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SUPRA-PUBIC LITHOTOMY.

BY W. BRITTON, M.D. TORONTO.

This operation is ordinarily resorted to in preference to Cheselden's or any other modification of the perineal section, when circumstances render it the only one feasible; indeed, with the exception of the German School of Surgery, the rule the world over has been to cut through the perineum if the pelvic outlet is not contracted and the calculus small and not encysted. The first recorded case was, like the majority of its successors, unpremeditated. In the year 1551, Franco failed in extracting a stone through the perineum of a child, and in desperation determined to remove it through the abdominal wall. Some of his admirers, after mature consideration, advised its adoption not only in such cases as forbade the perineal operation, but also in young subjects; indeed, Cheselden, whose name is so closely identified with lithotomy, was for years one of its most ardent advocates, and relinquished it not through want of success, but out of enthusiasm over his new modification of the lateral.

The earliest recorded case in England was in 1700, when Proby removed a bodkin in this way from a woman's bladder. In 1718, Douglas strongly claimed for it the attention of the profession, published a work on the subject; and very unostentatiously christened the operation "Lithotomia Douglasiana." From that time up to the present century its hold on the surgical world has been marked by many vicissitudes—to-day espoused by some of the foremost, and to-morrow falling into disrepute because of the objections put forth by the many. Only lately has it been received with anything like general favor, and this revolution of opinion may be referred to the reports of a number

of successful cases by Amussat, Dupuytren, Scarpa, Home and others.

A table of statistics was compiled in 1850 by Humphrey, of Cambridge; he managed to collect only 104 cases; and amongst English speaking nations no further work of any magnitude in this line was accomplished until 1875. During this interval the Germans took considerable interest in the subject, aroused chiefly by a second table compiled by Prof. Günther, of Leipsic, who collected the reports of 200 cases. In the year 1874, Dr. C. W. Dulles, of Philadelphia, devoted considerable attention to the matter; he tabulated four or five hundred cases; and comparing the results with an equal number of the lateral operation, he found that "the operation is as successful as the perineal for calculi under two ounces in weight, and has better results for larger calculi." He concludes the able article from which I have quoted, in these words:—"After thirteen years of study of this method, and an analysis of over 700 operations, I have come to the conclusion that a temperate view of the subject will lead to the conviction that the supra-pubic operation deserves to rank above all other methods of lithotomy, for stones of large size, and that its applicability to any case should be carefully discussed before deciding to cut through the perineum." In 1880, Dr. Peterson, of Kuhl, gave it a fresh impetus by his published description of the method of rectal dilatation for the purpose of elevating the bladder.

Heath says that the operation has been performed so seldom, that a comparison of its results with those of the perineal would be premature; but should it not, on further trial, prove to have a heavy mortality, it is certain to take a high place in professional esteem, and to supplant all other methods for the removal of large stones. I shall now give an epitomized history of a case of my own which occurred recently.

In November, 1887, I was called to see C. W., an active robust boy of nine years. He was suffering from the ordinary symptoms of stone, which on sounding I readily found present. When about two years old, and for some years subsequently he had been troubled with incontinence of urine, together with vesical irritability, manifested only by frequent urination; these were the only symptoms until two years ago, since which time dysuria had been constant and accompanied occasionally

by hematuria ; so it was safe to conclude that the stone was at least two years old. It did not appear to be large, and being of slow formation it was probably not phosphatic in character. I had then to deal with a hard calculus in a young patient, both of which circumstances rendered it unadvisable to perform the less serious operation of lithotrity ; and to choose between supra-pubic and perineal section was a difficult matter, until I obtained access to the pamphlet of Dr. Dulles, already referred to. In consideration of the good results shown in his table, and to avert the possibility of hemorrhage or urethral laceration, the supra-pubic method was adopted. In the operation I was assisted by Drs. W. T. Aikins and J. L. Davison. After chloroforming and sounding the patient, the bladder was thoroughly irrigated with a warm borated lotion and then injected with carbolyzed water ; and percussion showing that the bladder was well up in the hypogastrium, rectal dilatation was dispensed with. The ordinary incision through the abdominal walls was made and attended with only slight hemorrhage from small branches of the epigastric, which were easily secured. Instead of catching up the bladder with a tenaculum, two strong threads of silk were passed through its coats, one on each side of the proposed incision and well held up by an assistant, which materially assisted in exposing the anterior surface. The bladder incision was made as close as possible to the pubes, and only sufficiently large to admit the little finger for the purpose of exploring the interior and locating the stone which was lying loosely in the fundus. Having ascertained that it was not too large to admit of extraction through so small an opening, a straight, pair of forceps was introduced, and a mulberry calculus slightly larger than a peach stone, was easily removed. After a further digital examination to preclude the possibility of leaving a second calculus, and as the incisions were made with antiseptic precautions, and the structures appeared to be in a healthy condition, it was determined to aim at primary union. Accordingly, the bladder wound was united by interrupted fine catgut sutures that did not penetrate the mucous coat and at short intervals, in order to render it watertight. The external wound was closed also after the suspensory ligatures had been withdrawn and dressed with iodoform. The metallic catheter which had been

used as an aid in elevating the bladder, and a guide down upon which to cut, was now withdrawn and a flexible one substituted.

The subsequent history of the case is interesting, chiefly in the fact that nature will often surmount apparently insuperable obstacles to counteract the effects of bad nursing. Strict injunctions were given that the catheter be watched night and day lest it become impervious. For three days the case progressed satisfactorily, the patient having no pain and the temperature having risen no more than one might expect in urethral fever, when on November 28th, I was summoned to relieve the patient, who was reported to have been in pain for some hours. On my arrival I found the catheter as dry as a bone, and on removing the dressings, the wound, which hitherto had been uniting rapidly, showed signs of oozing. I cut one suture and removed the catheter, when urine not only flowed *per urethram*, but also shot up in a stream from the wound. I endeavored to pass a soft catheter through the wound for the purpose of drainage, but unsuccessfully ; evidently the vesical opening was smaller than the external one, and, lest further exploration prove disastrous, I trusted to free exit through the urethra. I ordered the wound to be frequently washed antiseptically, and dressed with carbolyzed ointment, re-introduced the catheter, and, instead of allowing the urine to drop into a sponge as most works direct, a small vessel was now used which the nurse was instructed to empty every hour, so that any clogging up of the catheter might be detected before damage could ensue from over-accumulation. The catheter was removed each day, washed out and re-introduced.

Whether the escape of urine occurred from the needle punctures made in introducing the suspensory ligatures or from the incision itself, I do not know ; but I feel quite confident that had the accumulation of urine been prevented, which ordinary watchfulness would have done, the patient would have been well in a week ; as it was, he went on rapidly towards recovery ; only once was there slight oozing of urine from the granulating wound, which was on December 13th, being the first occasion of natural urination ; up to this date the catheter having been retained. On December 21st, being twenty-six days after the operation, he was quite well.

So little has been written on this subject, and,

of what is written so much that is incomplete and conflicting, both as to the merits of the operation and the method of performance, that it will not be out of place to add a few plain facts

1st. It is much simpler than any modification of the perineal operation; the only structure to be avoided being the peritoneal fold, which, with careful dissection is easily done. Contrasted with this, the perineal section is "going it blind," between the artery of the bulb anteriorly, the internal pudic externally, and the rectum behind. The wounding of any of these would prove a serious complication; and supposing they are passed in safety, I wonder how many have succumbed to a prostate incised in a faulty manner. Supposing union occur primarily in the supra-pubic method, the danger of septicemia is averted, and in any case with proper drainage precautions, the risk of urinary infiltration and diffuse inflammation does not appear to be greater than in perineal section. The operation is not attended with hemorrhage, or the danger of wounding the rectum, the deep fascia or the seminal ducts, nor is it followed by shock or perineal fistula, both of which may occur in the lateral and median operations.

2nd. It is especially suitable for boys; for, in their case, on the one hand, the bladder is high up with plenty of room below the peritoneum for incision, and on the other hand the perineum is usually loaded with fat, and therefore the wound must be deep and difficult of precise execution. In such cases the prostate is small—its incision must be very limited in order to be safe—the finger is introduced through so small an opening, only with considerable force, and this with danger of lacerating the thin and delicate membranous urethra, which could not be otherwise than disastrous in its consequences.

3rd. The bladder is elevated by one or all of three methods—dilation of the rectum, injection of the bladder itself, or by the tip of a metallic catheter or sound. In dilating the rectum it is recommended to use a pear-shaped rubber bag, and lest tearing of its coats occur from over distension, to allow the water to enter by gravity from a graduated receptacle through a long rubber tube; from twelve to sixteen ounces usually proving sufficient. A double channelled silver catheter answers best for irrigating the bladder—it will also serve for dilating it subsequently by closing

the returning opening—and by closing both openings it will answer as a sound for pushing up the anterior wall.

4th. The external incisions should be as close to the pubic bones as possible—and that of the bladder as low down as practicable. To this end a tenaculum, which is more easily applied than the ligatures which I used in the case described, should catch up the anterior wall well down behind the symphysis—traction on which will rotate the bladder on its transverse axis, and so throw the peritoneal fold backwards out of harm's way.

5th. The smaller the bladder incision is, the better, provided it be large enough to permit of extraction without laceration.

6th. If the coats are in anything like a healthy condition it is well to close both wounds and trust to primary union—to this end catgut sutures in the bladder are the best.

7th. The retained catheter is preferably of soft rubber; for, although its channel is smaller in proportion than that of the ordinary elastic, it can easily be removed at intervals for cleaning, and its vesical extremity being more flexible, is more likely to lie low and drain effectively, and less liable to irritate by chance pressure against the anterior wall.

8th. It is above all things needful to take proper precautions that the bladder is thoroughly and constantly drained—and if the receiving vessel is emptied every hour, no accumulation of urine sufficient in quantity to prejudice the case can occur before the stoppage of the flow is detected.

THE INFLUENCE OF CERTAIN OCULAR DEFECTS IN CAUSING HEADACHE.*

BY F. BULLER, M.D.,

Professor of Ophthalmology, McGill University.

The influence of abnormal conditions in the organs of vision in causing headache has long been recognized, but it cannot even now be said that the nature of that influence in all its bearings is fully understood. The term eye strain is, indeed, applicable to a very complex condition, in which anatomical, mechanical, muscular and nervous influences variously combined each play their part.

* Read before the Canadian Medical Association, at Hamilton, September, 1887.

Whenever there is a deviation from the normal state in any one or more of these particulars, visual disturbance of some sort is likely to result, and with it more or less functional disturbance, of vision, as well as of other parts or organs.

In the organs of vision such disturbance of function most frequently presents itself to the ophthalmologist in some form of so-called asthenopia. Many cases of this kind are also accompanied with reflex disturbances in parts more or less remote from the eyes, the most important of which, in point of frequency at least, undoubtedly is headache. Headache from this source may attain any degree of severity, from mere discomfort to the most unbearable agony. It may be constant or intermittent, but in any case it is likely, in the long run, to resist every remedial measure until the visual difficulty, whatever it may be, is discovered and suitably corrected. Some experienced ophthalmologists go so far as to contend that nearly every case of migraine or sick headache is associated with some defect in the visual apparatus; for my own part, whilst admitting that such an association is of frequent occurrence, I am inclined to think there is a large proportion of these cases not to be accounted for in this way. Others, again, claim that all sorts of nervous disorders, including chorea, epilepsy and insanity, are often due to the same cause; on this point I am not prepared to express an opinion.

There is, however, among ophthalmologists, and through their labors, also, I think, in the general profession, a settled conviction as to the importance of ocular defects in causing headache. On this subject there is, however, but little information to be gained from the ordinary text-books of medicine, though current literature contains much that is well worth careful study.

Everyone has heard of remarkable cures, of headache by the correction of certain errors of refraction, and there is, perhaps, a widespread notion that ocular defects causing headache only require the adaptation of suitable glasses to remove the trouble. This is quite true of certain cases, the correction of refractory errors may accomplish all that is to be desired. Sufferers from headache during half a lifetime, have time and again been cured in a few days by wearing the glasses that have corrected a simple hyperopia. I once saw a student who had reached the third

year of his university course, a martyr to headache all the time, and subject to attacks of vomiting if he studied longer than two hours consecutively, so disheartened that he had decided to abandon his university career, when he found himself suddenly cured of all his ailments by wearing convex cylindrical lenses of 36 inches focus. Convex sphericals of the same focal distance had been used for some time previously without benefit. Here there was only a simple error of refraction, slight in degree, but giving rise to symptoms that might readily have been mistaken for some serious organic disease. Such a case can, I take it, only be explained by assuming an instability of nerve force which a trivial disturbing element was capable of putting completely out of balance. On the other hand, it is a matter of daily experience to meet with persons whose visual apparatus presents infinitely greater deviations from the normal without setting up any noticeable mischief.

As a rule, those who suffer considerably from slight ocular defects are neurotic subjects, in whom minor ailments are apt to make more show than serious ones do in those whom nature has endowed with vigorous nerve power. But there are visual abnormalities which even the most vigorous cannot bear up against without suffering, more particularly when any unusual demands are made on the organs of vision, or when from any cause the general health becomes deteriorated. In such persons the true nature of the troubles they experience is exceedingly apt to be overlooked, unless the eye symptoms happen to predominate, which by no means always occurs.

I have said the elements which may unite to produce eye strain, though simple in themselves, constitute a complex condition when so combined. Let us consider the most important ones separately, always bearing in mind that several may be combined in the same individual.

First of all come the errors of refraction—myopia, hyperopia and astigmatism. Next we have defective muscular action both of the extrinsic and intrinsic muscles of one or both eyes, in which any one or more of these may be implicated. Lastly, there may be faults in the perceptive organs—that is, of the retinae and their nerve centres. This third division we may leave out of the question, as a consideration of this part of the subject would take us beyond the limits of a short discourse.

It is the physiological demand for binocular vision and for distinct vision that, under certain unfavorable conditions, induces eye strain and consequent headache. We must, therefore, direct our attention chiefly to the muscular apparatus, any portion of which may be defective in power, or, what amounts to the same thing, the demands made upon it may for various reasons be greater than it can bear.

