way and come to no harm, just as many are exposed to different contagious diseases and do not contract them; yet, when it is shown that a much larger number of those who develop scurvy have been fed upon other foods than raw milk, it would seem as though it would be well to be extremely careful how anything but raw milk is given over long periods of time.

With regard to the pathology of scurvy, an

insufficient number of postmortem examinations have been made by one man to determine all of the lesions to be found, but as work has been done, no particular changes have been discovered in the blood, nor have any constant organisms been isolated which seem to have any bearing on the disease. Hemorrhage, however, seems to be a constant accompanying feature, and it may take place in any organ and at any place—it seeming to have a special predilection for the long bones, more often the femur. This hemorrhage tendency is always subperiosteal, and hence the tumor is confined between the periosteal attachments to the bone. This explains why, when the hemorrhage is in the neighborhood of joints, it can be definitely determined that the distal end of the diaphesis is the limiting demarcation line of the swelling, thus differentiating the tumor from any strictly joint disease.

The first symptoms may be obscure and indefinite and usually are. A progressive anemia, some slight gastroenteric disturbance, possibly a rise of temperature, and, after a longer or shorter time, evidences of pain on handling will be noticed; the infant will have a frightened look whenever it is approached; the limb first effected will be held fixed in one position, suggesting the possibility of a paralysis, and later, a painful swelling may be noticed anywhere along the long bones, frequently at the diaphesis of the bone. Some sweating of the head may be noticed, with irritability at night which, with the swellings at the bone ends, may suggest rickets. Later on, purpuric spots develop over the skin, the gums become spongy, hematuria, hematemesis, proptosis from hemorrhage behind the eyeball may develop.

With reference to the spongy, bleeding gums, it is the customary belief that this condition is only present when the teeth have come through the gums, but I have seen several cases within the last year where there were quite marked symptoms and no teeth.

Probably the explanation for this lies in the fact that the usual age for the appearance of scurvy is at about the eighth month, after the appearance of the first teeth.

As I have said before, to properly diagnose scurvy, one must always have it in mind; else the erroneous diagnosis of rheumatism, rickets, anterior poliomyelitis, etc., will be made.

From rheumatism, it may be differentiated by the swellings always being above the joints, and by there being little increase of temperature either local or general.

From rachitis, by the absence of a rosary and by the difference in location of the swellings, though the two diseases may be coincident, and frequently are, rendering it difficult to say which disease predominates.

From anterior poliomyelitis, by less sudden onset and by the absence of true paralysis.

The prognosis is usually good if an early diagnosis is made, but if allowed to run on some weeks unrecognized, until the infant's vitality is lowered markedly, the prognosis is grave.

I believe that incipient scurvy among infants is becoming more and more prevalent every year, for the following reasons: The number of infants fed on proprietary foods, which are advertised to the laity, is increasing every year; hence the more indiscriminate and prolonged use of foods lacking in some element necessary to the perfect nutrition of the child.

It is very easy, after trying every modification of cow's milk, and finding at last some prepared food which is easily digested and on which the infant thrives, it is very easy, I say, to shut our eyes to the future and allow the child to stay on this diet too long, and especially when the mother sees everything going well. She is loth to return to a milk which has caused so much trouble.

Secondly, the development of incipient scurvy is in cases of marasmus, or in any difficult feeding case, even though it be in the hands of a master of infant feeding, where the diet is kept low in proteids or fat, or both, for months, just maintaining the spark of vitality and nothing more. Amongst these cases, scurvy is especially liable to develop and does develop with surprising frequency. Any physician treating such a case needs to be constantly on guard for the first evidences of scurvy, which are usually crying of infant, during its bath, from the pain caused it by handling its tender limbs, or evidences of blood in the urine. If scurvy should develop in such a case and go on unrecognized, and be treated with salicylates, the already weakened little wife would rapidly succumb. The physician, however, is often in despair for he feels that if he gives raw milk of a formula commensurate with the child's age, in order to head off the scurvy, he will only be killing the

child with a food which cannot be assimilated. Fortunately, however, contrary though it be to the general accepted views, it is not necessary to change the food at once, but the addition of orange juice will be all that is necessary.

This must be so, because if scurvy develops through the absence or presence of some element in the food; incompatible with infantile ment in the food, incompatible with infantile wanting element or destroys the harmful one, it necessarily follows that its addition to the diet will meet all the indications without changing the diet immediately. If this theoretical contention is true, and can be demonstrated clinically, as I have seen demonstrated in several of my own cases, and in cases of others, notably, Morse, of Boston, then it would seem that it would be impossible to use cooked milked and low formulas with impunity, so far as scurvy goes, provided orange juice is always a part of the dietary.

Therefore, it seems to me good practice to always make orange juice or beef juice a part of all infants' diets.

Certainly it would appear from our inability to fix upon any cause for scurvy that the last word has not been said in regard to the chemistry of milk and the relation possibly of the mineral elements to the nutrition of the body.

1211 *Connecticut Ave.*

Correspondence.

