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All Communications for publication must be addressed to DR. HERALD, No. 199 King St. East.

Business Communications and other correspondence to be addressed to DR. A. R. B. WILLIAMSON, 259 King St. East.

Items of interest or original articles for publication solicited from Members of the profession.

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MEDICINES—THEIR USES AND ABUSES.

(Read before the Kingston Medical and Surgical Society.)

THIS evening I crave your indulgence while introducing for your consideration the uses and abuses of medicines. The public faith in the curative power of drugs is now and has been from time immemorial phenomenal, amounting almost, if not quite, to superstition. This belief in the efficacy of drugs has not been confined to the laity but has been and still is largely shared by the profession. Within the last few years

this confidence in the healing virtues of drugs has been somewhat shaken, and we find to-day considerable scepticism in the minds of both the public and the profession as to the beneficial action of drugs in relieving and curing disease.

What has brought about this change in opinion? Is it that these drugs have not the powers formerly ascribed to them or is it that they have been expected to do more than they were capable of? Or on the other hand, have they been wrongfully used, that is, have they been used for the cure of conditions over which they had no curative influence? It seems to me that they have very largely been used, not only in conditions over which they could not have any curative influence, but also very frequently in conditions in which they did and were bound to do positive harm. This misuse of drugs has not been confined to the laity alone, but the profession has not been entirely free from blame. At the present time I think we may safely say that this misuse of drugs is not so common with the profession as formerly, and this simply because the profession to-day is more fully aware of the action of the drugs they use and of the cause and nature of the diseases they are called upon to treat. The physician of to-day is indebted to the physiologist, the pharmacologist and the pathologist for his more accurate knowledge of the drugs he uses and of the diseases he treats. To use a drug rationally the physician ought to fully understand the physiological functions of the diseased organ he is called upon to treat, the action upon that organ of the drug he proposes to administer and the cause and nature of the diseased condition existing therein. Our knowledge on these points to-day is far in advance of that of our predecessors of say even twenty-five years ago. This knowledge has been acquired for us by patient and laborious study in the physiological, the pharmacological, the bacteriological and the pathological laboratories of those who have devoted their lives to these researches.

In consequence of this increased and more accurate knowledge the physician of to-day is in a better position to use his remedies in a rational manner than was his predecessor, and yet as I have already said we find physicians to-day using

drugs not only empirically but also irrationally. Why is this so? There are several reasons. First there are physicians and physicians. There is the intelligent physician who desires to thoroughly understand his cases as to their causation and their pathological nature and who endeavours to find and to use a remedy which has been demonstrated to have the power of counteracting the effects of the exciting cause of the disease or where that is possible of removing or destroying that cause. The latter physician always seeks to have a reason for what he does and seeks to have that reason founded upon well established knowledge. In the second place all preconceived ideas die slowly, and so we find that a line of treatment which was considered orthodox a few years ago is still followed by some practitioners who may perhaps be conversant with the latest and most approved method of treating a particular disease but who for various reasons hesitate to discard the old and to adopt the new. An example will perhaps best illustrate what I mean. It is now well known that pneumonia is an acute infectious disease and that like others of that class tends to run a definite course and that the main indication for treatment is the maintenance of the patient's strength. Now formerly this was considered a local disease of the lung and the physician's efforts were directed to that organ and drugs were administered that had or were supposed to have the effect of softening the exudation in the lung and of thus enabling the patient to expectorate this exudate. When this could be accomplished the patient was well. Now if our present views as to the causation and nature of pneumonia are correct, if pneumonia is an acute specific affection, if it is due to the presence of a germ, if that germ can be found not only in the diseased lung but in other organs and tissues of the body including the blood, if the constitutional symptoms are due to the presence of a toxine generated by these germs, the rational mode of treatment would be to administer something which had the power of destroying these germs or of neutralizing the toxine generated by them, or of counteracting their deleterious effects. An antipneumotoxine has been prepared and apparently successfully used by some

practitioners. How many of us have tried this mode of treatment? In general terms the deleterious effects of the toxine of the pneumococcus may be summed up in one word, depression, especially depression of the respiratory and circulatory systems. A rational treatment therefore would be to administer agents which have the power of stimulating and giving tone to these vital functions. Notwithstanding our accurate knowledge of the causation and nature of pneumonia and of the rational treatment to be adopted therefor how many of us still cling to the use of expectorants in the hope that the lung will thereby be cleared and the patient as a consequence get well. That the patient does then generally get well is a fact, but he gets well not because his lung has cleared, but his lung has cleared because he has got well. The administration of expectorants may not be wholly harmful in this disease but in my opinion their administration is often carried to excess, and their exhibition is of decided disadvantage to the patient, nauseating him and disturbing his digestive functions, thereby interfering with the assimilation of his nutriment upon which the maintenance of his strength so much depends. Let this example illustrate what I mean when I say practitioners often cling to the old method of treatment even when they know and are ready to acknowledge that the newer method is more rational and that the old is often harmful.

Again we frequently find physicians administering medicines where none are required and where their exhibition is positively harmful. This is no doubt often done out of deference to the patient's firmly fixed impression that he can get well only by taking medicine. In many such cases the administration of some harmless drug is not only not culpable, but justifiable. A patient comes to us complaining that he is troubled with headache, that he has a feeling of being tired, that he does not sleep well and that his bowels are sluggish. We give him advice as to exercise, food and regularity in his habits. If he is a sensible man that will be all he will require, but the vast majority of our patients are not sensible when it comes to the treatment of their bodily ailments. They believe

they cannot get well without the use of drugs. Over and above our good advice we prescribe some simple drug which in itself can do neither good nor harm. The patient takes the drug and follows the advice and gets well and gives the credit to the drug. Thus is the belief in the efficacy of drugs fostered and increased in the minds of the laity. Such a patient would not have done so well without the drug. He would not have followed our advice. He would in all probability have gone to some other physician who giving him the placebo would have added to his reputation at the expense of ours. Such a use of a drug is in my opinion not only not harmful, but actually beneficial.