In hyperopia and in astigmatism the chief demand is for distinct vision, hence the ciliary muscle is liable to be overtaxed, and there will be accommodative asthenopia. In myopia, the muscles of convergence are placed at a disadvantage, and we are more likely to meet with so-called muscular asthenopia. Both in myopia and hyperopia, as shown by Donders, the acts of accommodation and of convergence, which are essential to binocular vision, become more or less disassociated. It is only in the emmetropic eye that they are arranged to act equally at all distances. This want of harmony between the intrinsic and extrinsic muscles is in itself a fruitful cause of eye-strain. As a manifestation of this disassociation, we often meet with the obvious muscular defect called strabismus, usually convergent in hyperopia, and and divergent in myopia. In emmetropia, the range of distinct vision, consequently both of accommodation and of convergence, is from infinity up to some near point, say a few inches distance; but in the above mentioned errors of refraction, though there is the equivalent range of distinct vision, it is displaced more or less, backwards from the normal near point in myopia, and forwards in hyperopia. Correction of these errors of refraction acts beneficially in each case by restoring the range of vision to something like its normal position, and consequently, in re-establishing the association between convergence and accommodation. Correcting glasses also act, in hyperopia, as a direct relief to the ciliary muscle by diminishing the necessity for excessive accommodative efforts, whilst in myopia suitable glasses relieve the necessity for extreme convergence. In astigmatism, the constant effort to obtain distinct vision is particularly irksome, probably because it induces an irregular action of the ciliary muscle, a structure which nature has designed to act uniformly in all its extent, and which, on account of its delicate functions, is endowed with numerous and

extraordinary sensitive nerves. In astigmatism, then, we have to deal with accommodative asthenopia. But when the extrinsic muscles are at fault, the difficulties caused by otherwise uncomplicated errors of refraction cannot always be remedied by glasses that correct the refractive error. There can be no doubt that defects in the extrinsic muscles are met with much more frequently in connection with errors of refraction than in the normal eye, and it is sometimes found that a suitable correction of the refractory error will in time restore muscular equilibrium where this has been defective. Correcting glasses can often be supplemented in their action by combination with prisms in such a position as to relieve the strain of overworked muscles. Combinations of this sort may have the happiest effect in allaying the visual disabilities of those who suffer from both refractory and muscular errors. There are, however, cases in which a defective action on the part of the extrinsic muscles is the sole cause of the visual difficulty, but I am convinced that a large proportion of those cases in which a careful correction of the refractive error affords little or no relief to the symptoms of eye-strain, can be explained by the presence of some defect in the action of the extrinsic muscles, either inherent or the result of long habit—a defect which must be corrected before relief can be obtained by wearing glasses. The following case illustrates this point:

Mrs. S., aged 37, consulted me in the year 1883 on account of short sight, weak vision, and almost constant headache, troubles which dated back to girlhood, and from which she had never been able to find relief. She was wearing concave spherical glasses for distance only, of 16 inches focus. Under atropine, I found M $1/14$, with myopic astigmatism about $1/60$, vision = $\frac{2}{3}$ each, and apparently some weakness of the internal recti, but, as I thought, not enough to call for special attention (at that time I was not in the habit of testing the muscular functions in doubtful cases with the same care as I do now), I ordered—18 to be worn constantly if possible. Three and a half years later—that is, last April—she came to me again complaining that the eyes and head were, if possible, worse than ever. I then found the refraction, corrected under atropine: R., -4.50 \ominus -0.50 ; ax. 70° ; vision $\frac{2}{3}$. L., -4.50 \ominus -0.75 ; ax. 100° ; vision $\frac{2}{3}$. With this correc-

tion there was a latent divergence at 6 metres distance, =pr. 6°, abduction =15°, adduction the same. Abduction increased by exercise to 18° and adduction to 25°. Though varying slightly from day to day, repeated examinations substantially confirmed these conditions. There was thus an evident loss of muscular balance in favor of the external recti. This I corrected by a partial tenotomy of the left external rectus carefully regulated to exactly correct the latent divergence. She was directed to continue using the same glasses as before. A month later she came to report the result. There was then perfect muscular balance at 6 metres, abduction 12, adduction 30. From the day of the operation the headache had entirely disappeared.

Insufficiency of the external recti with latent convergence has lately also become a well recognized condition as a cause of asthenopia and its attendant discomforts. This condition is perhaps of less frequent occurrence than the same defect in the internal straight muscles. When discovered, however, it may, if necessary, be remedied by taking from the internal recti their overplus of power, or the relative strength of the externi may be augmented by a carefully regulated advancement of the tendon.

I now come to what I believe will prove to be one of the most important muscular anomalies, for the detection of which and a precise knowledge of the proper measures for its relief we are mainly, if not entirely, indebted to Dr. Geo. T. Stevens, of New York. I allude to defective action of the superior and inferior recti. I have recently found this defect to be of more frequent occurrence than I should have anticipated, and it is of extreme importance, not only on account of the visual and other (reflex) disturbances an error of this kind is capable of inducing, but also in its influence on the action of the other ocular muscles. I now consider no test of the muscular functions to be complete unless the condition of the superior and inferior recti is carefully taken into account, because a latent vertical deviation so disturbs the balance of the other muscles that the most misleading results are likely to be obtained if a vertical deviation has been overlooked. The terms suggested by Dr. Stevens to express the various abnormal conditions of the extrinsic ocular muscles seem to me entirely satisfactory, and I now always

employ them in my records. Vertical deviation or *hyperphoria* may be combined with any error of refraction, and with lateral deviation in either direction, such as the following case, which is one of compound hyperopic astigmatism, with hyperphoria and exophoria:—

Mrs. F., aged 36, a thin, worn-looking woman, has had pain in the eyes and headache for many years, always aggravated by near work. In Dec., 1883, I found under atropine—

R., + 32 s. \subset -80 c., ax. 135°, $\frac{3}{8}$ °.

L., + 40 s. \subset +14 c., ax. 130°, $\frac{4}{8}$ °.

and ordered these for all near work. They afforded some relief, but the headaches remained as before. She came again in April, 1887, and I found the refraction unchanged. After repeated examinations I found 1° of right hyperphoria and 2° of exophoria, abduction=9°, adduction=16°. After partial tenotomy of left lower rectus, the hyperphoria was corrected, but the lateral deviation remained unaltered. This was also corrected by partial tenotomy of right external rectus. On June 14th there was exophoria 1°, abduction 6°, adduction 23°, and freedom from headache. On June 25th there was exophoria =2° and some headache after prolonged use of the eyes. The remaining exophoria will probably require a repetition of the tenotomy. There is evidently still a considerable degree of latent excess of strength in the externi.

In another case, a gentleman 45 years of age, there was: R.H., =0.75 $\frac{3}{8}$ °. L.H., =4 D \subset +2 D.C., ax. 110, $\frac{3}{8}$ °+. With frequent headache and the head feeling so badly he was in great anxiety, fearing the head symptoms indicated organic disease of the brain. Here the correction of 1½° right hyperphoria by partial division of the left inferior rectus and the correction of the error of refraction by glasses, relieved the head completely.

The same error of muscular balance will undoubtedly cause distressing symptoms where there is no error of refraction or one so slight that it will not account for the symptoms. I have recently seen a marked instance of this kind, and will here give another in which the error of refraction was trivial, but the patient a great sufferer from headache and weak vision; he also had a worn, distressed look which one often meets with in cases of eye-strain.

C. A., aged 29, has had weak vision since his

school-days, and suffered almost constantly from headache. In 1880 I treated him for an anterior choroiditis of the left eye, from which he made a perfect recovery, but I did not succeed in relieving the asthenopia. Last June I again had an opportunity to examine the eyes, and found, under atropine: R. + 0.75 s. $\frac{3}{8}$. L. + 0.75 s. \circ 0.75 c., 90° $\frac{3}{8}$. There was slight insufficiency of the internal recti, with exophoria 1° and left hyperphoria 1° . A correction of the latter gave immediate freedom from headache, and was soon followed by a marked improvement in his general health.

There can be no doubt that visual imperfections which call for a constant and abnormal expenditure of nerve force, such as must necessarily be the case where there is loss of equilibrium, or of the visual axes in any direction, is not only a frequent cause of morbid conditions in the eyes themselves, such as conjunctivitis, blepharitis and keratitis, perhaps, too, of deeper seated inflammatory affections of these organs, but also of headache, migraine, neuralgia and other nervous disorders. That they cause deterioration in the general health almost goes without saying.

Every subject of such visual defects as these is handicapped or over-weighted to just such an extent that he is liable to break down before the finish. In the cases I have quoted I have not, for obvious reasons, gone fully into details, but enough has been said to show their bearing on a subject which seems to me to merit more attention than hitherto has been bestowed upon it, even by those who have to do exclusively with ophthalmic surgery; and, I am convinced, the facts I have endeavored to bring forward may be used as a key to unlock the hidden secret of many obscure and troublesome cases that would otherwise stand as an opprobrium to medical art, bidding defiance to all its resources.

ON THE NECESSITY FOR A MODIFICATION OF CERTAIN PHYSIOLOGICAL DOCTRINES REGARDING THE INTERRELATIONS OF NERVE AND MUSCLE,

BY THOMAS W. POOLE, M.D., LINDSAY, ONT.*

SECTION OF THE SPLANCHNICS.

In a "demonstration of the vasomotor functions of the splanchnic nerves," the chief editor of the

"Hand-book for the Physiological Laboratory" (a), informs his readers that these nerves contain vasomotor fibres which "are distributed to the arteries of the abdominal viscera."

We approach this "demonstration" expecting to find that when these nerves are cut the predicted results will follow in the arteries they supply being more or less "relaxed" or "dilated." What is our disappointment to find in all that follows in this chapter of the "Hand-book," the arteries are never once alluded to! Thus the very pith and point of the so-called "demonstration" is entirely ignored! What occurs is thus stated by Dr. Burdon Sanderson: "After section of both nerves the vessels of all the abdominal viscera are seen to be dilated. What "vessels" are these? Not the arteries, because Dr. B. S. continues: "*The portal system is filled with blood; the small vessels of the mesentery and those which ramify on the surface of the intestine are beautifully injected; the vessels of the kidney are dilated, and the parenchyma is hyperemic; all of which facts indicate, not merely that by the relaxation of the abdominal blood-vessels, a large proportion of the resistance to the heart is annulled, but that a quantity of blood is, so to speak, transferred into the portal system, and thereby as completely discharged from the systemic circulation as if a great internal hemorrhage had taken place.*" (b.) [Italics mine.] It needs no italics to give point and force to this remarkable admission. It is merely stating, with a little circumlocution, that the arteries are empty and the veins are full! The "beautiful injected vessels," which the learned editor so much admired, are not arteries but veins, the blood in which has become "bright red, like arterial blood," as Prof. Kuss explains of venous blood in the mesentery, because oxygenation has been effected simply by exposure to the air." (c)

The contraction and emptiness of the arteries, after section of the vasomotor nerves, is thus proved on the very highest authority. Where now is the justification of the assertion that after a section of this kind the arteries are dilated and hyperemic?

Whatever obscurity there might be as to the actual results of section of the cervical sympathetic, for obvious reasons, there can be no mistake

* Read before the Physiological Section of the Ninth International Medical Congress, held in Washington, September, 1887.

(a & b) Amer. Ed., p. 258, p. 260.
(c) Lec. Phys., p. 328.

as to the results here. Now the law of uniformity of cause and effect, demands that what is true of the relative state of the arteries and veins after section of the splanchnics, must be true also after section of the cervical sympathetic—and since the arteries are thus shown to be empty and the veins full in the former case, the same condition must be held to prevail also in the latter. It is worthy of note, in this connection, that both after section of the spinal cord, and after section of the splanchnics, blood pressure falls, and in both cases may be restored by faradization of the divided cord or nerve. It is evident from this, that the fall of blood pressure (as shown by the kymograph in the carotid) on section of the cord, is not to be regarded as an indication of arterial relaxation, as appears to have been done; because blood pressure fell also after section of the splanchnics, where we know positively that arterial dilation could not have taken place. It may be asked, how could faradization of the spinal cord or of the nerve, restore the pressure or tension in the arteries, if the heart and arterial system were already empty? Dr. Burdon Sanderson supplies the answer indirectly, in stating: "It is seen that after section of the cord the heart is flaccid and empty, and that its cavities fill and its action becomes vigorous, when the vascular contraction caused by excitation of the peripheral end [of the cut cord] forces the blood forward so as to fill the right auricle" (a). Now the only blood which could be "forced forward so as to fill the right auricle" is *venous* blood from the distended portal system. Thus it will be seen that all the facts fit, and as it were, dovetail into each other, in establishing that nervous paralysis and contraction of the arterial muscle go together the result being hypermeia, not of the arteries but of the veins. The explanation just quoted from the Hand-book, as to the forcing forward of the venous blood, as an effect of the faradic current, confirms the explanation made above, as to the dissipation of the venous hyperemia by the same current after section of the cervical sympathetic.

STATE OF THE ARTERIES IN DEATH.

Not only are the arteries invariably as empty as their physical structure will permit them to be, when their nerves are cut or paralyzed in the living body, but such is also their condition *in death* of the

body, when nerve force is extinct. This is a fact too well known to need any special proof. It is a fact, however, which ought to be explained by those who hold that in a condition of nerve paralysis the arteries are "dilated" and hyperemic.

THE OPERATION OF PITHING.

What has just been said of the contracted and empty state of the arteries is true also after the operation of "pithing" (in which the medulla and spinal cord are destroyed); as any one can easily satisfy himself, as I have done, by actual experiment. This is inadvertently proved to be the case by Dr. Burdon Sanderson in his account of an experiment designed to prove the contrary. Two frogs are taken. One is "pithed," in the other the nervous centres are uninjured. In both the heart is carefully exposed and the single ventricle slit open, so as to show the state of the great vessels. The experiment is intended to prove that in the pithed frog the arteries are "relaxed" and full of blood. On Dr. Burdon Sanderson's showing, the results are these: In the pithed frog, "although the heart is beating with perfect regularity and unaltered frequency, it is empty, and in consequence, instead of projecting from the opening in the anterior wall of the chest, it is withdrawn upwards and backwards towards the esophagus." The heart and its appendages "are alike deprived of blood"; but on opening "the rest of the visceral cavity, *the intestinal veins are distended.*" In these, "the whole mass of blood has come to rest, *out of reach of the influence of the heart.*" How significant is this! If the arteries were dilated, and consequently full of blood, this blood could not be said to be "out of reach of the influence of the heart." But this is not all. The Hand-book continues: "In the frog deprived of its central nervous system *only a few drops of blood escape*—the quantity, that is to say, previously contained in the heart and in the beginning of the arterial system. In the other, *bleeding is not only more abundant but continues for several minutes after the section.*" [Italics mine.]

Is it not evident that in the case of the pithed frog, the arterial system promptly emptied itself into the now "distended veins," and had "only a few drops of blood" left to drain away through the open ventricle (the frogs being both suspended), while in the case of the other frog, whose nervous

(a) Lec. Phys. p. 251.

system was intact, this arterial contraction did not take place, and the arteries continued to bleed for several minutes till drained of blood.

The "Hand-book for the Physiological Laboratory," from which I have quoted so often, occupies to-day a leading place as an exponent of physiological science. The reader who studies the details of the experiment just quoted, will be surprised to find, that here again, in an experiment specially designed to prove that "all the arteries are relaxed," the condition of the arteries is completely ignored, and never once alluded to! The arteries *ought* to be "relaxed," "dilated," and even "widely dilated" here, on the theory of the text-books, but they are empty and contracted, their final act being, as in death from other causes, "to drive their contents into the veins" (a).

AN EXPERIMENT OF DR. BROWN-SEQUARD.

In this connection I must notice in the briefest manner, an experiment of Dr. Brown-Sequard in which the doctrine here supported is confirmed in a remarkable manner. In a dog, a section was made of a lateral half of the spinal cord just below the medulla. The result was, extreme hyperemia of the "blood-vessels," to use Brown-Sequard's term, of one posterior limb, while the "blood-vessels" of the other posterior limb displayed a state of spasm and ischemia quite as extreme. "Very often the spasms persists for days," wrote the observer, "and it may be so great that the circulation is almost entirely suspended," so that "the cutting of the skin hardly gives a drop of blood." The question at once arose, was the paucity of blood in one limb due to the excess of blood circulating in the other, or *vice versa*? Was the spasm on one side, or the dilatation on the other, the primary or direct effect, through the spinal vasomotor nerves of the half section of the cord?

In order to solve this question, Dr. Brown-Sequard made "direct experiments." Among others he ligatured the iliac artery feeding the dilated blood-vessels of the hyperemic limb, thus directing "almost the whole of the blood coming from the aorta" into the iliac artery of the limb in which the circulation was so much diminished. Notwithstanding this, the spasm was but partially overcome: "the temperature rose but little"; and "it was quite evident the small arteries near the

toes did not allow the blood to pass freely." Here was complete evidence, not only that there was spasm, but also that this spasm was arterial. Although the vasomotor mechanism of the spinal cord is as yet only very imperfectly understood, there seems no reason to doubt that this active contraction of the arterial muscle was here, as elsewhere, due to nervous paralysis, the result of the half section of the spinal cord.

MORE ABOUT THE ARTERIAL MUSCLES.