Journal American Medical Association

Mr. Editor:—I was much pleased to read your editorial caution upon the business methods of *The Journal of the American Medical Association*. Originally intended for the building up of the Association, the publication of the papers read before it, etc., it has become commercialized, and runs the Association. It is subordinated to the making of money. It is after advertisements, and the sum of $5.00 from any one who will subscribe.

In your editorial, you mentioned the scandals in connection with some of the life insurance companies. It is probable that no one who handles the immense sums now calculated, and accumulating through the diligent and competitive instrumentality of the *Journal* is under bond, or gives any kind of security.

Of course, there is an auditing committee, but in addition to the fact that doctors are not also accountants, the time in which the committee is with the treasurer, and with his books in the hurly-burly of an annual meeting, is much too brief in which to detect shortages, false entries, etc. Such auditing committee, from the nature of the case, is a mere form.

In Democratic politics we heard much of the dangers of a sudplus. The surplus in the coffers of the Journal people *ought* to be very large. As you wrote, it might be used for many useful purposes.

After it is used up, I would suggest, for the good name of the Associatiou, that the Journal be so managed that it could not accumulate a tempting surplus—only a sufficient amount for its publication. Its price ought to be greatly reduced, and it should decline all advertisements. THOS. R. EVANS, M. D

Olcott, W. Va.

Obituary Record.

Dr. Lawrence G. Mitchell,

Of Downings, Va., died February 28th, 1906, aged forty-four years, after an illness of three weeks. He graduated in medicine at the University of Maryland in 1884, joined the Medical Society of Virginia in 1886, and has attended several of its sessions. Dr. Mitchell was popular in his section, and at the time of his death was a vice-president of the Northern Neck Medical Association. He is survived by his mother, four brothers and three sisters.

Editorial.

Dr. George S. Walker

Has tendered his resignation as first assistant physician of the Western State Hospital, to take effect March 8th. Dr. Walker has been connected with this hospital for over twenty years, and upon the death of the superintendent—the

late Dr. Benjamin Blackford—was placed in charge of the Western State Hospital until the Board could appoint a successor.

The Tri-State Medical Association of the Carolinas and Virginia

Met at White Stone Lithia Springs, S. C., February 27 and 28, with an attendance of 125. There were fifty odd papers on the final program, mostly by members of known ability as well as by several invited guests of national repute. The addresses by invited guests—Drs. Jos. Price, J. B. Deaver, Wm. Perrin Nicholson, W. D. Haggard and Alfred Stengel—were finely received. The program, although unusually long, was completed on the night of the 28th. Prolonged discussions were not allowed, —hence the dispatch of business. Dr. Royster made a splendid presiding officer. So far as the scientific program was concerned, the meeting could not have been better, but there has been complaint as to the hotel, its table board, etc., and the delays in making proper railway connection for the Springs. These things necessarily detracted from what would otherwise have been a most enjoyable session. The place itself is attractive. Thirty-two new members were enrolled at this session.

The officers elected for the succeeding year are: President, Dr. Rolfe E. Hughes, of South Carolina; Vice-Presidents, Drs. I. M. Taylor, North Carolina; J. A. Hayne, South Carolina; and W. E. Driver, Virginia; Secretary and Treasurer, Dr. J. H. Way, North Carolina. Executive Council, Drs. Hayes, North Carolina; Earle, South Carolina; and Horsley, Virginia. The Association will meet next year at Norfolk, Va., though the exact date will be determined later. *Surgery of the Stomach* was decided on as the subject for general discussion in 1907, with Drs. Stuart McGuire, of Virginia; H. A. Royster, of North Carolina; and Le Grand Guerry, of South Caroline, for leaders.

Dr. Wm. F. Drewry,

For several years past the superintendent of Central State Hospital, at Petersburg, Va., and who was recently elected by the Board of Visitors as superintendent of the Western State Hospital, at Staunton, Va., has definitely declined to accept the latter position. The reason assigned by Dr. Drewry for such declination is that the salary at the Staunton institution is entirely insufficient to justify him in leaving his work at Petersburg, where things are progressing nicely, and along lines instituted by himself, and in which he takes a special interest, to say nothing of the sacrifices entailed by a change of home.

Dr. J. S. DeJarnette,

For some time second assistant physician to the Western State Hospital, at a special meeting of the Board of Visitors held February 27th was elected superintendent to succeed the late Dr. Benjamin Blackford. Dr. DeJarnette quite recently married Dr. Chertsey Hopkins, until a few months ago physician to the woman's department in that hospital.

The Medical Examining Board of Virginia

For the next four years, beginning April 1st, 1906, will be composed as follows, one from each of the gubernatorial districts: Drs. W. B. Robinson, Tappahannock; H. M. Nash, Norfolk; J. E. Warriner, Brook Hill; W. W. Wilkinson, La Cross; R. S. Martin, Stuart; Samuel Lile, Lynchburg; Robert Randolph, Boyce; R. M. Slaughter, Theological Seminary; E. T. Brady, Abingdon; C. W. Rodgers, Staunton; and three from the State at large: Drs. R. W. Martin, Lynchburg; A. S. Priddy, Bristol; R. B. James, Danville. Commissions have been issued by Governor Swanson to each of the physicians named upon recommendation, as is required by law, of the Medical Society of Virginia. In addition two practitioners of the Homeopathic School are to be commissioned.