In the selection of a drug for administration in any particular disease, we should endeavour to select one which experience has demonstrated has a curative influence upon the disease to be treated. Sometimes it is true this selection must be made empirically. More frequently today than ever before the selection is based upon our knowledge of the nature of the disease, and of the physiological action of the drug. Let me illustrate. A case of syphilis comes to us. We prescribe Iodide of Potassium. We do not know how it acts in this disease, but by experience we have repeatedly demonstrated that it has a beneficial effect in this affection. This is an empirical use of the drug. Again we are called upon to treat a case of malaria. We administer Quinine. Here we know that the disease is caused by the presence of protozoa in the blood. Quinine has been shown to have the power of destroying these protozoa. The use of Quinine therefore in malaria is a rational mode of treatment. As our knowledge of the causation of disease and the physiological action of drugs increases the number of drugs used empirically will decrease, and the number rationally employed will increase. Drugs used today empirically will later on be used rationally. Quinine is a good example of this. Long before the cause and nature of malaria were known, Quinine was used empirically in its treatment. Now that the nature of the disease is thoroughly understood and the destroying influence of Quinine upon its causative germ has been

demonstrated, the administration of Quinine in this disease is no longer empirical but is a good example of rational treatment. So no doubt will it be with other drugs now used empirically as our knowledge increases.

Unfortunately however, there are many diseases that we are required to treat, the cause and nature of which we do not as yet thoroughly understand, and there are others, *e.g.*, tuberculosis, the etiology of which is understood but for which the pharmacologist has not as yet provided a remedy that has the power either of destroying the germ or of neutralizing the toxine produced by it. What shall we do in such cases when called upon to select our drug? We must do as we have done in the past. Control the effects, *i.e.*, the symptoms. This as might be expected will not be as satisfactory nor as successful a mode of treatment as is that where we are able to exhibit a drug which has the power of destroying the known cause of a disease. It is the best we can as yet do, and we must look to the bacteriologist and the pathologist to point out for us the nature of the disease and the cause thereof, and then we must ask the physiologist and the pharmacologist to find for us a drug which will destroy the germ or neutralize its toxine. The success of these co-workers with us in our fight for humanity against the inroads of disease and death in the past gives us good reason to hope that they will yet materially increase our knowledge of the causes and nature of diseases of which we are as yet ignorant, and provide us with remedies which will have the power of destroying the causes of these diseases, or at least of counteracting the deleterious effects of these causes. All credit to them for what they have accomplished in the past, and may success attend their efforts in the future.

I have said that many drugs are wrongfully used and that some are administered with positive injury to our patients. I will not presume to deal with all such drugs. A few samples must suffice.

Laxatives and purges. I believe that no class of drugs are more abused or more frequently administered with injury to the patient than are laxatives and purgatives. A patient's bowels

are sluggish and perhaps do not act more than two or three times a week. Something is taken or given to produce an evacuation. It has the desired effect. Then the condition of the bowels is as bad as if not worse than it was before. The purge is repeated. This process of purgation followed by constipation is continued for months or perhaps for years. In the first place had the patient been well advised and recommended not to have recourse to purgatives, but to pay strict attention to his diet, to his manner of eating, to exercise, to regularity in his habits, especially endeavouring to be regular in his efforts to have an evacuation of his bowels, he in all probability would have regained perfect and regular actions. As it is now he has permanently weakened the muscular tone of his bowels, and has thus brought about a condition which can be overcome only by prolonged and persistent treatment. The above is not a fancy picture of what may occur by the injudicious use of purgatives. You all know that is a condition frequently met with, and unfortunately it is not always brought about by the patient being his own doctor, but sometimes it results from his medical attendant being too lax in his diagnosis, and in his directions as to the continued administration of medicine to secure an evacuation of the bowels. As a rule in chronic constipation, they are not only not required but they are contraindicated. The cause of the constipation should be sought for and that treated, leaving the constipation to take care of itself. When the cause is removed or overcome the constipation will disappear.

Headache powders and draughts. The medicines used for this purpose are mainly the bromides and coal tar products such as antipyrine, antifebrine and phenacetine. The indiscriminate use of these drugs for the relief of headache cannot be too strongly condemned. I think it may safely be said that the profession now recognizes the truth of this statement and is very chary about prescribing these drugs for this purpose, and when they think that any of them are advisable they prefer to administer them without telling the patient what is being prescribed. Their repeated use by a physician is now practically

a thing of the past. I need not go into their injurious effects. You all know them as well as I. Hear again I would remark the headache is not the disease. It is only a symptom of the disease. We should endeavour to determine what the cause of the headache is and treat that. All the drugs I have spoken of have a tendency to depress. Perhaps the patient is suffering from headache because he is already too depressed, or as the laity would say, run down. What more contrary to reason could be imagined that the administration of drugs to still further depress.