It will be obvious that the relative state of the arteries and veins in the foregoing experiments is incompatible with what M. Charcot calls "the paralytic dilatation" of the arteries, as a result of vasomotor nerve section, and could not occur, if after this section the arteries remained "widely dilated," and "permanently larger," as asserted by other authorities already quoted. If this were the condition of the arteries, it is evident that they would be wholly incapable of contracting upon their contained blood, so as to force it forwards through the capillaries and into the veins;—an act depending entirely upon arterial contraction, because the force of the heart has already expended itself, and the capillaries have no muscular walls; while, that the veins are merely passive, is shown by the fact they have no vasomotor nerves, and their calibre is not, as in the case of the arteries, regulated by nerve influence (b). Thus all the facts show that the arteries, so far from being "dilated" and "paralyzed," are undergoing active contraction. Some recent authorities appear to suggest the modified idea that the dilation of the arteries, instead of being "permanent," as alleged by some authorities, is a temporary effect—"an opening of the flood-gates," so to speak, in order to facilitate the transmission of blood to the veins. Thus Dr. M. Foster writes: "The section of the splanchnic nerves causes the mesenteric and other abdominal arteries to dilate, and these being very numerous, a large amount of the peripheral resistance is taken away and the blood pressure falls accordingly; a large increase of flow into the portal veins takes place and the supply of blood to the face, arms, and legs, is proportionately diminished." (c) It would appear that here, as elsewhere, "the fall of blood pressure" is reparded as evidence of "lessened peripheral resistance," and a

(b) Foster's Phys., pp. 265-268.

(c) Phys., 3rd Amer Ed., pp. 240 and 220.

(a) Kuss Phys., p. 181.

proof that the arteries are "dilated," the fallacy of which will presently appear.

We read again: "When the nervous system is destroyed, dilation of the splanchnic vascular area causes all the blood to remain stagnant in the portal vessels; and probably these as well as other veins are rendered unusually lax, so that the blood is largely retained in the venous system, and very little reaches the heart." (a) And further: "When in the frog, the brain and spinal system are destroyed, very little blood comes back to the heart, as compared with the normal supply, and the heart in consequence appears almost bloodless and beats feebly . . . the veins become abnormally distended and a large quantity of blood becomes lodged and hidden as it were in them." (b) Here is the secret, both of the emptying of the arteries and of the fall of blood pressure. The blood comes to rest in the more capacious venous system (c) "out of reach of the influence of the heart." Now seeing that the rapidity of the arterial circulation is such that only one-seventh of a second is required for blood to pass from the heart to the radial pulse, how long, think you, would be required to empty the arterial system of the pithed frog, seeing that at first little blood, and very soon no blood, finds its way back through the heart, into the arterial trunks? Why, the time required would be counted by seconds rather than by minutes. There would be no time and no necessity for the terminal arteries to dilate; the emptying of the arteries and the fall of blood pressure being amply accounted for by the fact that *blood is passing out of the arterial system faster than it is being returned to it.* A precisely similar condition to that just described as resulting from nerve destruction, occurs also in the fatal stage of asphyxia. Here, too, the arteries are "contracted" and empty, and the large veins are so distended that "if cut into they spirt like arteries." (d) And here also, Dr. M. Foster tells us there is a fall of blood pressure in the midst of general arterial contraction. He says: "On account of the increasing slowness and feebleness of the heart, the blood pressure, in spite of the continued arterial contraction, begins to fall; since less and less blood is pumped into the arterial sys-

tem." (e) It will be seen that the parallel between the two cases is complete, and that the plain facts as given by the highest authorities, do away completely with the assumption that, here, the fall of blood pressure is to be regarded as a proof of arterial relaxation. Even in the slower forms of death, when the process of emptying the arteries, is more gradual, there is still no evidence of, and no necessity for, a dilation of the terminal arteries to give exit to the blood; for, granting that contraction of the terminal arteries would tend to hinder the outflow of blood, this effect would be counteracted by stronger contraction of the larger arterial trunks above, forcing the blood through and out of the numberless terminal branches ending in the capillaries.

The facts thus far presented refer only to the great vasomotor areas of the cervical sympathetic and splanchnics. It seems unnecessary to attempt to discuss the lesser and local vascular mechanisms, about which little is known, and that little comes to us under the aegis of an erroneous theory. The greater always includes the less. What happens when the life of the chief nervous centres is killed either by sudden and intended destruction, or in death from ordinary causes, happens also in a more limited area when local or subordinate centres are killed or paralyzed. Since in the former case the arteries are found contracted and empty, the same rule must be held to hold good in the case of the individual nerve and artery.

THE STIMULATION (?) OF ASPHYXIA.

Is it not a strange position to put forward in the name of medical science, that an animal dying of asphyxia is actually undergoing a high degree of nervous excitation? Yet such is actually the teaching of the text-books in physiology to-day! Dr. Burdon Sanderson, treating of asphyxia, says: "One of the effects of diminishing the proportion of oxygen in the blood is to excite the vasomotor centre, and thus to determine general contraction of the small arteries. The immediate consequences of this contraction is to fill the venous system." As the process advances "the heart's contractions become more and more ineffectual till they finally cease, leaving the arteries empty and the veins distended." (f) There is no mention here of arterial relaxation or dilation, to facilitate the outflow of

(a) Phys., 3rd Amer Ed., p. 367.

(b) *Ib.*, pp. 240 and 220. (c) *Ib.*, p. 154.

(d) Dr. Burdon Sanderson, *Hand-book, etc.*, p. 332.

(e) *Phys.*, p. 445.

(f) *Hand-book, etc.*, p. 333.

blood. On the contrary "the immediate consequences" of "a general contraction of the small arteries" is "to fill the venous system," and in a few minutes "the arteries are empty and the veins dilated," the animal being dead. This is precisely the condition which we have seen in a former page, to be the direct result of destruction of the nervous centres. It is a process which invariably prevails in the dying, and is complete in death. Thus according to Paul Bert quoted by Prof. Kuss, "death is always owing to asphyxia" (a).

Why has it been assumed by physiologists that in this rapid sinking into death, the nervous centres are undergoing an unusual excitation? Because as we have just seen, there is "a general contraction of the small arteries," and other spasms and contractions of the respiratory muscles fixing the chest and arresting respiration; and in accordance with the theory of the day, these spasms and contractions of the muscles, depend on active discharges of nerve force, stimulating the muscles to contract. How is this assumed extraordinary activity of the nerve centres to be accounted for in an animal actually dying? There is a "physiological law" which declares that the activity of an organ is directly dependent upon its receiving a due supply of arterialized blood (b) and Dr. W. B. Carpenter has said of venous blood, that "it exerts a depressing influence upon the nervous centres," from which they are at length "completely paralyzed." (c) One would have imagined that bad blood, deficient in oxygen and loaded with carbonic acid, would have been the very last thing which a physiologist would have chosen as a pabulum from which to generate an excess of nerve force! and doubtless the choice was embarrassing enough. But necessity compels. The exigency of the theory is inexorable. Muscular contraction without nervous stimulation is deemed impossible, and there being nothing else to fall back upon, it has been assumed that impure, non-arterialized blood plays the part of a stimulant to the nervous centres. Accordingly we find a recent and popular writer—Dr. J. Milner Fothergill—in his "Antagonism of Therapeutic Agents," declaring that "the more venous the blood the greater the activity of the respiratory centre. The effect of venous blood is to augment the natural explosive decomposition of

the nerve cells. . . . The effect of defective arterialization causes more rapid as well as deeper breathing; more perfect and extensive respiration is set up until properly oxygenated blood is procured." This author would almost lead one to believe that a kindness was done to the rabbit in having its vagi cut. He says, "When the vagi are cut, the respiration is modified; it becomes deeper and more prolonged, fuller and more complete." (d) But unfortunately this view of an apparently improved respiration is wholly delusive; for, as Dr. Burdon Sanderson tells us, "notwithstanding the vigor of the respiratory movements, the blood becomes more or less venous,"—the animal is dying, and does die, "commonly before the end of the first day" (e).

Let it be kept in view that the theory of the day explicitly teaches that "the muscles receive from the nervous system a preternatural stimulus to action" (f) and that spasm and convulsion "are dependent upon excessive activity of the spinal centres:" (g) and we shall see presently to what apparent absurdity this doctrine has led. In one of Kussmaul and Tenner's experiments, the carotid arteries are ligatured with the effect of inducing "immediate loss of consciousness and general and violent convulsions," which are promptly recovered from, and nervous control over the muscles restored, as soon as the ligatures are united and blood is admitted to the brain. Dr. M. Foster's view of this experiment is, that here "the nervous centres being no longer furnished with fresh blood, become rapidly asphyxiated through lack of oxygen." And yet strangely enough he holds that in this almost fatal condition of "rapid asphyxiation," the nervous centres are undergoing stimulation! for he adds: "similar anemic" convulsions are seen after sudden and large loss of blood from the body at large; the medulla being stimulated by the lack of arterial blood." (h) Surely such a view as this may be gravely challenged, even when put forward on high physiological authority! Dr. M. Foster remarks in another page, in his chapter on "Death," that "blood is not only useless but injurious unless it be duly oxygenated" (i). And again he says

(d) P. 88. (e) Hand-book, p. 317.

(f) Dr. Pereira. Vol. 2, p. 541.

(g) Dr. W. B. Carpenter, *ib.*, p. 84.

(h) *Phys.*, p. 441. (i) P. 833.

(a) *Phys.*, p. 330.

(b) Dr. C. B. Radcliffe. (c) *Hum. Phys.*, p. 537.

of venous blood that if it "continues to be driven through a muscle, the irritability of the muscle is lost even more rapidly than in the entire absence of blood. It would seem that venous blood is more injurious than none at all"(a). Why should nerve function be augmented by what is useless and injurious, not only to muscle, but to every other tissue in the body?

(To be Continued).

Correspondence.

OUR NEW YORK LETTER.

(From Our Own Correspondent.)

WORK AT THE POLYCLINIC—DR. R. C. M. PAGE, ON DISEASES OF THE CHEST—TREATMENT OF COMMON SKIN DISEASES.

Treatment and diagnosis may be said to be the two great things in medical practice, and these are well taught in Dr. R. C. M. Page's clinic, at the Polyclinic, who always shows many interesting chest cases. He relies on the rales for the diagnosis of bronchitis, and states, that although in some cases there may be change in the fremitus, this is due to the tumefaction of the bronchi and consequent interruption of the transmission of the voice sounds. An explanation new to me, of why there should be in the normal chest a difference in the intensity of the voice sounds, greatest on the right side, was that the right bronchus being the larger, the voice sounds are more readily transmitted. This is a point which may have important practical bearing on the recognition of early phthisis, which, of course, usually affects the left apex. Speaking of bronchitis, reminds me of several bad cases of chronic bronchitis in which the cough was troublesome, being almost wholly and immediately relieved by ʒss to ʒj of *syrup* of ipecac. Another very favorable prescription here for old coughs and one which does great good, is the so-called Stokes' Expectorant. Its composition is as follows:

R.	Ammon Carb.,	grs. xvj.
	Ext. Senegæ. Fld.	
	" " Scillæ,	āā ʒss.
	Tincturæ Opii Camph.	ʒij.
	Syr. tolu,	ad ʒij.
	Sig. ʒj. p. r. n.	

(a) Phys. p. 128.

Judging from the every day out-patients, irregularity of the heart's beat appears to be more or less endemic. The causes as taught here are about as follows:

1. Centric Causes—

Chorea, epilepsy, hysteria, cerebral and spinal irritation.

2. Excentric Causes—

All forms of gastro intestinal irritation; certain articles of diet, tobacco, alcohol, opium, coffee, etc., genito-urinary disturbances.

3. Mechanical Causes—

Tight-lacing, displacements of heart from any cause, emphysema.

4. Blood Changes—

Bright's disease, gout and rheumatism.

5. Fatty Degeneration.

It is contended that the younger the patient is when suffering from acute articular rheumatism the more prone is he to suffer from acute endocarditis, whilst those who are subject to acute articular rheumatism late in life, rarely have the complicatory endocardial trouble.

For irregularity of the heart's-beat such as I speak of, little else is done than to regulate the diet and use some local anodyne, as emplastrum belladonnae.

In the diagnosis of heart complications, great stress is laid upon the association of cardiac dropsy and tricuspid murmurs.

Skin diseases are always plentiful in New York. Eczema is treated here by the soft-soap application, and some form of simple ointment, often the oxide of zinc. In tineæ of all kinds strong solutions of chrysophanic acid are employed, and a common practice is to coat the patch, when nearly well, with a solution of gutta percha and chloroform, which is claimed to lessen the tendency to irritation and prevents a chronic eczematous patch from occupying the seat of the tineæ. Syphilitic ozæna is treated here by simply douching with warm water, and appears to do as well and better under such simple applications than when more irritating ones are used.

DRUGS.

EDITOR CANADA LANCET.

Not long since, an agent of a well-known drug firm, which claims to deal exclusively with physicians, called on me. As his drugs were considered

cheaper than what I was getting from the wholesale establishment with which I had for many years been dealing, I gave him a fine order, for orders over a specified amount were sent at expense of the firm. I was pleased with the goods and their apparent cheapness, but on inquiry of my village druggist, I find that he buys far more cheaply than I; he pays 98c. per lb. for fl. ext. cascara sagrada, while I pay this drug firm which deals with physicians only, \$1.35 for the same. While I pay \$2.90 for 1,000 of Bland's pills, my village druggist pays \$1.25 per lb., ordered as the fl. ext. cas. sag. is from a Montreal firm. The only plan for us to adopt in the matter of such business, is to keep a constant watch on our druggists, who, unless one finds out by mere accident the price of drugs, will in every case be the loser. Yours,
December 23, 1887. SYNTAX.

Reports of Societies.

BRANT CO. MEDICAL ASSOCIATION.

BRANTFORD, DEC. 7TH, 1887.

The President, Dr. Thompson in the chair.

After routine business Dr. Burt gave some points in the history of a case of carcinoma of the breast. The patient was of delicate constitution, aged 67 years, giving a cancerous family history, her mother and sister having suffered from the disease.

He removed the breast, assisted by Drs. Philip and Sutherland. Several axillary glands, some of them very large, were also removed. A few cervical glands were enlarged, the enlargement being probably due to irritation, as they had decreased somewhat in size since the operation. The sponges, instruments, etc., used in the operation, were soaked in a carbolic acid solution, and the wound had healed by first intention.

Several of the members present discussed the removal of cancers, touching on the means to be employed; indications for and against removals; repeated removals, and the question of prolongation or shortening of life by such operation. With regard to the latter point, the feeling of the members was that life was made much more pleasant, and was prolonged by operation in most cases. Dr. Griffin spoke of a case in which repeated operations had been performed, the pati-

ent getting a new lease of life with each operation. Dr. Philip assisted at the removal of a breast, which was shown to be cancerous by the microscope, in which the disease had failed to return after a period of seven years. Dr. A. J. Henwood and Dr. Secord were appointed to provide notes for the next meeting, which should form a ground work for discussion.

Selected Articles.

RHEUMATISM.

BY JULIUS POLLOCK, M.D., F.R.C.P., LOND.