Dr. Garland P. Moore, of Cape Charles City, Va., has been designated by Governor Swanson, of Virginia, as Surgeon of his personal staff, this position carrying with it the rank of colonel.

Failure of Repeal of License Taxes in Virginia.

The Legislature of Virginia has adjourned until 1908. In the meantime, the profession of the State will have to pay the State license taxes as heretofore. The Bill to repeal the license taxes passed the House of Delegates dur-

ing the latter days of its session by a handsome majority, and we believe it would likewise have passed the Senate could it have been brought up in that body earlier than the last day of its session, when, it appears, the objection of three Senators prevented the consideration of any measure.

There is nothing to do except bide the consequences. The profession of Virginia has now to "pick its flint and try again."

The lesson to be learned from experience is to prepare a bill ready for the next Legislature, and introduce it earlier in the session, so that it may have ample time to be considered in both branches of the Legislature; and not allow it to be time and again side-tracked for the introduction and passage of bills introduced afterwards.

The profession of Virginia owes the Chairman of the Committee on this legislative matter, Dr. J. B. DeShazo, of Ridgeway, Va., a debt of gratitude that it will be hard ever to repay. At the sacrifice of very material personal interests, he was in Richmond the greater part of the time of the Legislative Session after the bill was introduced in the House of Delegates, and worked as incessantly for the success of the measure as it was possible for any man to do. Dr. Thomas S. Powell, of Brunswick county, the Delegate from that county, was the patron of the bill in the House, and Dr. Scott, also of the House of Delegates, rendered very efficient assistance.

After the bill passed the House, it went over to the Senate and received the recommendation of the Finance Committee during the last week of the Legislative Session. When brought up in the Senate, during the rush hours preceding adjournment of the session, a rule had unfortunately been made which prevented the consideration of any of the hundreds of bills on the Calendar, if those Senators objected. It is common opinion that if the bill could have been brought up in order in the Senate, it would likewise have succeeded in that body. And there does not appear to be any question as to the approval of the Governor of Virginia had the measure been brought to him. It is a case of "almost—but lost"—due to delay of action in the earlier days of the Session of the General Assembly—when everybody was saying: "Plenty of time."

During the next session of the Medical Society of Virginia, this matter must receive further consideration, and the old committee continued or a new one appointed to take advantage of the vacation of the General Assembly to work up proper influences for the success of the measure then.

We are not aware of any occasion for the Governor to call the Legislation in session before the next regular time in 1908. But in the event of any circumstance that should demand such call for extra session, the profession must be prepared to push its measure.

Army Medical Corps Examinations.

Preliminary examinations for appointment as Assistant Surgeon in the Army will be held throughout the country on May 1st and July 31st, 1906, at points to be herafter designated. Permission to appear for examination can be obtained upon application to the Surgeon General, U. S. Army, Washington, D. C., from whom full information concerning the examination can be procured. The applicant must be a citizen of the United States, between twenty-two and thirty years of age, graduate of a reputable medical school, of good moral character and habits, and he must have had at least one year's hospital training or its equivalent in practice.

Applications must be in possession of the Surgeon General on or before April 1st. There are twenty-five vacancies.

Physical Examination of Infants and Young Children. By THERON WENDELL KILMER, M. D., Adjunct Attending Pediatrist to Sydenham Hospital; Instructor in Pediatrics, New York Polyclinic Medical School and Hospital, etc. Illustrated with 59 Half-tone Engravings. 12mo., 86 pages. Extra Cloth. Price, 75 cents, net. F. A. Davis Co. Philadelphia, Pa.

To appreciate the merits of this manual, intended to instruct the doctor as to the best methods of examining the baby, it is sufficient to thumb its leaves. While plenty of instruction is given as to the physical examination of the adult, very little is said, even in the larger works on pediatrics as to the necessary modifications of procedure with reference to the examination of infants. While this little book is fully worth its price to any practitioner as teaching him many little points of value, we should caution the doctor that the carrying out of the details of examination is not so easy as described when the baby is crying at the presence of a stranger.

Index to Volume X,

[APRIL, 1905—MARCH, 1906, INCLUSIVE.]

VIRGINIA MEDICAL SEMI-MONTHLY.

This Index is divided into TWO PARTS—FIRST, **Index of Contributors**; SECOND, **Index of Subjects**, in which italicized lines represent original articles.

Notices of books, colleges, deaths, journals, personals, and proceedings of societies, etc., are indexed in the INDEX OF SUBJECTS under the respective words **Book Notices, Colleges, Hospitals, Journals, Obituaries, Personals,** and **Society and Board Proceedings, etc.**

INDEX OF CONTRIBUTORS.

INDEX OF SUBJECTS.

(Italics indicate subjects of Original Comunications.)

Book Notices, Etc.

Obituary Record, Etc.

Personals.

Societies, Boards, Etc.