Arsenic. It is of the use of arsenic in the treatment of diseases of the skin that I would call you attention. Probably there is no drug more frequently prescribed in these affections than is arsenic. Properly used there is no more valuable remedial agent. Indiscriminately employed there is no agent that produces more injurious effects. In general terms we may say that arsenic should not be given in acute affections of the skin, but that its use should be restricted to chronic conditions. The action of arsenic is a stimulating one, being a direct stimulate to the skin or acting through the peripheral ends of the nerves supplying the skin. Thus in old, chronic, sluggish conditions of the skin its administration ought to be beneficial by stimulating the parts to renewed effort. In acute inflammatory conditions of the skin on the other hand where the skin is already overstimulated, the action of arsenic tends to aggravate the trouble. In all such cases its use should be avoided. Many skin affections are set up by the irritable condition of the intestinal tract. Now arsenic is an irritant to the prima via and therefore in all such cases arsenic should not be administered at least until the trouble in the stomach or bowels has been completely overcome. At all times arsenic must be used with caution. It is very liable to derange the stomach and thus interfere with digestion. It should therefore always be administered in well diluted form and when the stomach is full, or at least not empty. I always prefer to commence with a small dose and gradually increase the amount as I see how it is borne by my patient.

Antipyretics. Every year that I practice medicine I become more and more convinced that the demand for the administration of antipyretics becomes less and less. Exacerbation of temperature is not a disease. It is only one of the many evidences of disease. Rational treatment does not seek to allay symptoms. It seeks to combat and if possible to overcome the cause of the disease. It is true that many times we do not know definitely the cause of the disease, and in other cases we may know the cause but have not a remedy for overcoming that cause. Then we must treat the symptoms as they arise. It is also true that while we are fighting a known cause with a remedy which has been demonstrated to have the power of lessening the effects of the cause the temperature of our patient may rise and remain abnormally high. It is also true that abnormally high temperature long continued may exhaust and kill our patient. It is our duty in such cases not to wait for the effect of the agent we are administering to combat the cause of our patient's malady, but we must do something to lower his temperature. Year by year I am becoming more and more convinced that this internal administration of antipyretic drugs is not the best way to lower abnormally high temperature. I would rather place my reliance on cold sponging, the cold pack and the cold bath. The effects of antipyretic medicines is only temporary. After their administration the temperature soon rises again and a fresh dose must be given. This process must be repeated so long as the temperature shows a tendency to go up. Now the antipyretics internally administered have a tendency to depress the patient, especially as to his heart action. In those diseases in which we have a high temperature there is naturally the same tendency. It seems therefore to me bad practice to administer a depressing drug where there already exists a strong tendency towards depression. My practice in recent years has been to hold the antipyretic drugs in reserve, and when the temperature would not come down under sponging, packing or bathing, to administer a single dose of one of the antipyretics, thus lower the temperature and then strive to keep it down by the other means I have mentioned.

Digitalis. No drug is used more frequently in heart lesions than digitalis ; no drug is capable of doing more good in these conditions, and no drug can do more harm. The cases in which it is to be employed must be carefully selected with a due regard to the condition of the heart and blood vessels, and a full appreciation of the action of the digitalis upon these organs. Digitalis acts upon the muscular structure of the heart and vessels, causing them to contract with greater force and it lessens the frequency of the heart's beats. On account of the slower action of the heart a longer time is given for the supply of blood to the heart, and therefore the tone of the heart muscles is increased under the action of digitalis. If the contraction of the blood vessels went hand in hand with the contraction of the heart, the resistance to the onward flow of blood would be increased on account of the increased blood pressure, and but little advantage would follow the administration of digitalis, but fortunately when a valvular lesion occurs there is hypertrophy of the ventricular walls, and hence the contractile power and its force are increased so that the increased blood pressure is more than counterbalanced by the increased powers of the contractions of the hypertrophied heart muscles. Now in some conditions of the heart we wish to increase the power of these contractions, and in others we do not. Quoting from Broadbent: "The special indications for its use are frequency, weakness and irregularity of pulse, and oedema of the extremities, with scanty, turbid, concentrated urine. When these are absent it is rarely of service."

Now gentlemen, I am aware that I have brought before you much that you know as well as I. I know that I have spoken of but few of the drugs that are capable of being misused. My aim has been to bring up for discussion the principles upon which the selection of a drug should be made in a given case. If I have succeeded in directing your attention to this important subject, and if what I have said leads to a discussion of this fundamental principle in the treatment of disease, I will feel that you will pardon me for having asked you to listen to well known truths.

JOHN HERALD.

RUPTURE OF THE UTERUS.

A NOT very uncommon accident to the parturient woman is rupture, or laceration of the birth canal. Fortunately such a complication is most likely to occur in the lower part of the canal, involving the cervix, vaginal walls, or perineum; all of which are attended with a minimum amount of danger, and are most accessible to treatment.

At times, though rarely, the upper part of the canal yields, giving rise to that alarming and often fatal accident known as rupture of the uterus. By rupture of the uterus is understood a laceration of some portion of the uterine wall, occurring during the process of parturition, and giving rise to hemorrhage, pain, collapse, and, not unusually, to partial escape of the foetus into the abdominal cavity through the rent in the uterine walls. It is an exceedingly rare accident, occurring, probably, not oftener than once in 4000 cases.

Etiology. The maternal predisposing causes are :—frequent child-bearing, undue prolongation of labor, fatty degeneration of the uterine muscles from old metritis, syphilitic infection ; previous operations on the uterus, as myomectomy, or Caesarian section; or from some variety of uterine deformity.

The foetal predisposing causes are :—male sex of the child, hydramnios, mal-presentations.

The chief exciting cause is strong uterine contractions, coupled with mechanical impediment, or insuperable obstruction to the passage of the child, conditions existing in transverse presentations, pelvic contraction or deformity, large size of the foetus, especially of the foetal head, hydrocephalus, fibroid or other tumors.

The mechanism by which rupture occurs from this cause is worthy of special consideration, in that it furnishes one of the earlier symptoms, and hence a most important warning of the probability that such an accident is impending, and that relief must be prompt.