Let me now pass to the subject of my lecture. I have certain drawbacks to contend against to-day, which I do not allude to by way of complaint, but that you may know I have not overlooked them. In the first place, there is little or nothing new to tell you about rheumatism. No fresh light has been shed upon its pathology or treatment during the last few years, and I fear lest what I have to say to you may be "as tedious as a twice-told tale." Then again, I am badly off in the matter of illustration. My subject is one that does not carry specimens or diagrams. Nor are we able at will to command the presence of a certain number of cases of rheumatic fever in the wards. At the present time there is but one, and he is convalescent. Such are my difficulties, and I am sure you will bear kindly with me. But to proceed. There are two forms of rheumatism, the articular and the muscular; and although they both are known under the common term "rheumatism," they are really, I believe, two separate and distinct disorders, with but little in common except their name. Articular rheumatism, as its name implies, is essentially an affection of the joints, very frequently associated with inflammation of the pericardium, endocardium, and other serous membranes, the structure of which so closely resembles the synovial. There is usually fever and marked constitutional disturbance. The disease, when uninfluenced by remedies, pursues a tolerably definite course, and has a strong tendency to wear itself out in time—say "six weeks," according to the first Dr. Warren. Its main features are those of an acute febrile attack, with local lesions. Muscular rheumatism, on the other hand, is a much more indefinite complaint, affecting the muscles, aponeuroses, and other fibrous structures, rarely accompanied by fever, never implicating the heart, and of very uncertain duration. Both these forms of rheumatism are full of interest, and will repay careful study; but either is a large subject, and it would be impossible to do justice to the two diseases in one lecture, so I propose, if

you will allow me, to confine my attention this afternoon entirely to the articular form, which from its greater pathological importance may well claim precedence. This disorder occurs in three well-marked forms—the acute, the subacute, and the chronic. The first two are often spoken of as “rheumatic fever,” and I shall not scruple to avail myself of the term to avoid tautology. Perhaps the subacute form, in which the temperature ranges from 99° to 102° F., is that most commonly seen, especially in hospital practice. It differs from the more acute variety simply in degree; all the symptoms are less severe, a fewer number of joints are implicated, and perhaps there is less chance of cardiac mischief. But it is quite as tedious as the acute form, and relapses are not uncommon. In chronic articular rheumatism there is generally no pyrexia, and I believe it is not unfrequently confounded with other kinds of joint disease. It is recognized without difficulty by the number of joints that are affected at the same time, and by the wonderful influence that salicylate of soda exercises over it. I call to mind one case of this chronic form, which came under my notice in the very early days of that salicylate of soda, and in which for nearly a month I tried every remedy for rheumatism that I could think of; at last I used the salicylate of soda and cured my patient in two days.

I propose to pass lightly over the ordinary phenomena of an attack of rheumatic fever, which are probably as familiar to most of you as they are to me; the symptoms of having “taken cold,” the more or less pyrexia, the profuse and acrid sweat, the swollen, painful, and tender joints, the occasional metastasis, and the not infrequent implication of the heart, which latter complication, if it be a complication, and not, as some German authorities have held, the very essence of the disorder, are the more likely to occur in inverse ratio to the age of the patient. But there is a remarkable condition that sometimes arises during the course of an attack of articular rheumatism, to which I desire especially to call your attention. I allude to what is known by the name of “hyperpyrexia.” Now this state of high fever is not unknown in other diseases; it occasionally accompanies typhoid and scarlet fever; it is the very essence of *coup-de-soleil* or sunstroke, and is met with in various diseases of the nervous system; “but it is in connection with acute rheumatism that it has attracted most attention and is most frequently encountered. Curiously enough, it is not only the more severe attacks of the disease that drift into hyperpyrexia; comparatively mild and subacute cases, which appear to be doing well, will now and then take this remarkable course. The symptoms of hyperpyrexia are very characteristic and well marked. The temperature which in ordinary cases of rheumatic fever ranges from 100°

to 103° F., or thereabouts, without any apparent reason begins to rise, and may ultimately attain the height of 110° or even more; at the same time the joint affection subsides, pain is no longer complained of, and the patient often expresses himself as better just as the most serious symptoms are coming on. In most cases, but not invariably, the profuse sweating ceases; the skin becomes dry, harsh, and intensely hot to the touch; very frequently a crop of sudamina breaks out upon the neck, chest, and abdomen (which latter symptom I have learned to look upon as a very unfavorable sign); the tongue becomes dry and brown; there is great thirst, with complete loss of appetite; the breathing is rapid, the pulse very quick and generally weak; the patient is tremulous and restless, with a suffused and ‘ferrety’ appearance about the eyes, delirious at night, but often fairly sensible in the daytime. The delirium is generally of a low, muttering kind, not unlike that of delirium tremens, though occasionally there is some excitement. Unless the disease takes a favorable turn, or relief can speedily be given, death ensues in a day or two, apparently from mere hyperpyrexia.”

The occurrence of hyperpyrexia would appear to depend upon the nervous system being attacked by the rheumatic poison; at least this was the view that I took of it ten years ago, and which has since been abundantly confirmed. Dr. MacLagan says: “Admitting the existence of a thermic centre, whose function it is to control heat formation and prevent undue rise of temperature, we have no difficulty in certain maladies and injuries in attributing the increased body heat to interference with the function. The temperature rises because the reins are slackened. The sequence of events seems to admit of no other explanation. Carrying out this line of argument, we cannot fail to see, not only that the rise of temperature thus induced must be directly as the extent to which heat inhibition is impaired, but that paralysis of the thermic centre, by abolishing inhibition and leaving heat production in uncontrolled possession of the field, must lead to hyperpyrexia. And the more we consider the pathogenesis of febrile heat, the more apparent does it become that impairment of inhibition is a much more likely cause of hyperpyrexia than is direct stimulation of heat production. Heat inhibition remaining unimpaired, tissue metabolism could scarcely cause those very high temperatures which characterize some cases of hyperpyrexia. Heat inhibition being paralysed, there is no difficulty in seeing that the temperature cannot fail to rise, and to go on rising, so long as tissue metabolism and heat production continue. All cases of hyperpyrexia we therefore regard as being probably of neurotic origin—as due to some cause which exercises a paralyzing influence on the thermic centre. Pyrexia may result either from

increased production or defective inhibition, but marked hyperpyrexia is probably due only to defective inhibition. In the cases hitherto instanced there has been a direct lesion of the nervous centres to explain the paralysis of the thermic centre and the consequent rise of temperature. Other cases there are, however, in which the evidence of paralysis of that centre is equally well marked, in which hyperpyrexia is pronounced, but in which the sequence of events by which it is brought about is not so apparent."

Now what is the etiology—what are the causes of rheumatic fever? These may, very properly I think, be divided into two—"predisposing" and "exciting." This part of my subject has given rise to much speculation and conjecture, and various theories as to the pathology of acute rheumatism have been broached. Is there a special poison, and if so is it introduced from without, as in the case of small-pox, typhoid fever, or ague? or is it manufactured within the body, as in gout or uræmia? Dr. MacLagan has advocated the view that the poison of rheumatic fever is malarious in origin, and although I cannot agree with this, it was a very "happy thought," for it led him to try salicin in the treatment of the disease, and was the means ultimately of introducing the use of salicylate of soda, the value of which is now universally acknowledged. By some authorities the "germ" theory has been entertained, and Professor Pel, of Amsterdam, thinks that "it only wants the discovery of the specific micro-organic cause of the disease in the inflamed serous membranes to render the present presumption of its specific origin a certainty." But I do not "cotton" (to use a homely phrase) to the theory that the poison of acute rheumatism is introduced from without. All evidence appears to me to point to the conclusion that it is manufactured *within* the body. This has been clearly proved to be the case in gout by Sir Alfred Garrod; and Dr. Lauder Brunton has called attention to certain remarkable poisons that are formed during the peptonising of proteids within the living body, which suggests the possibility, to say the least of it, of the *materies morbi* of rheumatic fever being formed during the process of digestion or metabolism. Whether it may be lactic acid, an old idea recently revived by Dr. Fagge, or any other kind of acid, I cannot say. We know that a profuse and acrid sweat accompanies the disorder, and looks like an effort of nature to eliminate the poison; but we also know that no amount of alkalies will neutralise the mischief. Unsatisfactory as it may be, we must, I think, admit that the particular substance, the presence of which in the blood predisposes to an attack of acute rheumatism has yet to be discovered.

The liability to rheumatic fever is not the same at all ages. It is amongst the young that the

disease is most prevalent, though mere infants do not seem to suffer. Perhaps the most common time of life for an attack is between the ages of ten and thirty, though it may occur in younger and older persons. It is very unusual to meet with a first attack of articular rheumatism after fifty years of age, and even those who have had the disorder ultimately outlive their liability to be attacked by it. Youth, then, must be reckoned as among the predisposing causes of acute rheumatism. A previous attack has been also supposed to increase the liability to the disorder, but about this there is some doubt. The very fact that in course of time the tendency to the complaint is lost would seem to contradict it. Some ten years ago I was the only person who dared to disbelieve the dictum that former attacks predisposed to the disease; but I find now that the late Dr. Fagge, in his work on Medicine, takes the same view. Loss of health or debility in any form no doubt increases the liability to acute rheumatism. It also seems to be inherited, and in some persons there is such a strong tendency to the disorder that the slightest exposure to wet and cold, or to cold only, will bring on an attack, and occasionally no exposure at all can be traced. Other persons are much less liable to rheumatism, and only the most disastrous circumstances will produce the disorder. A large number of the community escape the disease altogether, no matter to what amount of wet and cold they may be exposed. "The most important exciting cause, perhaps the only one worth considering, is exposure to cold, and especially to cold and wet. Sleeping in a damp bed with insufficient clothing, remaining in wet clothes, sitting in a draught of cold air when heated—in fact, getting a 'chill' in any way, will often induce acute rheumatism in those that are disposed to it. Possibly it is the check thus given to the eliminating functions of the skin that determines an attack of the disease. It may be well to mention here that it is wet *and* cold that are so injurious; and if anyone find himself in a damp bed, he may minimise the mischief, perhaps save himself from any harm, by heaping on plenty of clothes, or by getting rid of the sheets and sleeping between the blankets only." In the same way, if we happen to get wet through from any cause, we should keep ourselves warm by sharp exercise until we can get a change of clothing, which ought to be effected at the earliest possible moment.

It is not often that we have the chance of making a post-mortem examination on a case of rheumatic fever during the height of the joint inflammation, but occasionally a case proves fatal from cardiac complications or hyperpyrexia. We then find that the affected joints are more or less vascular, especially about the synovial fringes, and coated with a sticky, altered synovia. Sometimes there is effusion, but more commonly not, because

the joint mischief is apt rapidly to subside upon the occurrence of any fatal complications. It is said by Sir Alfred Garrod that no ulceration of the cartilages takes place in true articular rheumatism, even after repeated attacks of the disease; and very rarely, if ever, is pus found in the joints. When a case has proved fatal in consequence of cardiac disease, the post-mortem appearance will be in accordance with the mischief that has arisen during life. When death occurs in consequence of hyperpyrexia, we shall probably find evidence of pericarditis in about half the number of cases. Cardiac complication is not an essence of the high temperature, but only an occasional accompaniment. The post-mortem appearances in hyperpyrexia will generally include a vascular condition of the brain and meninges, a dark and congested state of the lungs; the liver and spleen are friable and easily broken down, and the kidneys usually congested. The blood is tarry and fluid, but the muscles are remarkable for their bright-red color. These changes, it will be noted, are simply the result of the high fever. The odour of such cases, even when recently examined, is most offensive.

The diagnosis of acute rheumatism is generally so simple and easy that I do not halt here to make any remarks on the subject. The prognosis is eminently favorable as far as the mere issue of the affection of the joints is concerned; but it must be guarded (1) in reference to possible cardiac mischief, and (2) the chance of hyperpyrexia, which latter, however, is but a remote contingency. Heart disease is more liable to occur in children; hyperpyrexia in adults. In the chronic forms of true articular rheumatism the prognosis is very favorable. I now come to the last and most important part of my subject—the treatment of rheumatic fever. A few years ago this was most unsatisfactory. I have seen alkalies, quinine, blistering, and other reputed remedies tried in a large number of cases, alone or in combination, but without being at all impressed by their value; and well might Sir William Jenner, when President of the Clinical Society, express the doubt and uncertainty with which he used to approach the treatment of articular rheumatism under the old *régime*. But some ten or twelve years ago a new and improved method of dealing with the disorder came into operation; and it is only due to Dr. Maclagan that he should have the credit of having been the first to use salicin as a remedy, which ultimately led to the introduction of salicylate of soda, one of its derivatives. I cannot say that I have had much success with salicin, though I have tried it in a number of cases, but he must be blind indeed who cannot perceive the great value of the soda salt. There may be some doubt as to whether its use shortens the duration of rheumatic fever, but beyond question it robs the disease of some of its most painful symptoms.

In a few days, sometimes hours, the temperature is brought down, the inflammation and pain in the joints subside, and the patient is in most cases practically convalescent. It is not claimed for salicylate of soda that it will prevent the occurrence of heart complications, or even hyperpyrexia, but it lessens the chance of either mischief by rapidly reducing the fever. It must also be borne in mind that the drug is not an absolute specific. Where shall we find one? It fails to relieve or cannot be tolerated every now and then. But this is no more than what happens with quinine in ague, or iodide of potassium in syphilis. Salicylate of soda sometimes produces sickness, deafness, tinnitus aurium, and a peculiar kind of cerebral disturbance; but these disagreeable effects quickly disappear on a discontinuance of the drug, and seldom return upon its resumption after a short interval. The salicylate has been charged with producing serious cardiac depression, and even causing sudden death; but the evidence on these points is not very clear, and personally I have never witnessed any such effects. In treating a case of articular rheumatism, the salicylate of soda may be given in doses of ten, twenty, or even thirty grains every two, three, or four hours, according to the severity of the symptoms and the effect produced. Where there is evidence of great acidity, some alkali (five to fifteen grains of the bicarbonate of potash) may be usefully combined with each dose of the salicylate, which is best given in some aromatic water to conceal its somewhat acrid taste. It is important to keep up the action of the drug for some days after the disappearance of the fever, as the premature disuse of it is apt to lead to a return of all the symptoms—a so-called relapse. Towards the close of a case of rheumatic fever, the joints are not unfrequently left rather swollen and painful; it is then that iodide of potassium (internally), and iodine paint (externally) are so useful. When quite convalescent, the patient should have tonics, and especially steel and quinine; and if rheumatic pains linger, the salicylate of quinine, in five-grain doses, three times a day, is often of much service. Other salts of salicylic acid will probably be found useful in the treatment of rheumatism; and lately a new preparation, "salol," has been introduced. It is a salicylate of phenol and has been used a good deal in America, with, I believe, satisfactory results. But it may be asked, What is to be done in those cases of articular rheumatism in which the salicylates are not successful? Well, it is unfortunate when this happens, but we may fall back upon large doses of salicin, upon alkalies, or upon the excellent alkaline quinine prescription of Sir Alfred Garrod. Quinine and bicarbonate of potash are rubbed up together with a little mucilage and some aromatic tincture, in such proportions that each ounce and a half of the mixture contains

five grains of quinine (in the form of carbonate) and thirty grains of potash. This dose may be given every four hours for as long as may seem desirable.

Of course, all cases of rheumatic fever must be kept in bed, and properly dieted. The most suitable nourishment in the earlier stages is the usual beef-tea and milk "fever" diet, but to this may soon be added some farinaceous food, eggs, and afterwards fish. Rheumatic fever is a disease of debility, and it is very desirable to keep up the strength of the patient; but in some cases the too early resumption of meat has seemed to be followed by a return of the rheumatism. Further information on this point would be of value. Stimulants are not absolutely necessary, nor often needed, in cases of articular rheumatism; but they may be required at times, and should be administered in accordance with the condition of the patient. The bowels should receive attention, but no active purging is required, especially as the movements necessitated by any action of the bowels are attended with considerable pain in severe cases. On the other hand, opium or morphia, which may well be used hypodermically, is often of great service, alleviating the pain in the joints and allowing the patient to get some sleep. When cardiac mischief arises in a case of acute rheumatism, it should be treated in accordance with the plan adopted in such cases, the consideration of which is outside my subject. I must, however, say something about the treatment of hyperpyrexia, a matter of much interest and importance. It is unfortunate that in this severe condition, where most we want its aid, the salicylate of soda, though it was originally introduced as an antipyretic, should entirely fail. Nor can I say much that is favorable of any other of the reputed febrifuges, such as quinine, antipyrin, etc. In truth, we are driven, in the treatment of hyperpyrexia, to the application of external cold, and although some years ago I expressed a very doubtful opinion as to the efficacy of this method, a further knowledge of the subject has led to a considerable modification of my original views. There is now, I think, no question that the careful and judicious use of the cold bath or cold pack holds out the best chance of saving life in these truly formidable cases. The most important precaution would seem to be that the application of cold should be gradually and cautiously applied so as to avoid shock. This may be accomplished by placing the patient at first in a bath the temperature of which is not much below 80°F., and gradually reducing the temperature until the desired effect is produced. This bath may have to be repeated more than once perhaps, and the use at the same time of injections of ice-cold water into the rectum may be of service. Where a bath is not available, or thought to be undesirable for

any reason, the cold pack may be tried. In cases where ice is not used, the patient's body and limbs are wrapped closely in a single sheet, which has been previously wrung out of cold water (temperature 50° to 60°). A blanket is then thrown loosely round him, and he is allowed to remain undisturbed for about half an hour, when the same process is gone through again, and repeated until the temperature is sufficiently reduced. When the ice pack is employed, a hip bath, or other suitable receptacle, containing a few gallons of water, in which some large pieces of ice are floating, is kept by the patient's bedside, and his body and each limb are separately wrapped in pieces of old sheeting which have been wrung out of the iced water, each piece being renewed as often as it begins to feel warm to the hand. No other covering of any kind is put over the patient. In this way the temperature may be very rapidly reduced, and it is necessary to be careful that it is not brought too low. It should not be allowed to fall below 99°F. Amongst many others, two cases have recently been reported, which tend strongly to show the value of external cold in the treatment of hyperpyrexia. One is by the late Dr. Carrington, at a meeting of the Clinical Society on February 25th last, and the other by Dr. Frederick Taylor, in the *Lancet* of March 12th, 1887.—*Lancet*.

THE DOCTOR'S WIFE.

"It is useless," says the *Boston Medical and Surgical Journal*, "to suppose for an instant that any description of the doctor's wife can do justice to her, for doctors' wives differ as stars from each other in magnitude, or, a comparison more to the point, quite as widely as their husbands. It is even doubtful if a composite photograph could so blend their many virtues and individualities as to produce a face in which each community could find their own doctor's wife. But yet, as a class, the wives of physicians possess certain common traits, as well as common graces, which are known and appreciated not only by their husbands, but by all those who possess an extended acquaintance with doctors and other families, though these characteristics are modified by the peculiarities of the woman, and the character of the practice to which she is wedded. The wife of a doctor in general practice differs very decidedly from the wife of a specialist. The business of the latter is commonly confined to certain hours; his office-door is tended by a trained servant, who does not need appeal to the wife for information as to the doctor's whereabouts; but, in general practice, when the domestic answers the bell, and holds a parley with the anxious individual who wishes to find the doctor, the doctor's wife is very apt to be somewhere within hearing, at the head

of the stairs, or behind the office-door, and is very likely to take the conversation into her own hands. She, perhaps, knows the caller, and is able to dispose of him according to his merits. If it is near the time of the doctor's return, she may exercise various transparent devices for keeping him, allowing him, if he is garrulous, to tell her what has driven him to consult the doctor.

"In the early days of her married life she may have gone forth herself to pursue her husband in his route through the village, to hasten his footsteps in some new direction; but it would take something very unusual to start her off in a chase after the doctor in her maturer years. It seems to be a superstition among the more helpless class of patients that the doctor's wife must have some share of the wisdom which they attribute to her husband, and it is by no means rare for her advice to be asked as to the course to be followed when the doctor himself is not available, and she learns, in the course of years, a series of stock recommendations—that a baby in a fit may be safely put into hot water, that a broken leg can be left an hour or two until the doctor comes.

"But there are patients who resent her interference and disregard her suggestions. They will neither tell their errand nor promise to call again. They arouse, sometimes, her pity, sometimes her curiosity, a quality of which the model doctor's wife should possess but a minimum. She finds it difficult, sometimes, to manifest a proper interest in her husband's business without appearing too curious. She is seldom a gossip, or, if she is a little talkative with her neighbors, one of the staple topics of conversation will be the dreadful uncommunicativeness of her husband, whom, under such circumstances, she will possibly characterize as 'close-mouthed.'

"The doctor's wife is almost sure to hold strong opinions on hygienic subjects, and she talks with an air of learning about sewers, traps and ventilation.

"If she is the wife of a doctor who practices in the city, she holds strong ideas about medical charities. Perhaps she appreciates too highly the doctor's unpaid efforts. She has been known to express very radical ideas about hospitals, and night-calls she abominates. She does not like the doctor to imperil his life by attendance on diphtheria. In fact, her constant tendency is to over-value his services. She feels that he does not receive all he ought for the exhausting labor he performs. And yet, with the sweet inconsistency which belongs to the sex, she hurries the good man off on certain occasions. She has been known to drop to sleep after the night-bell had summoned him, and, awakened again by the noise he makes on his return, oblivious of the time that has passed, to chide him that he has not yet started.

"She takes it to heart when the doctor is discharged from a case and a rival practitioner in-

stalled over it, and if the family who have thought it for their interest to make the change are numbered among her friends, a little coolness is an almost inevitable result. Her lifelong friends do not always fully appreciate her husband's peculiar virtues, and it is a constant surprise to her that any of them should continue to employ their old practitioner.

"The doctor's wife is usually emphatically the domestic manager. The domestic machinery is of necessity left to her control, for the irregular and absorbing nature of the doctor's vocation renders him somewhat unreliable as a purveyor. He is occasionally absent-minded, even when present in the body. If he undertakes to do the marketing, he will forget to order the dinner. On the other hand, the care of the children is apt to pass into the doctor's hands rather more than in other families. He gets up at night to see why John coughs, and what it is that makes Benjamin so restless.

"There is one fond delusion which the doctor's wife hides in her own breast, and never reveals, except to her mother, her sisters, and her few intimate friends, and occasionally to her husband, when he is particularly exasperating: she is sure that her husband's success in his profession is, in reality, due to her. His professional attainments are all very well, but, without her directing hand, who can tell where his lack of worldly wisdom would have led him?"

Whereupon an unfortunate, who signs himself "Cælebs, M.D.," writes to our contemporary as follows: "Your remarks in the last issue of your valuable journal upon the Doctor's Wife call forth from my heart certain personal reminiscences not unmingled with pain. 'Pins,' says the infant prodigy, 'save a great many people's lives because they don't swallow them.' So doctors' wives ruin the prospects of hundreds of us young fellows because we don't have them. Shall I tell you my sad fate? Two years ago, on the death of old Dr. Gamboge, two of us, as is the custom, moved into town to take his place. My friend and classmate, Dr. Benedick (alas, no longer my friend!) and I each arrived on the ground about half an hour after the old doctor had breathed his last. We were pretty well matched in what is popularly but erroneously supposed to be the preparation for practice, and we entered the race neck and neck. We were, as Virgil says, or might have said, *Et secare pares, et exercere parati*. Well, we took lodgings on opposite sides of the main street, and the fight began. As fast as I scored a point Benedick scored another, and somehow his points always seemed to count for a little more than mine. I went to the brick church, which was larger, and he went to the wooden meeting-house, which had the most old families. My chimney blew down and I got it in for a five liner in the local paper, but the next week one corner of his house took fire

and he got it in for ten lines. I put on my door an old-fashioned knocker and he put in an electric bell. The country people knew all about knockers, but the electric bell was something they couldn't quite grasp (figuratively I mean; they grasped it often enough literally). Finally I fell into the common pit, and bought a horse long before I needed it or could afford it. The first time I passed Benedick on the street he smiled in an unpleasant way and said: 'Oho, I've got on to a racket worth two of that,' and the next thing I knew he was married. His wife distanced my horse in no time. She went to the sewing-circle and every good patient he ever had was brought into the conversation in some way. Even if he was only called into a house to see the cook, the women all learned that he had been there, though they didn't know (for 'I mustn't talk about my husband's affairs') who the patient was. Then, when the wedding-calls were returned, into every house went some mysterious hint, not too definite, of Benedick's wonderful success. Were there children in the family, 'The doctor is so fond of children, and they all take to him so quickly!' Had any of the household met with an accident, 'The doctor is very fond of surgery.' Were any little dresses in making, 'My husband is such a good baby-doctor. Whatever should I do if it weren't for him!' She always found out who the family physician was, and this information, of course, was the first and most important step toward ousting him. If a new-comer moved into town, the grocer and butcher were hardly more prompt in leaving their cards at the back door than Madam in presenting *her* business-card at the front door. If little Susy Simmons swallowed a pin, and the horrified mother was running amuck for the nearest doctor she could find, she was beguiled in by Mrs. Benedick to wait for her doctor, whom she 'expected in every minute.' No emergency cases ever would wait for me to come home, and whenever a patient eager for immediate healing turned away from my door, he was invariably gathered in by the siren across the way, who either entertained him till her partner's return, or else got his name booked for a visit. They were two, or more than two, to my one. It takes two men to run the Punch and Judy show—one to work the figures, the other to do the talking, get in the crowd, and take up the collection. I had to run my show alone, and didn't take up much money. I wonder if King Lemuel's mother did not have such a doctor's wife in mind when she told him the memorable story of the virtuous woman. There are certain internal evidences that she did 'She perceiveth that her merchandise is good. *Her candle goeth not out by night.* . . . Her husband is known in the gates, where he sitteth among the elders of the land.' By the way, Mrs. Benedick has already got her husband on to the School Cou-

mittee, and, I hear, is thinking of sending him to the Legislature next year. There is nothing left for me but to move on and try it somewhere else. *Vae victis.* I fondly thought when I spent my money for a horse and carriage that I held the 'right bower'; but I have found that Benedick has the 'joker.' And now, before trying my fortune in a new field, I must have, cost what it may, a wife. Bitter experience, as well as the tenor of your editorial, convince me of it.—*N. Y. Med. Jour.*

A SURGEON'S LIFE.*

I have always held that it is impossible for any man to be a great surgeon if he is destitute, even in an inconsiderable degree, of the finer feelings of our nature. I have often lain awake for hours the night before an important operation, and suffered great mental distress for days after it was over, until I was certain that my patient was out of danger. I do not think it is possible for a criminal to feel much worse the night before his execution than a surgeon when he knows that upon his skill and attention must depend the fate of a valuable citizen, husband, father, mother or child. Surgery under such circumstances is a terrible taskmaster, feeding like a vulture upon a man's vitals. It is surprising that any surgeon in large practice should ever attain to a respectable old age, so great are the wear and tear of mind and body.

The world has seen many a sad picture. I will draw one of the surgeon. It is mid-day; the sun is bright and beautiful; all nature is redolent of joy; men and women crowd the street, arrayed in their best, and all, apparently, in peace and happiness within and without. In a large house, almost overhanging this street so full of life and gayety, lies upon a couch an emaciated figure, once one of the sweetest and loveliest of her sex, a confiding and affectionate wife and the adored mother of numerous children, the subject of a frightful disease of one of her limbs, or it may be of her jaw, if not of a still more important part of her body. In an adjoining room is the surgeon, with his assistants, spreading out his instruments and getting things in readiness for the impending operation. He assigns to each his appropriate place. One administers chloroform; another takes charge of the limb; one screws down the tourniquet upon the principal artery, and another holds himself in readiness to follow the knife with his sponge. The flaps are soon formed, the bone severed, the vessels tied, and the huge wound approximated. The woman is pale and ghastly, the pulse hardly perceptible, the skin wet with clammy perspiration, the voice husky, the sight indistinct.

*From the Autobiography of the late Dr. Goss.

Some one whispers into the ear of the busy surgeon: "The patient, I fear, is dying." Restoratives are administered, the pulse gradually rises, and after a few hours of hard work and terrible anxiety reaction occurs. The woman was only faint from the joint influence of the anæsthetic, shock, and loss of blood. An assistant, a kind of sentinel, is placed as a guard over her, with instructions to watch her with the closest care, and to send word the moment the slightest change for the worse is seen.

The surgeon goes about his business, visits other patients on the way, and at length, long after the usual hour, he sits down, worried and exhausted, to his cold and comfortless meal, with a mouth almost as dry and a voice as husky as his patient's. He eats mechanically, exchanges hardly a word with any member of his family, and sullenly retires to his study to prescribe for his patients—never forgetting all this time the poor mutilated object he left a few hours ago. He is about to lie down to get a moment's repose after the severe toil of the day, when suddenly he hears a loud ring of the bell, and a servant, breathless with excitement, begs his immediate presence at the sick chamber, with the exclamation, "They think Mrs. — is dying." He hurries to the scene with rapid pace and anxious feeling. The stump is of a crimson color and the patient lies in a profound swoon. An artery has suddenly given away, the exhaustion is extreme, cordials and stimulants are at once brought into requisition, the dressings are removed and the recusant vessel is secured.

The vital current ebbs and flows, reaction is still more tardy than before, and it is not until a late hour of the night that the surgeon, literally worn out in mind and body, retires to his home in search of repose. Does he sleep? He tries, but he cannot close his eyes. His mind is with the patient; he hears every footstep upon the pavement under his window, and is in momentary expectation of the ringing of the night-bell. He is disturbed by the wildest fancies, he sees the most terrific objects, and, as he rises early in the morning to hasten to his patient's chamber, he feels that he has been cheated of the rest of which he stood so much in need. Is this picture overdrawn? I have sat for it a thousand times, and there is not an educated, conscientious surgeon that will not certify to its accuracy.—*Med. Age.*

MEDICAL NOTES.

It is asserted that four drops of oil of sassafras added to an ounce of *iodoform* completely destroys the disagreeable odor.

Turpentine, in doses of 20 or 30 minims, is said, by a recent writer, to remove some forms of *headache* and produce a wonderfully soothing effect upon the patient.

Salol is recommended for *menorrhagia*, in the *Rév. de Thérap.*, in the following formula:—

R.—Salol, 10 parts.
Acaciæ, 5 "
Aquæ destillat., 200 " M.
Fiat emulsio.

In *nervous headache* the following will often be found an efficacious and prompt combination:—

R.—Acid. hydrobromic. dilut.,
Extract guaranæ, fluid., aa f̄ss. M.
SIG—Dose, a teaspoonful in half a tumbler of water, repeated *pro re natâ*.

In *insomnia*, Dr. J. W. Brayton (*Med. Rec.*) commends the use of antipyrine. He states that it is of particular value in the neuralgias and spasmodic affections occurring in those persons who cannot take opium or any of its alkalies in any food, but especially beneficial in insomnia, giving refreshing sleep after failure with the usual remedies.

For hypodermic use in *neuralgia*, Dr. East, of Mayo (*Phila. Polyclinic*), recommends the following:—

R.—Thein.,
Sodii benzoat., aa ʒj.
Sodii chlorid., gr. viij.
Aquæ destillat., f̄ʒj. M.
Six minims equals half a grain of theine.

Dr. Fordyce Barker, in the *American Journal of Obstetrics*, says the most valuable remedy for *hemorrhages* occurring at or near the climacteric, is a combination of equal parts of fluid extract of hamamelis and fluid extract of hydrastis.