From an obstetric point the pregnant uterus at full term, presents three more or less distinct zones—1. The upper zone which embraces the muscular layers of all that portion of the uterus actively engaged in the extrusion of the foetus—"the upper uterine zone, or segment". It is thick, muscular, and its peritoneal coat is intimately connected with it. 2. A distended lower portion, "the lower uterine zone or segment", about three inches in length, extending to the internal os, and which remains passive during uterine contraction, or undergoes dilatation, probably from antagonistic innervation. It is thinner, less muscular, but more elastic than the upper segment, and its peritoneal coat is loosely connected to it. 3. The cervix, which has become more or less obliterated during the progress of pregnancy.

The lower boundary of the contracting zone of the fundus is marked by a ridge of thickening, which under normal circumstances is scarcely, if at all, perceptible—"the contraction ring" or "the ring of Bandl." This ring marks the boundary line between the upper contracting zone, or segment, and the lower dilating zone, or passive zone.

On the outer surface of the uterus an inconstant circle of blood vessels—the *vena coronaria*—may be seen, and when present indicates the true line of division between the upper and lower uterine segments.

There are two sets of forces operative in every labor, the forces of expulsion, and the forces of resistance. The forces of expulsion are furnished by the involuntary muscular contraction of the upper uterine segment, aided by the muscular abdominal walls. By the action of these a diminution of the intra-uterine area is produced. The degree of force exerted by the combined action of these two forces has been estimated to be from 17 to 55 lbs. The forces of resistance are furnished by that portion of the parturient tract which must be dilated, viz. that portion of the parturient canal between the contraction ring and the vulva, which includes the lower uterine segment, the cervix, the vagina, and the vulva. In a normal labor the lower pole of the uterine ovoid is gradually dilated until the foetal body passes

through it. If an insuperable obstacle, such as mentioned, prevents the descent of the child, and the contractions of the upper uterine segment continue, the child's body is driven down further and further into the lower uterine segment and cervical canal. The walls of the lower segment become more and more distended to receive the increasing bulk of its contents, while the firmly contracting upper uterine segment is drawn up higher and higher, and it becomes thicker and thicker, until it sits upon the child's body like a cap.

The ring of Bandl, or the upper boundary of the lower uterine segment, is normally at about the level of the brim. As the upper segment becomes thicker the contraction ring becomes more and more marked as a visible and palpable line running across the abdomen between the symphysis and the umbilicus, approaching nearer the latter the greater the distension and elongation of the lower uterine segment. If there is a greater bulk of the foetal body in one side of the lower uterine segment than the other, the contraction ring is higher on that side, and will thus run an oblique course across the abdomen. There is a limit, however, to the capacity of the lower uterine segment, and to the stretching and tenacity of its walls. The limit being reached, the walls give way, and rupture occurs.

Similar effects may be produced, it is affirmed, without insuperable obstruction, by the tetanic action of the upper uterine segment, induced by the administration of ergot in the early stage of labor. Occasionally rupture takes place without obstruction, owing to tissue degeneration—fatty fibrous or tubercular—of the uterine wall. Rupture may also arise from traumatism, as from falls, blows, or violent and unskilled manipulations during the forceps operation or version. Inflammatory changes due to prolonged pressure between the foetus and the pelvic walls may conduce to rupture and even to ulceration and gangrene. The site of the rupture will vary, but it almost always begins in the lower uterine segment. It may occur on the anterior, posterior or lateral walls, authorities differing as to the most frequent seat; probably the most frequent site is on the posterior wall. The line of cleavage is

usually transverse or oblique. It may extend upward from its point of origin, so as to involve the upper segment, or even the fundus, or as far transversely as almost to sever the upper from the lower segment. The rent may extend through the mucous and muscular coats alone—"incomplete rupture"—or it may penetrate all the coats into the peritoneal cavity "incomplete rupture."

Clinical history.—In cases due to other causes than obstructed labor, there may be no premonitory symptoms, rupture occurring suddenly and without warning. When obstruction exists there will be a history of labor beginning naturally, of the rupture of the membranes and escape of the liquor amnii, but the solid contents of the uterine cavity cannot, from one or other of the causes enumerated, engage in the superior strait. The pains become more vigorous and frequent, and the woman's suffering becomes extreme. The upper uterine segment becomes denser as the pains continue, while the lower segment becomes thinner, and more and more distended. The changes in the density of the two segments are further pointed out by the gradual ascent of the ring of Bandl, until it may reach to, or even above, the level of the umbilicus.

With the occurrence of rupture six typical symptoms occur:—
A sudden, sharp, excruciating, lancinating pain, sometimes accompanied by a peculiar noise, as if something had given away.

The uterine contractions cease.

Blood flows more or less freely from the vagina.

Symptoms of shock and collapse, indicated by pallor, frequent and feeble pulse, cold extremities, fainting, hurried respiration, etc.

On vaginal examination, the presenting part of the child will be found to have receded, owing to its partial or complete escape into the abdominal cavity.

Abdominal palpation reveals two distinct tumors, one the rounded off contracted uterus, and the other the irregular shaped foetus, if the escape has been complete. A loop of the intestine may prolapse through the rent in the uterus, and found during vaginal examination.

If rupture is not complete it will be readily seen that some

of these symptoms will be absent, especially those indicating partial or complete escape into the abdomen. Indeed, the rupture may not be discovered until the child is born, or may never be suspected, unless septic peritonitis after labor should suddenly set in.

Prognosis—This will depend upon the site, the degree and the extent of the rent, and upon its treatment. Incomplete ruptures are not so fatal as those in which the peritonem is also involved. The result will depend much upon whether or not there was escape of meconium, liquor amnii, blood, placenta or foetus into the abdominal cavity.