In regard to the use of *iodoform* as an aseptic and antiseptic, Dr. John Wyeth, of New York, says, in the *N. Y. Medical Record*:—For two years past I have abandoned it in dressings, and have never had better results. I am forced to conclude that it is an unnecessary complication to the aseptic dressings, to say nothing of its persistent and offensive odor. The employment of the weaker sublimate solutions for irrigation, 1 to 3,000 and 1 to 5,000, the sublimate gauze dressings applied moist and kept so by protectives, will secure in my opinion, as perfect asepsis as is possible.—*Coll. and Clin. Rec.*

THE LATE PROF. BALFOUR STEWART.—We regret to announce the death of Professor Balfour Stewart, M.A., LL.D., F.R.S. Mr. Balfour Stewart, who had just only completed his 59th year, was educated at the Universities of St. Andrews and Edinburgh. In 1859 he was appointed to the directorship of the Kew Observatory, and in 1867 to the secretaryship of the Meteorological Committee, which last appointment he resigned on his promotion to the professor's chair of Natural Philo-

sophy in Owen's College, Manchester, in the year 1870, a post which he held until his death. Two years before this distinction was conferred upon him he had been awarded the Rumford medal by the Royal Society for his discovery of the law of equality between the absorptive and radiative powers of bodies. Together with Messrs. De la Rue and Loewy, he wrote "Researches on Solar Physics," and he and Professor Tait published their researches on "Heating produced by Rotation in Vacuo." Besides these he wrote a number of treatises especially on the subjects of meteorology and magnetism. The article in the "Encyclopædia Britannica" on "Terrestrial Magnetism" is from Professor Balfour Stewart's pen. Among the many works of which he was sole or joint author may be mentioned the "Elementary Treatise on Heat," "Lessons in Elementary Physics (1871)," "Physics" (1872), "The Conservation of Energy" (1874), and "Practical Physics" (1885). Most of these are text books on the subjects of which they treat. He and Professor Tait also produced the "Unseen Universe," a work of which twelve editions have been published. At the time of his death he was President of the Physical Society of London, and was a member of the committee appointed to advise the Government on solar physics. Professor Balfour Stewart died on Monday at Ballymagarvey, Balrath, in the County of Meath.—*London Times*.

DIPHTHERITIC PARALYSIS OF THE PNEUMOGASTRIC.—Suss (*Rev. Mens. des Mal. de l'Enf.*) draws the following conclusions :

1. In the course of diphtheritic paralysis functional troubles are often observed in the sphere of the pneumo-gastric nerve.
2. The effect of these troubles is seen with reference to the heart's action in slowness, quickly followed by acceleration and smallness of the pulse. Precordial pain and violent pain in the heart itself are usually associated with these conditions.
3. With reference to the respiratory passages, the symptoms are dyspnea and sometimes great irregularity in inspiration and expiration. Less frequently patients suffer from Cheyne-Stokes respiration.
4. With respect to the digestive passages, there are very violent gastro-intestinal pains, and almost always vomiting of food or mucus.
5. Should all these symptoms be associated the disease would usually run a rapid and fatal course, probably within twenty-four hours.
6. If the pulmonary—and, still more, if the cardiac—symptoms are isolated, we may look for a cure in some cases, though it is not possible to say with what frequency.
7. All of the accidents occur most frequently in the progress of a paralysis of the velum of the palate. The presence of this condition should compel a physician to give a very guarded prognosis.
8. The only treatment which has been of any benefit for this diseased

condition is electricity, which may be applied over the cardiac region or over the posterior region of the chest. 9. It is absolutely certain that the heart-clots found, *post mortem*, in the cases which have been studied by the author as the basis of this paper, have no bearing in explaining the phenomena which have been referred to. 10. The bulbar lesions which have been found in the course of these investigations could account for the pulmonary and cardiac disturbances only in isolated cases, and could give no information as to their curability. 11. Changes in the terminal branches of the pneumo-gastric—that is, in the fibres of the pulmonary, cardiac, and abdominal plexuses—can alone explain the peculiar phenomena which were observed in the study of the author's case. The complete explanation must come from histological investigation, which will be supplementary to the author's clinical studies.—*Archives of Pediatrics*.

HYPODERMIC INJECTIONS OF CARBOLIC ACID IN CASES OF RHEUMATISM.—According to the Vienna correspondent of the *British Medical Journal*, Oct. 8th, 1887, Professor Benedict has been using with extraordinary success hypodermic injections of a two per cent. solution of carbolic acid in the treatment of rheumatoid affections. He asserts that in even a few moments after the injection into the part the joint will be freely movable and free from pain, as though narcotized, and in recent cases joints in which there was great tenderness on pressure and distinct swelling of the bones, would be apparently free from disease a few days after the injections; not only would the pain disappear in the joints in whose neighborhood the injections had been practised, but would be markedly lessened in distant joints. Prof. Benedict believes that the carbolic acid has not only a local influence, but a general effect in causing the elimination of the rheumatic poison. He has especially obtained good results by the simultaneous use of salicylic and carbolic acids, when the salicylate of sodium is administered by the mouth in small doses, and one to three subcutaneous injections of carbolic acid being given in twenty-four hours, the course of the affection was very much accelerated and no bad consequences were observed, especially if the treatment was carried out from the very beginning of the disease. Extraordinarily good results were obtained by the method in cases of inflammation of the sheaths of tendons, especially after injury. A few injections sufficed to cut short the morbid process, and no local pain or muscular atrophy, etc., was observed, provided the disease was treated in the above mentioned way from the very outset.—*Ther. Gazette*.

POTT'S FRACTURE—In a paper on this subject Mr. Robert Jones states that, since the original description given by Pott, a hundred years ago, no

great advance has been made either in the anatomy or treatment of the fracture associated with his name. The clinical signs of this lesion are, briefly, a depression over the side of injury, eversion of the foot, a prominent inner malleolus, and a swelling round the ankle-joint. The fracture takes place usually about two inches above the malleolus, the deltoid ligament being often ruptured, and the astragalus separated from the tibia. Dislocation of the foot outward, it is held, is not an essential and absolutely diagnostic symptom, as a slight outward displacement may occur on separation of the tibia from the fibula, without fracture of this latter bone, and outward displacement of the astragalus. Reference is made to two cases in which the fibula was certainly intact, although there was marked simulation of Pott's fracture. The precise spot of fracture, which varies in different cases to the extent of three or four inches, is often obscured by rigidity, due to swelling. The patient, guided by pain, is often able to place his finger on the exact point. On pressure upon the upper third of the fibula the patient is generally able to refer pain to the seat of fracture. As a rule, the surgeon can only guess at the direction of the fracture. Prominence of the inner malleolus, though always present, is not essentially diagnostic. It occurs in certain fractures of the lower end of the tibia, and in sprains of the ankle where laceration of the deltoid ligament has taken place, a tense swelling is often found sufficiently deceptive to lead to a possible error in diagnosis. It is very often difficult to make out crepitus in cases of this fracture. Eversion of the foot usually fails to cause this symptom. It is more likely to be produced by inversion, but the movement best calculated to elicit it consists in combined flexion and inversion. In twenty-nine out of seventy cases the lesion was complicated by fracture of the inner malleolus. The deformity in cases of Pott's fracture occurs and is intensified, Mr. Jones holds, through the continuation of the force which was employed upon the fracture. A foot is fractured by inversion, and then the deformity is generally inversion. Patients do not usually realize the extent of the injury, and continue to walk until a trivial becomes a marked deformity. Fracture due to direct force is less prone to luxation. In the treatment of Pott's fracture the reduction of deformity is accomplished the more readily in proportion to the absence of delay. The earliest chance should be seized of replacing the astragaloid luxation. The attempt at reduction should be long continued. If the reduction be completely effected there is no subsequent tendency to recurrence of the deformity, and, therefore, no necessity to employ splints devised to counteract special displacement. Lest, however, a little deformity remain, it is well to apply a couple of side-splints and a posterior splint, the side-splints being furnished with pads suitably ar-

ranged to minimize deformity. When the splints (which in Mr. Jones' practice are made of malleable sheet-iron) have been adjusted, the knee should be flexed and the leg be made to rest on its outer surface; the foot be maintained at a right angle to the leg. The injured limb should be kept in splints for fully five weeks. In conclusion, Mr. Jones offers a few suggestions regarding the treatment of cases in which, long after active treatment of Pott's fracture, the patients complain of pain, deformity, or inability to walk—*The London Medical Record*.

ANTISEPTIC RULES FOR MONTHLY NURSES.—In a paper introducing a discussion on the prevention of puerperal fever, at the Section in Obstetric Medicine of the British Medical Association (*Brit. Med. Jour.*), Dr. W. S. Playfair laid down the following "antiseptic rules for monthly nurses": 1. Two bottles are supplied to each patient; one contains a solution of chloride of mercury, of the strength of one part to one thousand of water, tinted with litmus (called the 1-in-1,000 solution), the other carbolic oil (1 in 8). 2. A small basin containing the 1-in-1,000 solution must always stand by the bedside of the patient, and the nurse must thoroughly rinse her hands in it every time she touches the patient in the neighborhood of the genital organs, for washing or any other purpose whatsoever, before or during labor, or for a week after delivery. 3. All sponges, vaginal and rectal pipes, catheters, etc., must be dipped in the 1-in-1,000 solution before being used. The surfaces of slippers, bed-pans, etc., should also be sponged with it. 4. Vaginal pipes, enema tubes, catheters, etc., should be smeared with the carbolic oil before use. 5. Unless express directions are given to the contrary, the vagina should be syringed twice daily after delivery with warm water, with a sufficient quantity of Condly's fluid dropped into it to give it a pale pink color. 6. All soiled linen, diapers, etc., should be immediately removed from the bedroom.

NINETY TAPE-WORMS AND ONE GIRL.—In the *Correspondenzblatt für Schweizer Aerzte*, Dr. Roux, Surgeon of the Cantonal Hospital in Lausanne, describes a singular case in which the patient, a girl aged twenty-one and a half, discharged (after two six-gramme doses of extract of male fern) at least ninety *bothrioccephali lati*. The worms passed out in a bundle, the patient assisting the delivery by tearing the package with both her hands, and at the same time uttering shrieks like a woman in labor. The agonizing delivery lasted ten minutes. The mass of parasites filled up half of a chamber utensil. The disentangling and counting took exactly four hours and a half of the author's time. As an individual only such a worm was considered which had a head, and at its other end measured not less than 3 or 4 millimetres in breadth, or

which had an absolutely thread-like (though headless) anterior end, and measured not less than one metre in length. Numerous very long ribbons, which did not answer those conditions, were left out of the reckoning; neither were any of the ribbons which had been discharged several times by the girl for a couple of weeks, previously taken into account. There could be no doubt, therefore, that the number of worms, given as ninety, in reality far surpassed that figure. The length of individual bothriocephali varied between 250 and 60 centimetres, a large number measuring only between 100 and 60. Except some slight nervous phenomena (such as occasional headaches, vivid dreams, *semi-somnambulism*), the patient did not present any morbid symptoms. She was a robust, and ruddy, and even cheerful and active, country girl, with excellent appetite and digestion, and with ninety-five or ninety-seven per cent. of hemoglobin in her blood (as Gowers-Sahli's hemoglobinometer showed). The case seems to give a support to Dr. Zschokke's theory, according to which the prevalence of bothriocephalus latus among the population residing around Lake Lemman should be attributed to the eating of infected fish, mainly that of perch (*perchette*). At least the girl, who had come to the locality from Argovia about the Easter of 1884, during a period of several months' duration, in 1886, was dining on perch (and bothriocephali) once a week, or even still more often, the patient residing at the time at Bonvard, near the lake mentioned.—*Br. Med. Jour.*

THE TIME FOR THE ADMINISTRATION OF ACIDS, ALKALIES, etc.—A correspondent of the *Brit. Med. Jour.* says: "My teacher, Sir Robert Christison, as far as I can remember, taught us the following rules: Alkalies should be given before food. Iodine and the iodides should be given on an empty stomach, when they rapidly diffuse into the blood. If given during digestion, the acids and starch alter and weaken their action. Acids, as a rule, should be given between the digestive acts, because the mucous membrane of the stomach is in a favorable condition for the diffusion of the acid into the blood. Acids may be given before food when prescribed to check the excessive formation of the acids of the gastric juice. By giving it before meals you check the osmosis stomach-ward of the acid-forming materials. Irritating and dangerous drugs should be given directly after food, such as the salts of arsenic, copper, zinc, and iron, except where local conditions require their administration in small doses before food. Oxide and nitrate of silver should be given after the process of digestion has ended; if given during food, chemical reactions destroy or impair their special attributes, and defeat the object for which they were prescribed. Metallic salts, especially corrosive sublimate, also

tannin and pure alcohol, impair the digestive power of the active principle of the gastric juice, so should appear in the stomach during its period of inactivity. Malt extracts, cod-liver oil, phosphates, etc., should be given with or directly after food, so that they enter the blood with the products of digestion."—*A. Y. Med. Jour.*

FECAL ANEMIA.—Sir Andrew Clark did good service recently in calling attention to the importance of constipation as a factor in the production of anemia or chlorosis in young women. Whether or not this theory of the mechanism of their causation by the absorption of the products of the decomposition of retained feces be correct, clinical experience indicates plainly enough that a very close relationship exists between the two. Not only with regard to fecal accumulations, but in respect to retained excretions anywhere, the same observation holds good. This fact accounts for the good effects which attends purgation in so many disordered conditions more or less dependent on the non-elimination of the excrementitious products. When the effect of decomposition compounds are superadded to those of non-elimination, it is not surprising if a morbid condition of things be engendered. It was incidentally remarked that fecal accumulation may take place without constipation. In other words, there may be daily but imperfect action of the bowels. Although this is a trite observation, it is but too frequently lost sight of in the treatment of these conditions. The role of ferruginous preparations, in restoring the blood to its normal condition is an important one, but it is quite subsidiary to the necessity for effecting a thorough clearance of the overloaded colon. For this purpose our forefathers resorted to a combination of iron and aloes, which fulfils every indication and has the merit of being less nauseous to take, if given in the form of pills, than the horrible blend of Epsom salts and perchloride of iron which figures in every hospital pharmacopeia.—*Med. Press and Cir.*

CONTEMPT OF COURT.—Of all the curious reading that we have enjoyed in some time, we think that offered by a communication from Dr. F. E. Stewart to the current number of the *Druggists' Circular*, certainly caps the climax. It affords a splendid illustration of the wisdom of the adage which advises the shoemaker to stick to his last. Wherever a physician strays from his own profession into the intricacies of the law, and especially of the patent laws of this country, his feet are in dangerous and slippery ground, no matter where his head or heart may be. In the present paper, Dr. Stewart attacks the recent decision of the United States District Court in the matter of the suit of Battle & Co., against the Grosses (Daniel W. and Edward Z.) for infringement of their

copyright of Bromidia. He declares that the decision is not final or binding, and advises the Grosses and druggists generally not to pay any attention to it. Dr. Stewart thus puts himself in contempt of the United States Courts and advises others to place themselves in the same foolish and dangerous predicament. The queer part of the matter, however, is, that every reason which he advances against the validity and justice of the decision is the strongest possible argument in its favor, and the reader must be obtuse indeed not to see that it is so. This view of it was evidently taken by the editor of the *Circular*, who says:—"While giving Dr. Stewart's argument publicity on account of its novelty, we think it proper to remind pharmacists that they are bound by the decision so long as it is allowed to stand"—which advice is good, sound sense, like pretty much everything that emanates from the editor of the journal quoted.—*St. Louis Med. and Surg. Jour.*

THE TREATMENT OF PSORIASIS.—Besneir uses

R. —Naphthol (b) 1 part.
Adipis, 9 parts.

The affected part is to be well rubbed with this salve before retiring, and flannel worn during the night; in the morning a bath of hot soapsuds should be taken.

If no improvement follows after five days of this treatment, pyrogallic acid is used, 5 or 10 to 100. To avoid irritation, friction is employed on small surfaces only, and these surfaces are changed every four days.