Before the advent of asepsis the mortality was over 90%; since then it has been largely reduced. The survival of the child is a rare exception.

Management—The prophylactic treatment includes all that is required of a careful and well trained, observing obstetrician. Such a calamity may, in a large majority of cases, be avoided by a careful diagnosis of the existing conditions before labor commences, or during the progress of its initial stages, and measures taken to combat them.

A careful employment of anæsthetics in cases where there is a tendency to tetanic contraction may avert much trouble. In minor degrees of pelvic contractions, a careful watch must be kept over the uterine contractions, and the rise of the ring of Bandl. The fundamental principle in all cases of threatened rupture is early termination of labor by the method most conducive to material safety, whether by forceps, version, or craniotomy, or by whatever method the circumstances of the case requires or will admit. Extra care must be taken to avoid violence in manipulation, particularly if version is attempted. The lower uterine segment may be ruptured even by moderate manipulation.

When the child is dead, or rupture imminent, or impacted shoulder, craniotomy or embryotomy should be resorted to by preference.

Once rupture has occurred, it is difficult, owing to the exigencies of the case, to dictate a plan of treatment.

One may be briefly formulated as follows :—1. If the foetus is lying within the uterus, podalic version should be performed at once and the child rapidly extracted, unless forceps offers the greater advantage. A careful examination must then be made as to the site and extent of the rent. If it be low down, small, and absolutely closed in by the uterine contractions, the clots and shreds of membrane should be evacuated, a warm douche administered, and a hypodermic injection of ergotin administered, after which a strip of iodoform gauze should be carried to the fundus, and a firm abdominal roller applied.

Upon the first indication of peritonitis, an abdominal section should be performed, and the peritoneal cavity flushed, and drained.

2. When the rent is large, and a portion of the foetus has escaped into the abdominal cavity, the head, however, remaining fixed, or resting on the pelvic brim, forceps should be applied and the child rapidly extracted. This failing abdominal section must be performed, and the rent closed according to the Sanger method.

3. If the entire foetus have escaped into the abdominal cavity, or the lower portion remain in the uterine cavity, abdominal section is the only resort.

4. If the rent be extreme and ragged, or if there exist a septic condition of the parts, a Porro-Caesarian section, or total extirpation of the uterus is the only plan to pursue.

The placenta may be removed by the vagina, unless it has passed into the abdominal cavity, and the uterus contracted upon the rent, in which case section will be necessary, even though the child has been delivered per vaginam. If the rent is incomplete, it will be sufficient, after careful cleansing and irrigation, to pack the rent with iodoform gauze, for the purpose of controlling hemorrhage and to secure drainage.

R. W. G.

A CASE OF MIXED DIPHTHERIA INFECTION.

FLORA S., aged four years, was on the evening of December 9th, 1902, admitted to the Nickle Wing of General Hospital. I had seen her late in the afternoon and found a temperature of $104\frac{1}{3}\%$; pulse 118; and respirations 20. On examination of the throat a small grayish patch about the size of a pea could be seen on the right tonsil. The glands at the angle of the jaw were enlarged and hardened and the constitutional depression seemed to be extreme. After her removal to the Hospital, 2000 units antitoxin were administered by the hypodermic method. A spray of hydrogen peroxide was ordered for local treatment and a mixture of tinct. ferr. mur. and liq. ammon. acet. dil.—prescribed for internal administration. Small fractional doses of calomel and soda were also begun. On the following morning the temperature was $99\frac{1}{8}\%$; pulse 108. No perceptible change in condition of throat or glands. During the day the temperature went up and in the evening reached $102\frac{3}{4}\%$. The following day, (Dec. 11th) the morning temperature was $99\frac{1}{3}$ and the evening temperature $103\frac{1}{3}$; pulse 124. Such an intermittent temperature at once pointed to septic infection. The throat did not improve. The small patch of membrane still remained and occasionally branched out in a forked manner, reaching obliquely forward from the right tonsil to the under surface of the soft palate in front of the uvula.

At my request Dr. W. T. Connell made a bacteriological examination of the exudate and reported as follows:—Diphtheria bacilli present though in small numbers; streptococci predominating.

Two days later, (Dec. 13th) the high evening temperature still persisting a further dose of antitoxin (1000 units) was administered. The temperature and pulse record on the following day, showed in the morning, temperature 102, pulse 108; and in the evening, temperature $103\frac{1}{3}$, pulse 108. The next morning, (the 15th) the temperature dropped to normal, pulse 104 and we were gratified to notice the complete disappearance of the membrane. However, the temperature soon rose and the same evening (15th) registered $103\frac{1}{3}$; the membrane was again

appearing on the throat. At 7 p.m. another dose of 1000 units of antitoxin was given. The next day (16th) the temperature remained at 99 all day and no change in the condition of the throat could be noticed. The child was very much depressed; very pale and listless despite the strong stimulation that was being carried out. On the 17th the temperature again began to rise and in the evening reached 103; pulse 126, very feeble, and the child's general condition alarming. The next morning (the 18th) the temperature was $103\frac{2}{5}$; pulse 134, and the local and general symptoms merely aggravated.

As a last resort it was thought advisable on account of the mixed nature of the infection and the septic course, to try administration of antistreptococcus serum. Accordingly at 12:30 p.m. 10 c.c. antistreptococcus serum and eight hours later a second dose of 10 c.c. were administered hypodermically. On the following morning the temperature registered $99\frac{2}{5}$; the membrane had disappeared from the throat and the glands were not so markedly swollen. During the day, (19th) the temperature rose slightly, reaching $100\frac{2}{5}$ at 4 p.m. At 8 p.m. it had dropped to $98\frac{2}{5}$, the first normal evening temperature, since the commencement of the illness. On the following day, (the 20th) the temperature remained normal; the throat began to lose its congested appearance; the glands were regaining their normal size and consistence. The child now improved rapidly and passed on to a complete recovery.

To summarize the points of interest in the case:--

1. The mixed nature of the infection, associated with septic manifestations.
2. Only *temporary* improvement in *some* of the symptoms following administration of antitoxin in full doses.
3. Almost immediate response to the action of the antistreptococcus serum. *Permanent* improvement in *all* symptoms. Complete recovery.

NOTE—I have since learned that some are using antistreptococcus serum with good results in cases of pure diphtheria infection.

G. W. MYLKS.

PURULENT OTITIS MEDIA.

PROBABLY no purulent condition is regarded with so much indifference as that of the middle ear, nor can we imagine where a suppurating focus could more insidiously produce its deleterious results.

Purulent otitis may be acute or chronic and it was my intention to say a few words this evening on chronic suppuration and its dangerous complications and sequelae, but as I firmly believe that the chronic condition would almost entirely cease to exist were appropriate treatment applied in the acute cases, I shall include both conditions in my remarks.

The different routes selected by bacteria in their spread through the human system are many, and of these one of the most common is from the naso-pharynx via the eustachian Tube to the tympanum or middle ear, so at the outset let us understand that suppuration in the tympanic cavity is almost always the result of the extension of a local infection of the nose or naso-pharynx. I think we all agree that the naso-pharynx and pharynx are never absolutely sterile, being always a camping ground for the staphylococcus pyogenes albus and aureus, streptococcus pyogenes, pneumococci and occasionally tubercle bacilli as well as a few others. When the nose and naso-pharynx are entirely free from inflammation, these bacteria seem as it were to lie dormant, but when they become active they generally secure berths in the eustachian tube and lie off on their short journey towards the tympanum and when certain constitutional diseases with local manifestations in the pharynx attack the system these bacteria are incensed to greater activity and the liability of the extension of their field of action to the Ear is greatly increased. I think the exanthemata, particularly Scarlet Fever furnish more cases of infective otitis than any other disease. In these Infections the streptococci are the organisms most frequently present and seem to act with their usual amount of virulent activity.

Influenza is also a common cause of infecting the ear by extension from the throat, and the destructive process if not treated early and effectually seems to have a greater tendency to invade the deeper structures of the temporal bone than in most other diseases. Examination of the discharge in otitis complicating grippe reveals the presence of streptococci and quite often the pneumococci.

Pneumonia—diphtheria, tonsillitis, typhoid and sometimes tuberculosis also set up a purulent process in the ear by direct extension from the throat.

Another factor which I have seen to be quite common in producing otitis is the pernicious habit of sniffing salt and water up the nostrils—this act of sniffing opens the orifices of the eustachian tubes and the bacteria are flushed on into the tympanum there to set up inflammatory changes. The nasal douche also occasionally acts as a causative agent, in the same manner indiscreet use of the Politzer bag may produce a similar effect, while violently blowing the nose may be accountable for an acute otitis, inflammation of the delicate structures of the middle ear is generally ushered in by a sense of fullness in the affected ear which is soon followed by pain and the treatment now instituted will decide as a rule what other symptoms supervene.

If appropriate treatment is applied in this the incipient stage of the attack, resolution will invariably take place, but if the condition is allowed to go unnoticed or inappropriate treatment rendered, the pain increases in severity and 24 or 36 hours later the serous exudate which has now become sero-purulent owing to the unrestricted activity of the bacteria causes the membrana tympani to rupture and the resulting discharge appears in the external auditory canal, the pain is relieved, and some might add the patient is happy while others might truly say perhaps only for the time being.

Now, if the drainage provided by nature is sufficient, the discharge may in a few days to a few weeks, gradually cease, the perforation in the drum close, and our patient recover with perhaps normal auditory functions, but unfortunately this happy termination of an untreated purulent otitis is very rare.

Usually the drainage afforded in this manner is insufficient and as a result of this the condition may terminate in one of two ways: the inflammation may extend from the middle ear through the additus and invade the cellular structure of the temporal bone and we have a catarrhal mastoiditis which may undergo resolution, or suppuration may take place and if this is treated radically and heroically a cure will result, but if neglected the pus will either burrow through the mastoid cortex and appear as a sub-periosteal collection of pus or the deeper structures of the temporal bone may become involved, producing thrombosis of sigmoid or lateral sinus—cerebral or cerebellar abscess. The last two conditions are very rare complications of acute inflammation of the middle ear, being far more common as sequelae of the chronic suppurative condition, but nevertheless I have on more than one occasion seen their presence as such demonstrated by operation.

But what most often occurs as a result of lack of treatment in this acute stage, is the continuance of the discharge in a diminished but none the less virulent form, however, and the case ultimately joins the rapidly increasing army of chronic discharging ears.

Prophylactic treatment is the very essence of cure and the highest attainment of success aspired to by the physician of to day. It is not so much what otologists know and apply in the treatment of ear disease but the family physician's ability to recognize the onset of inflammation of the ear and his success in applying timely and appropriate treatment. For he it is who is intimate with the time of life when the child is prone to acute catarrhal attacks of the upper air passages when it is essential to maintain nasal respiration and prevent laying the foundation for aural disease. He is also in attendance at the exanthemata when the warning that announces involvement of the ear is given, and does he regard it with indifference or does he heed it, or best of all does he forestall that warning cry by a daily examination of the membrane tympani in all his exanthemata cases especially scarlet fever, a procedure which I consider is just as absolutely necessary as is the use

of the thermometer, or the examination of the urine in the same disease. Again, even in adults he is prescribing for the relief of influenza and does he keep the ear under constant supervision and apply timely treatment, the same precautions should be taken in pneumonia, typhoid, etc., although perhaps not as necessary as in the former conditions.