For extensive surfaces, Besnier employs a dressing of—

R. —Acid. pyrogallic.
Acid. salicylic, āā gr. 90.
Ether and alcohol, q. s. to liquefy.
Add collodion flex., ʒ 20.

Rev. Gén. de Clin. et de Thérap.—*Med. News.*

ANTISEPSIS OF THE BLADDER AND URETHRA.—

At a recent meeting of the French Academy of Medicine, Lavaux read an account of his method of treatment of the bladder and urethra, with the following conclusions: Continued lavage of the anterior portion of the urethra and intravesical injections without a sound, are the most simple and harmless method of genito-urinary antiseptics, which can be employed in all diseases of the urethra. The use of antiseptics and hot injections by this method greatly lessens the danger of accidents in rapid dilatation of the urethra. Rapid dilatation, for simple strictures, is greatly to be preferred, with these precautions, to slow dilatation. Intravesical injections, made without the use of a sound, are quite sufficient to maintain the calibre of the dilated urethra. By these methods the indications for urethrotomy are much less frequent.

Divulsion of obstinate strictures is rendered much less dangerous by the method.—*L'Union Médicale. Med. News.*

NEW VAGINAL SPECULUM.

The accompanying illustrations represent a speculum designed by Mr. Butler-Smythe, and made by Messrs. Maw, Son & Thompson, of London. The speculum consists of two slight concave blades of unequal size, hinged together. Fig. 1 shows the instrument open and ready for use; Fig. 2 the same closed. It may be used with the

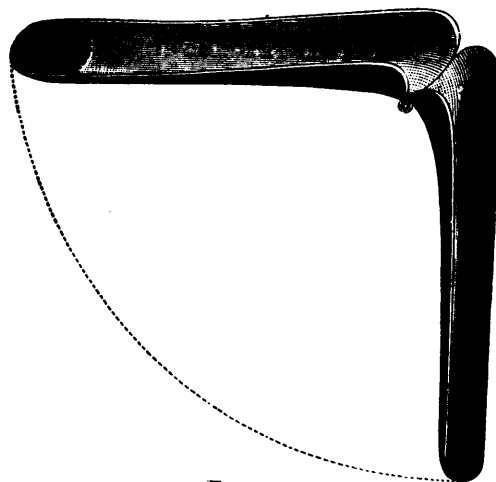


FIG. 1.

patient lying either on her side or back, and, when introduced, one blade acts as a retractor, whilst the other forms the handle. The instrument has been used for some time in hospital and general

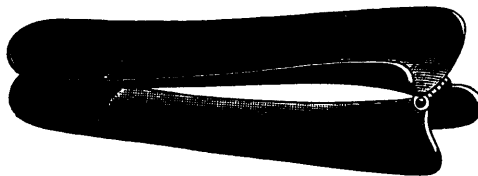


FIG. 2.

practice, and has been found convenient for diagnosis, and useful in cases where the vagina has had to be tamponed or plugged in cases of hemorrhage. Not the least point in its favor is its portability, an important consideration in practice. The blades fold back on each other, and thus enable it to slip into the pocket, where it takes up but little room.—*Brit. Med. Jour.*

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THE BACILLUS OF CANCER.

Since the great majority of contagious and infectious diseases have been shown to be due to the presence in the tissues of a micro-organism, the medical world has been expecting some explanation as to the cause of malignant growths, and especially of cancer. The question of the contagiousness of cancer, antedates the discovery of disease germs, numerous writers having remarked on cases which came under their notice, where there was apparently a fair probability that the virus of cancer had been introduced into the tissues of healthy persons, and had produced its specific results. Some recent writers laugh at the idea of the possibility of such infection, notwithstanding numerous cases which have recently been published, apparently not so much with the idea of supporting the theory of contagiousness, as of placing before the profession facts which, other things being equal, would cause careful men to pause before delivering snap judgments on matters, which from want of sufficient scientific training they are incapable of comprehending. Thus cases of cancer of the penis in men whose wives suffered from malignant disease of the womb; of cancer growing upon a limb opposite to one on which a malignant growth already existed; of a nurse acquiring cancer after having washed for a length of time the dressings of a cancerous os, and others too numerous to recite, seem to point in a direction opposite to that of mere accidental occurrence. Till within

a very short period of time, all such cases were ruled out of court as infectious by scientists, because no specific organism had been found which would in any way account for such transmissions as we have referred to above. Because Koch was unable to discover a *bacillus* in cancerous growths, not a few were ready to declare that no such bacillus could exist. But he did not find the coccus of erysipelas, yet to-day no one doubts that Fehliesen did. The discovery of a cancer bacillus was left for Scheurlen, of Berlin, who in a late communication to the Verein für inner Medecin, gave the result of his investigations in this subject. He made experiments with about forty specimens of cancer of the breast; from every specimen he inoculated twenty culture tubes, thus giving in all 800 specimens. The tumors were washed in a sublimate solution, and the "cancer-juice" scraped from the freshly-cut surface by means of a sterilized knife. He used as cultivating media, serum from a case of pleurisy, gelatine, potato and agar-agar. The growth of organisms was rapid and luxuriant, forming colorless films upon the surface of the fluid, which films afterwards became brownish yellow. At first there were found only bacilli, but later, spores made their appearance. He found the same spores in the cancer-juice, but in smaller numbers than the bacillus, whilst in sections of the tumors no bacilli were found. He had no difficulty in staining the bacillus, but the spores did not respond so easily; no method having been found successful, except Erlich's process for staining the tubercle bacillus. The spores were found both within and without the cells. For nearly two months (since Oct. 1st) Scheurlen has been experimenting with the products of his cultures. He inoculated six bitches in one of the mammary glands, and found in two, which died swellings had formed at the seat of inoculation. The swellings were not conclusive as to the theory of transmission, though they point strongly in that direction; they consist of granulation cells, epithelioid cells, together with bacilli. Scheurlen does not doubt that the results obtained are due to chronic inflammation with cancerous degeneration. It may be mentioned that in medical circles in Berlin, no decided belief in the specificity of the bacillus discovered is held, though the communication and subsequent discussion has attracted a good deal of attention. Virchow and Von Bergman have ap-

parently thrown some cold water on the enthusiasts, and the profession generally are now looking to Koch. Fränkell, who is considered one of the first bacteriologists in Germany, objected to the methods of Scheurlen, saying that secondary infection might have occurred, and that it has frequently happened. He also pointed out that the quick growth of the bacillus, a few hours, does not correspond to the known slow growth of cancer, and that degenerate cells always form a favorable nidus for bacterial growth.

Dr. Schill, of Dresden, has been working on the same lines as Scheurlen for the past five years, and is said to have obtained results similar to his. The presentation of his view of the case will be full of interest to the medical world, but in the meantime the matter is *sub judice*, with perhaps a leaning to the supposition that a genuine cancer bacillus has been found. Dr. Bigelow, in the *Boston Medical and Surgical Journal*, says: "To those who know the ins and outs of professional feeling in Berlin, the fact that the discovery was made in Leyden's clinic and not elsewhere is not without significance." It would not be just to accuse such men as Virchow and Bergman of a jealous belittling of a new man, and their scant endorsement of his results are more probably due to a truly scientific spirit of conservatism.

SURGICAL TREATMENT OF TUBERCULAR PERITONITIS.

The views so long entertained by the profession regarding tuberculosis, have during the past year received a shock. The frequency of laparotomy, and the comparative impunity with which the abdominal viscera can be inspected and subjected to manipulation and surgical treatment, have ceased to surprise us. But that such an intractable constitutional malady as tubercular peritonitis can be remedied, by opening the abdomen, making local application, washing out, and even sponging the diseased parts, is at least remarkable. But this is not all. It is claimed that treating the abdominal disease in this manner, exerts a most favorable influence on the concomitant lung affection, if any be present. It is stated that Mr. Lawson Tait, the celebrated laparotomist of Birmingham, first performed the operation, and now claims a uniform success for it, *per se*, and a

complete cure of the disease in 80 per cent. of all cases of tubercular peritonitis subjected by him to this method of treatment. But to Mr. Frederick Treves, is due the credit of first definitely proposing and successfully carrying out the novel treatment for this disease. Already over one hundred cases are recorded with a mortality of less than twenty per cent., which is such a remarkable showing that we might find it difficult to believe, did not the statement come from very reliable sources. As a matter of fact, they are so well authenticated, that we are compelled to accept them, notwithstanding the violation of our preconceived opinions. Kussmaul, has lately read a report before a German Surgical Society, of thirty-six cases, of which but six died, and of the latter four died subsequently of general tuberculosis.

Some of the cases treated were first aspirated, with the view of relieving the pressure, but while this allayed the mechanical distress, it in no other way benefited the malady. It was only after the abdomen was opened and the cavity thoroughly cleaned by either pure or carbolised water, applied in large quantities, and the affected parts sometimes sponged, that the remedial results were clearly apparent. A drainage tube left in the wound is considered essential by most operators, although one at least has been successful without it. In one or more cases an injection of a solution of iodine was tried with complete success, after cleansing the abdominal cavity. The operators admit that sufficient experience has not yet accumulated to definitely establish the best method of cleansing the peritoneum, nor to clearly indicate the proper cases to select for operation. But with such alleged success, and the rapidity with which the operation is spreading among our most prominent surgeons, these desiderata will not be long delayed.

Why complete immunity from the re-accumulation of ascites obtains after the abdominal section and cleansing, does not yet appear to be thoroughly understood, especially as re-accumulation nearly always occurs after aspiration and tapping. The idea was suggested by one of the operators, that the very satisfactory results of laparotomy were produced by removing the toxic products resulting from the life of the bacilli in the tubercles, contained in the ascitic fluid, and preventing absorption and baneful effect on the system; but we would

naturally suppose that if the ascitic fluid were the only cause of the constitutional effects, tapping should answer a similar purpose. But experience so far has taught us that this method of surgical treatment has so far excelled any former method, that we are justified in adopting it in all suitable cases. And we can only express our regret that the seriousness of the operation will prevent its frequent adoption by the general practitioner, and deter the patient from submitting to so severe an ordeal.

The surgeon is thus encroaching, step by step, on what was formerly considered the exclusive domain of the physician. The brain is now largely submitted to surgical control. The liver and the kidneys are subject to direct investigation as well as most other abdominal organs, and now so medical a disease as tuberculosis is attacked, and in some degree subdued by this aggressive surgical knife. This may be, and probably is, a result of the natural law of the survival of the fittest, to which even great physicians must submit as well as all others; for by the universal operation of so important a law, not only science, but the world advances and is improved.

THE MICRO-ORGANISM OF VACCINIA.

Much interesting research has attended the investigation of the nature of vaccine virus. Not only have scientists given much thought to the subject, because of its scientific interest, but more utilitarian reasons have been added to spur investigators to the unravelling of the mystery which surrounds the subject. There has been (*Lancet*) a reward of £1000 offered since 1883 by the Grocer's Company of London, for the discovery of a "method by which the vaccine contagium may be cultivated apart from the animal body, in some medium or media not otherwise zymotic; the method to be such that the contagium may by means of it be multiplied to an indefinite extent in successive quantities, and that the product of any number of such generations shall (so far as can within the time be tested) prove itself of identical potency with standard vaccine lymph."

Among many papers on this subject, that of Dr. Neil Carmichael, read before the Philosophical Society of Glasgow, is of great interest and importance. He has found that micrococci, often in

chains are always present in vaccine lymph, whether this be humanized, or from the calf; and that no other organisms are present. He concludes that these organisms are the active principle of virus, giving the following reasons:—"They are invariably present in vaccine lymph, are uniform in size and other characters, and abound most in the purest and most active lymph; (2) they are the only living organisms found in vaccine lymph; (3) they multiply enormously when the lymph is planted on the calf or human subject, in the vaccinated tissues and subsequently in the vesicles, and this active proliferation is coincident with the active development of vaccinia; and (4), from their resemblance to other specific micro-organisms—for example, those of pneumonia and erysipelas.

For ten years past Dr. Carmichael has been experimenting on the production of artificial lymph, by cultivation. His attempts at vaccination with this cultivated lymph have not been very successful, but sufficiently so to prove the necessity for further research in this direction. He makes, as the results of his investigations the following statements:

"1. We have succeeded in cultivating the vaccine contagium in the form of a crop of micrococci, the progeny of the micrococci of ordinary vaccine lymph. 2. We have found that its failure in 90 per cent of the cases proves it to be of lessened infective power, and for purposes of general vaccination entirely unsuitable. It is of lessened infective power, but not necessarily, when it does succeed, of lessened protective power. It is not, I think, a truly attenuated lymph, because when it does succeed its success is perfect. It is lymph which, by naturalisation in a new soil, has become less infective—that is to say, less ready to germinate than the old. 3. We have succeeded in producing vaccinia in a number of children (10 per cent. of the cases) apparently susceptible, in a special degree, by inoculation of these cultures. 4. These occasional successes serve as a fresh starting point for the renewal of lymph, enabling us, not certainly to obtain a sufficient supply for general purposes of inoculation, but yet enabling us, in a soil not otherwise zymotic, to cultivate the contagium of vaccine lymph, and so to secure a fresh untainted renewal of our lymph."

COMMUNICATIONS TO THIS JOURNAL.

We solicit communications on all subjects of interest to the profession. It is our desire to make this Journal a practical helper to the physician and

surgeon in his daily work, and at the same time to keep our readers abreast of the most recent scientific discoveries of the day as regards medicine. Now that we may succeed in the first of these objects, we feel that we shall need the assistance of the practitioners of this country, wherever and whoever they may be. Any man who has a practice, and who uses his intelligence, must meet with cases which would be instructive and interesting to his fellow-workers. But how few of our medical men think it worth while to contribute short, practical articles, or letters to the Medical Journals of this country. Very few indeed, as is witnessed by the scarcity of such communications in all Canadian Journals. The case is different with the English Journals, and with many American Journals, whose circulation is perhaps no larger, and whose readers we are sure are no more intelligent or scientific than ours.

Long formal articles are not the kind of communications of which we are now speaking. There can be no doubt that the great majority of medical men entertain views on certain subjects, and have methods of treatment which would be very valuable to the profession generally, but which, owing to the reticence of the possessors of such knowledge never see the light. Short, concise, and pointed articles, in which theories are not so prominent as facts, and good results are shown from certain methods of treatment, will be appreciated by all who read medical journals. We take it to be the duty of every medical man to add his quota, however small, to the general fund of knowledge which goes to the improvement of the condition and amelioration of the suffering of mankind.

THE CAUSE OF TETANUS.—A short time ago we drew attention in an editorial note to the probability of tetanus being an infectious disease. Lately Drs. Rattone and Carle have reported the results of their investigations on this subject to the Medical Academy in Turin (*Rundschau, Virginia, Med. Monthly*). They give the following case and conclusions:—Towards the end of 1886 a patient died of tetanus in the Hospital of St Maurice, in Turin. Two hours after death the initial lesion and some of the surrounding tissues were cut out, from which a watery emulsion was made. One month later the fluid was examined and found to contain large numbers of bacilli and cocci. Twelve

guinea pigs were injected in various organs (nerves, muscles and spinal cord), all of which, with one exception, died in from six to eight days with all the symptoms of tetanus. From these animals pieces of the ischiatic nerve and spinal cord were taken out and again an emulsion made. Some of this fluid was injected into other guinea pigs and all died of tetanus. In order to make these experiments distinctive, animals were injected with putrid and septic matter and strychnine, which gave entirely different symptoms at death. The experimenters conclude that—(1) tetanus is an infectious disease; (2) an animal can be inoculated from a human being; and (3) it can be transmitted from one guinea pig to another.

PAJOT ON STERILITY.—Speaking on the subject of obstacles to fecundity in the human species, Professor Pajot says: "Has the woman an anteversion? Say to her: 'Have the kindness, if you please, every evening when you expect to have intercourse with your husband, not to urinate for five or six hours. Don't ask why; that doesn't concern you. Only don't urinate. You wish to have children? Yes? Well then, urinate after intercourse, and not before.' If she has a retroversion, say to her: 'Madame, when your menses are over, eat plenty of eggs and plenty of rice. Take every night for three or four days a little pill which I am going to give you.' (This little pill contains simply a third of a grain of extract of opium.) 'Manage not to go to stool for three or four days. Then have intercourse with your husband, but don't go to stool till afterward.' You will say that all this is very ridiculous; yet the whole process is entirely rational and is based upon anatomical and physiological principles." This reminds us of the story of the physician's assistant who was consulted by a lady wishing to have an abortion procured. The assistant, who was an Irishman, heard her complaint, and being ignorant of any means to produce the desired result, advised her to "hold her water for three or four days, and she'd drown the little chap out."