We should be very careful about spraying or douching the nose and throat in the exanthemata, etc., for fear of setting up an inflammation in the middle ear. The experience at some large Hospitals, where diphtheria and exanthemata are cared for, is that the cases in which douche or spray was used, quite often had middle ear disease, so that finally some of the attending surgeons abandoned washing the nose and throat, and above all we should never prescribe salt and water to be sniffed up the nose, either in the exanthemata or for the removal of the ordinary catarrhal secretions. I am aware that in making this last statement I am condemning a treatment carried out by some of the most eminent rhinologists of this country and of Europe, but I have seen a conspicuously large number of purulent ear diseases with their complications and sequelae the direct result of this treatment, and during the past summer I performed a double mastoid operation on a patient who only a couple of weeks previously had had this remedial agent prescribed.

Next what is to be done after infection of the tube has taken place and the resulting earache has begun. Examination of the drum membrane at this time will reveal a congestion of its surface generally distributed, but more pronounced in the region of the manubrium plexus.

At this stage I believe the first essential is rest, which lowers arterial pressure and is thus at once a decided aid towards resolution, without surgical interference, which should be our aim at this stage.

Minute doses of calomel until laxative effect is produced.

As to local therapeutics at this stage, I place great reliance on irrigation of the ear with a solution as hot as can be tolerated but one of the chief difficulties is the proper employment of this agent, at home where very often its use has little merit other than well meaning.

The prime necessity is some form of treatment which the friends can carry out and with which there is no liability of doing harm. After a somewhat varied experience with almost every form of ear syringe, douche, etc., I have discarded all in favor of the ordinary rubber bag, known as the fountain syringe, fitted with a nozzle, which can be sterilized and of such a shape that it cannot be introduced too far and will not obstruct the return flow. Its advantages are—quantity, holding a quart or more—ease of application—continuance of flow—heat—at this stage irrigation of the ear with a solution of Bichloride, 1—5000, at temperature of 105% or 110% centigrade, reduces swelling—relieves stasis and eases pain.

The ordinary rubber bulbs—glasspiston syringes, etc., usually placed in the hand of patients, their friends, etc., are absolutely ineffectual in relieving an acute attack and when we consider the small amount they are capable of holding and the manner in which they are used, one might say that they are of little more value than a “squirt”. I think it also devolves upon us to instruct the parents or friends at home, as to the manner of syringing the ear, keeping in mind the direction of the external canal and the necessity of making traction in a direction upwards and backwards in adults and downwards in infants and children. These details to the uninitiated are very essential. The hot water bag will also be found a useful adjuvant to the other treatment in this stage and the local depletion of blood by a couple of leeches or if these are not at hand, by the artificial leech is also to be commended.

If these efforts to control pain and deplete the circulation have not been successful in bringing about resolution in 24 hours, we should again inspect the drum, when we will find it dark red in color and bulging and in all probability the short process of the malleus invisible and now we must resort to free incision of the membrane, this having been decided on, it is advisable to syringe ext. and canal with bichloride and then mop it out with absolute alcohol. I think we will find it to our advantage to administer a general anaesthetic, preferably nitrous oxide gas if at hand, otherwise chlorform or ether, since it is of

the greatest import to secure free exit for the pent up secretions by an incision beginning at the posterior inferior quadrant of the membrane and proceeding directly upwards through Shrapnell's membrane to the upper border of the canal. This as a rule relieves pain at once and now we should order the ear to be irrigated in the manner and with the solution I have spoken of earlier in the paper and under no circumstances should we dust a power in the external canal, as it interferes with our—desideratum—efficient drainage. Some authorities, especially one American aurist has been insisting a great deal of late, on the danger of increased infection by irrigating the canal at this stage, but if employed in the way I have indicated such a risk is practically reduced to nil and the removal of the secretions from the middle ear must not only be provided for but encouraged, otherwise by obstruction accumulation may take place behind the drum and extension occur in other directions leading to more dangerous areas.

If this treatment is faithfully carried out, the discharge which may be profuse for a few days will quite rapidly subside, the line of incision heal and our patient recover with normal audition, whereas if we temporize until the bacteria bound to be recognized at any cost, carry their campaign a little farther and after causing the drum membrane to rupture, appear in battle array in the external auditory canal, we have usually a small ragged perforation, imperfect drainage and the suppuration may involve the mastoid cells as shown by tenderness on pressure, etc., but it is not within the scope of this paper to discuss the treatment of this condition nor the complications which may supervene. But as I have said in a preceding part of this paper, that more often the pain in the ear subsides, the mastoid, etc., escape involvement and the condition continues as a chronic otorrhoea and here I think is where the most indifference is shown, not only by patients as well as their friends, but unfortunately by some practitioners who seem to think that as the acute stage with its distressing pain has been relieved by this even worse condition, that they have done their duty and leave the rest to nature, but in this I think we sadly err and in this connection I can't do

better than quote from one of the most distinguished otologists we of his day, Dr. Wilde, that 'so long as an otorrhoea is present we can never tell how, when or where it will end or when it will lead to.'