THE SPONTANEOUS ORIGIN OF SCARLET FEVER.—It is generally conceded that the ghost of the *de novo* origin of scarlet fever has been laid, but the question crops out here and there even yet. Thus Dr. Newton, the State Dairy Commissioner of New Jersey, writes in *Science*:—"I have often

seen isolated cases of this disease beginning at a time when no other case existed in the city. Many times I have seen a single case begin without any probability of an exposure to another case, but I do not think that we are justified in accepting the theory that the disease may arise *de novo* because of our inability to find the original case. But there is much to lead us to study this side of the question, for filth may be a possible cause."

The statement that *filth may be a possible cause*, is sufficiently unscientific for the most conservative members of the profession. There is no reason to believe that because the source of infection cannot be ascertained, even after the most careful and anxious enquiry, there is, therefore, no source of infection. The wonderful power of life manifested by the virus of this disease, as shown by the distance to which it may be carried, and the length of time which may elapse between the infection of articles of clothing, and the subsequent outbreak of the disease among people who have been brought into contact with such clothing, as well as many recorded instances in which long after the *de novo* theory had been apparently proved, the real cause of the appearance of the disease was made manifest, should go a long way towards confirming our belief in the specificity of the virus, and in Virchow's doctrine, *omnis cellula e cellula*.

SMALLER MORTALITY IN TYPHOID WHEN TREATED BY COLD BATHING.—In an extensive table of cases taken from the practice of the Red Cross Hospital at Lyons M. Bouveret (*Lyon Méd.*) shows a decided decrease in the death-rate in typhoid, when the high temperature in that disease has been combated by cold bathing.

He divides the past twenty years into three periods, as follows:

I. 1866-1872.....	Death-rate, 26.2 per cent.
II. 1873-1881.....	" 16.5 "
III. 1881-1885.....	" 7.3 "

During the first period the treatment was by drugs and expectancy; during the second, cold baths and drugs having an antipyretic action were used but not at all systematically; during the third, the cold bath was used much more frequently. M. Bouveret compares this reduction to that shown by Liebermeister, at Bâle, which was from 26 per cent. to 8.8 per cent. He also states

that the German Military Hospitals give a reduction from 20.8 per cent., to 8.9 per cent. during the same periods. The public surely needs education on this point, and when in the fulness of time they shall have received it, we may hope to see the death-rate in this disease materially diminished in private practice.

ARSENIC IN MENORRHAGIA.—Dr. Palmer recommends this drug (*Med. Rec.*) in two classes of cases: (a) That of growing girls and young women—nulliparæ chiefly—in whom menstruation is not necessarily too free, but appears too frequently and continues too long. A vicious habit of irregularity of menstrual function, from some cause, becomes established, which is highly detrimental to health. Small doses (gtt. iij.) of Fowler's solution, continued during the interval as well as the menstrual time, have rarely failed to correct the irregularity. (b) The menorrhagia of the climacteric, either as to time, quantity, or duration. Here its action is less decided than in the former class, for we all realize that too frequently the aforementioned symptom at the menopause bespeaks some serious organic lesion, often a malignant disease of the uterus. Menorrhagia of malarial origin has a good remedy in arsenic.

DOSE OF SALICIN IN RHEUMATISM.—Dr. McLagan says (*Lancet*) that from the time he first introduced salicin to the notice of the profession (1874), he has never ceased to insist on the necessity of employing *large doses*. Twenty to forty grains given every hour until there is decided evidence of its action, is not too much. He finds that generally before an ounce is taken improvement has taken place, and that as the symptoms decline the dose may be diminished. In Dr. McLagan's opinion, one might as well give one grain of quinine every three hours and expect it to cure intermittent fever, as to give five or six grains of salicin and expect it to cure rheumatism. The frequently repeated and large doses are necessary, because the salicyl compounds are so quickly eliminated that, used in any other way, the patient never really comes under their influence.

COCAINE APPLIED LOCALLY IN VOMITING OF PREGNANCY.—Dr. Wm. Duncan, F.R.C.S., assistant obstetric physician to the Middlesex Hospital, reports (*Lancet*) three cases of obstinate vomiting

of pregnancy, completely and rapidly cured by the local application of cocaine to the vagina and cervix uteri. In the first place the uterus was markedly anteflexed and tender; in the second it was normal as to position, but tender, while the third was slightly anteflexed. In all three cases the roof of the vagina and the cervix were freely painted with a 15% solution of cocaine, and a plug of cotton-wool soaked in the same solution, was carefully inserted into the cervical canal for about three-quarters of an inch. In all three cases the results were wholly satisfactory. The author wisely draws attention to the danger of causing abortion by the application to the cervical canal, which he advises should be made with great care.

STRYCHNINE AS AN ANTIDOTE TO ALCOHOL.—

The benefits derived (*Lancet*) from strychnine in dipsomania, have led another observer to undertake experiments to show what the antagonistic action of that drug is to alcohol. He experimented on dogs, and drew the following conclusions: 1. Strychnine undoubtedly neutralizes the intoxicating and narcotic effects of alcohol. 2. It enables large quantities of alcohol to be taken for a considerable stretch of time without causing the usual organic lesions which follow the use of alcohol alone. 3. There are, however, limits beyond which the alkaloid itself becomes injurious to the organism. 4. Therapeutically, strychnine should be used in all forms of alcoholism. 5. It may be regarded as a powerful prophylactic against alcoholism.

CALOMEL IN SMALL DOSES IN PNEUMONIA.—The use of calomel in pneumonia has been frequently recommended by various writers and clinicians. Some physicians advise its use from the commencement of the disease; others, again, speak of its use in promoting resolution only. In solidification, accompanied with dry tongue and skin, we have derived great benefit from its early use in small doses given often. We usually give about one-twelfth of a grain every hour for forty-eight hours, or until the symptoms are relieved. From what we have seen written on this treatment, and our own experience, we are inclined to believe it reliable. The calomel, however, should not be continued if the bowels become irritable from its use.

NERVE SUTURE.—In the clinical notes of the *Br. Med. Jour.*, a case, operated upon by Mr. Croft, of St. Thomas Hospital, is reported. The posterior tibial nerve had been cut across by a stab. The ends of the nerve were found retracted an inch and a half, but were carefully sutured together with very fine silk, and the wound dressed antiseptically. Twenty-four hours afterwards "sensation was observed to be present all over the foot, but modified in character in the sole." Five weeks later the leg was entirely well, the boy having perfect use of, and perfect sensation in, the foot and leg.

MARRIAGE AND INSANITY IN IRELAND.—The *Lancet* in a review of the Dundrum Criminal Lunatic Asylum (*Am. Jour. of Insanity*) makes note of the curious fact that the single among the inmates are three times more numerous than the married and widowed combined, and adds that this fact is observable in most, if not all, Irish asylums. In the State of New York quite the contrary seems to be the rule, as an examination of the statistics of the Utica asylum shows that the number of single inmates is only about half that of the married and widowed.

ANTIPYRIN IN INSOMNIA.—Dr. Drayton (*Med. Rec.*) mentions the case of a patient in whom he succeeded in obtaining refreshing sleep, after the usual remedies, such as the bromides, chloral, and morphia had proved ineffectual. He gave six grains of antipyrin with two of antifebrin, with the result that she soon became quiet and fell asleep. She slept six hours and awoke refreshed. The antipyrin was continued for four nights with the happiest results, no more sleeplessness having been complained of.

THE WONDERS OF THE TELEPHONE.—A physician reports to us, says the *Medical Age*, December 10th, that he was saved a two-mile ride through a driving storm the other night by having the patient, a child, brought to the instrument and held there until it coughed. He diagnosed false croup, prescribed two grains of turpeth mineral, and turned in for an undisturbed sleep during the remainder of the night. He found the patient in the morning doing nicely—under the care of another doctor.

SWALLOWING ARTIFICIAL TEETH.—Mr. Eglinton writing to the *Lancet*, says a patient of his swal-

lowed her artificial teeth. He endeavored at different times to remove them from the stomach by means of a horsehair probang, but without success. He then administered 20 grs. pulv. ipecac. with 10 grs. zinci sulph. in a cupful of warm tea, and got the patient to eat a few figs. Shortly after she vomited the teeth embedded in the figs. She complained of pain in the epigastrium, which was relieved by a few drops of tinct. opii, and next day she was quite well.

RHEUMATISM, MUSCULAR OR ARTICULAR.—A writer in the *Med. Summary* gives the following: This remedy has stood a test of *fifteen* years. It is almost sure.

R Citrate of lithia. . . . ʒj.

Citrate of potash. . . . ʒj.

Take a teaspoonful in hot lemonade with sugar ʒj., and repeat every two hours.

If there is in the domain of medicine a certain cure, this is the remedy. Try it.

ANTIPYRIN IN HEADACHE.—Dr. Davies, in a communication to the *Lancet*, says he has found antipyrin in doses of ten grains repeated every hour for two or three hours, then at intervals of six hours for a day or two, extremely useful for headache due to worry and over-work. He states that it leaves no ill effects, and that it tends to prevent recurrence of the trouble.

HEAT CENTRES IN THE CORTEX CEREBRI.—Dr. Ott, in a preliminary note to the *Medical News*, says he has discovered a heat centre about the junction of the supersylvian and postylvian fissures. When this portion of the cortex is destroyed, a rise of temperature occurs which persists for several days. His experiments were made upon the lower animals.

BRITISH DIPLOMAS.—Dr. A. M. Ewing (Trin.), has taken the M. R. C. S. Eng.

CORONERS.—Dr. Grant, of Perth, has been appointed associate coroner for the County of Lanark.

Dr. Asa Gray the celebrated botanist has reached the age of 77 years. He now lies ill at his home in Cambridge, suffering from an apoplectic seizure from which it is not expected he will recover.

MR. LAWSON TAIT, has been appointed to the chair of gynecology in Queen's College, Birmingham.

Books and Pamphlets.

A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS. By Roberts Bartholow, M.A., M.D., LL.D., Professor of Materia Medica and Therapeutics in the Jefferson Medical College of Philadelphia. Sixth Edition, revised and enlarged. 8 vo. pp. xxiv, 802. New York: D. Appleton & Co. Toronto: Carveth & Co. 1887.

A work which has reached its sixth edition in a little over ten years, requires no commendation. As a text-book as well as a book of reference for the busy practitioner, it has obtained on its merits an established popularity. From a careful perusal we are thoroughly convinced that this sixth edition will in no way diminish its acknowledged value. The author has given the work a thorough revision, considerably enlarging the book, and has brought to bear a lengthened experience, not only as a teacher of Materia Medica, but as an author of various other medical works, in its pages. His facility of stating comprehensive facts in few words is seldom equalled, and his ripened judgment in selecting the really valuable from the innumerable host of new remedies so persistently pressed upon us by their ardent advocates, demands our admiration. To those whose time will not permit almost continuous reading of the medical journals, a work of this kind is invaluable, if they would keep abreast of the most advanced views and desire benefit from the more recent discoveries in the ever-changing materials of medicine.

FEVER NURSING, for the use of professional and other nurses, and especially as a text-book for nurses in training. By J. C. Wilson, A.M., M.D., Visiting Physician to the Philadelphia Hospital, etc., etc. Philadelphia: Lippincott & Co. Toronto: Williamson & Co. pp. 201. \$1.00. 1888.

This little book should be in the hands of every nurse in the country. The author is evidently a teacher, and knows how to present his thoughts in a concise and lucid manner. The language is within the comprehension of any one fit to act as nurse. Not only does he instruct *how* a given fever should be managed, but he also, so far as is possible, tells *why* such methods are adopted, giving the attendant a rational interest in the outcome of her service. The book will be read with interest and profit, not only by nurses, but also by the practising physician.

OPERATIVE SURGERY ON THE CADAVER. By Jasper Jewett Garmany, A.M., M.D., F.R.C.S. 8vo. 150 pages. Cloth. New York: D. Appleton & Co. 1887. \$2.00.

This work is well written. The directions for performing operations, such as amputations, ligations, disarticulations, etc., are clear and concise. The work is not intended to take the place of manuals which treat of operations on the living, but rather to place the technique of such operations before the student or practitioner, so that, having practised them properly upon the cadaver, he may approach them with greater confidence and skill when called upon in his official capacity to deal with the living. The practice of giving demonstrations in operative surgery upon the cadaver, as well as of allowing students to perform various operations, is well thought of and considerably practised in England. To all who wish to take such a course, the work before us will be invaluable.

INSANITY: ITS CLASSIFICATION, DIAGNOSIS AND TREATMENT. By E. C. Spitzka, M.D., President of the New York Neurological Society, etc. 8vo, pp. 423. New York: E. B. Treat, 1887. Price, \$2.75.

Insanity is a subject so little thought of by the general physician, and so little understood by him, that this book will be of great use. It contains numerous original ideas, and the author does not fear to differ from some of the long accepted classical ideas of alienists. He also expresses his opinions positively, a great treat for the general professional reader in this branch of medicine. As a summary of the latest ideas on insanity, the book is excellent. The method of examining the insane is well treated, as also the part on differential diagnosis. We heartily recommend the book as being one of the most useful that have lately issued from the press.

THE MEDICAL NEWS VISITING LIST; a Daily Record of Practice and Accounts, without the use of signs, and thus obviating the need of transferring. Arranged in removable tablets. Philadelphia: The Medical World. 1887. \$1.50.

The object of this innovation in visiting lists is to save practitioners the trouble of carrying bulky books for recording their daily business, and to make the accounts legal by using words instead of signs. So far as we can judge from an examination of the proposed system, it will accomplish the above object, by the aid of a companion which is

soon to appear as a "Ledger of Monthly Balances." This is a book of 160 pp., leather bound, and alphabetically arranged, so that each account may be readily found. Its price is to be fifty cents.

A MANUAL OF ORGANIC MATERIA MEDICA for the use of Students, Druggists, Pharmacists and Physicians, by John M. Maisch, Phar. D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. Third edition, with 257 illustrations. Philadelphia: Lea Bros. & Co. 1887.

This work has always been a popular one with the Pharmaceutical profession, and the present edition has been so improved as to render it still more valuable. It presents in a concise form the essential physical, histological and chemical characters of the organic drugs, rendering it a useful and reliable guide to business transactions.

REFERENCE HANDBOOK OF THE MEDICAL SCIENCES, embracing the entire range of Scientific and Practical Medicine and Allied Science, by various writers. Illustrated by chromo-lithographs and wood-engravings. Edited by Albert H. Buck, M.D. Volume V. New York: William Wood & Co. 1887.

Volume five of this comprehensive work is to hand and is fully up to the standard. Among the contributors may be mentioned Alt, of St. Louis, Buck, of New York, Henry C. Coe, of New York, Graham, of Toronto. The work is well done, and ably edited.

VICK'S FLORAL GUIDE FOR 1888.

This annual guide is to hand, and contains even more than the usual amount of information about plants and flowers. It will be sent to any address on application to James Vick, Rochester, N.Y.

Births, Marriages and Deaths.

On 28th December, Dr. J. Harrison Howell, of Shedden, Ont., to Julia J., daughter of J. H. Reckie, of Cannington.

On the 13th December, Dr. F. D. Canfield, to Florence A., daughter of James Noxon, all of Ingersoll, Ont.

On the 19th January, Dr. McCrimmon, to Isabel, fourth daughter of D. McKenzie, all of Kincardine.

On 31st December, at Little Britain, Dr. W. N. Whiteside, late of Beeton.