If we consider the anatomy of the tympanic cavity—the thin lamella of bone forming its roof and separating it from the temporal sphenoidal lobe, also its direct connection with the mastoid process, enclosing as it does, that large venous channel—the sigmoid sinus as well as the proximity of the cerebellum, instead of temporizing with and wondering why chronic purulent otitis should be productive of evil results, I think we should be amazed that any case of suppuration of the middle ear, lasting a few years, would not destroy its fragile bony enclosures and invade the feebly resisting tissues of the cranial cavity.

It might be asked, at what stage of a purulent otitis, is the term chronic to be applied, roughly speaking, I would say all otorrhoeas of 3 mos. duration or longer, are chronic.

Treatment of this latter condition depends to a large extent on its duration, character and amount of secretion and the changes produced in the structures of the tympanum.

The first requisite, however, is to provide for the removal of the secretion, and the second is to render the ear as aseptic as is possible with the remedies at our disposal, and I think this is best accomplished by syringing ear with some antiseptic solution as potassium permanganate—or bichloride—one or more times a day according to the amount of discharge. Instillations, although somewhat abused have yet a value depending on condition of drum size of perforation—presence or absence of granulation, etc. If discharge is slight in amount and of mucoid consistency, a solution of zinc sulphate, grs. viii to oz., will be found useful or copper sulph or acetate of lead may be substituted.

When small granulations are visible they should be touched with silver nitrate, acid chromic or trichloroacetic, but if large they should be thoroughly removed with snare or ring curettes and this supplemented by the instillation of an alcoholic solution.

Powders used by the physician himself, have their indications and advantages, but to give them to patients or friends to use at home, is not only useless but decidedly harmful.

In conjunction with local treatment we will find it of great benefit to attend to the general health as many patients suffering from otorrhoea are scrofulous, tubercular or syphilitic.

If after applying this conservative treatment faithfully, the discharge still continues, it is proof, positive, that there is carious bone in the middle ear which, use of the probe will reveal, and the extent of this necrosis will decide what further treatment is necessary. If the carious condition is limited to the ossicles then ossiculectomy is indicated, but if as is generally the case, the disease is more extensive, the radical operation of Stacke must be performed, which consists of an incision behind the ear from mastoid tip to upper attachment of auricle and the removal of entire post. canal wall, thus converting the external auditory canal, middle ear and mastoid antrum into one large cavity, the removal of all diseased bone, etc., and then the skin grafting of this newly formed cavity. This seems a surgical procedure of considerable magnitude when we consider that it is only to remedy what the laity call a running ear, but I say stop that running ear, regardless of the difficulties that accompany such procedure.

C. E. O'CONNOR.

NOTES OF TWO HUNDRED AND FIFTY LABORS.

THESE cases have been attended during the past four years, in a section of the city occupied entirely by people of moderate means. In but few of them was a trained nurse available and many of the women were confined under the most discouraging conditions as regards cleanliness of surroundings and proper attention.

There were seven twin labors.

The 257 children presented as follows:—L.O.A. 203, R.O.A. 33, R.O.P. 4, Breech 16, Face 1.

There was a marked preponderance of males, 140 boys and only 117 girls.

The heaviest child weighed $12\frac{3}{4}$ pounds. The lightest, a premature of 28 weeks that lived in a home-made incubator, only 2 pounds.

The twin labors comprised one pair of boys, two pairs of girls, and four mixed pairs. Three of the mixed pairs and the pair of boys had separate placentae and membranes. One of these mixed pairs was in all probability a case of superfœtation, as one of the children was two pounds heavier than the other, which was evidently not full term, and in addition the mother had had her right ovary removed three years previously.

Podalic version was twice performed. In the case of the largest child, after an unsuccessful attempt at high application of forceps. In a case of central placenta previa.

Forceps were used in forty-one cases. Perineal repair was necessary in twenty-eight, though in no case was suture of the rectal sphincter required.

Seventy-seven of the women were primiparae. Twenty-eight needed instrumental assistance, and fourteen of these required perineal repair, as did also ten of the others.

The youngest primipara was sixteen, the oldest forty-three years.

Eighteen of the children were born dead. Five from unduly prolonged labor terminated by forceps extraction. Four of these had been under care of midwives. Four were premature. Three were syphilitic. Two from placenta previa. One each from placental separation, cord around neck, eclampsia and neglected breech.

The following complications were met with :—

Placenta previa. Three cases, two marginal and one central. The last was treated by rapid dilatation and version and child was saved. The marginal cases were treated expectantly by tampon and both children were lost.

Post-partum hemorrhage. Three alarming severe cases. Two from inertia, one after a twin labor, the other after birth of dead child. The third was secondary, at seventh day, from some undiscovered causes.

Eclampsia. Three cases, all in primiparae. In the first, a twin labor, convulsions began when first child was at perineum. They were both extracted and are still alive. The second case had been in convulsions for fourteen hours before coming under observation. Child was born dead, without interference, the following day. The third case occurred at eight months. Patient had had four convulsions before treatment was commenced. Had several more at increasing intervals during the next forty-eight hours, but entirely recovered and delivered of a live child at full term, after an easy labor.

Phlegmasia Alba Dolens. Two cases, limited in each to one limb. One of these patients was four months in bed.

Adherent placenta. Three cases.

Concealed hemorrhage. One case.

Separation of symphysis. One case. Severe infection occurred four times. Twice undoubtedly by nurse in attendance.

In curetting one of these on tenth day, a large dull curette was passed through uterus into abdominal cavity. Fortunately patient made a good recovery without surgical interference. More or less severe inflammation of the breasts occurred five times, four of them easily accounted for. In two the husband's mouths had taken the place of a breast pump.

Incubator was practised on six premature children. Three, including a pair of twins lived, the others died at four, six and thirty days.

There were no maternal deaths.

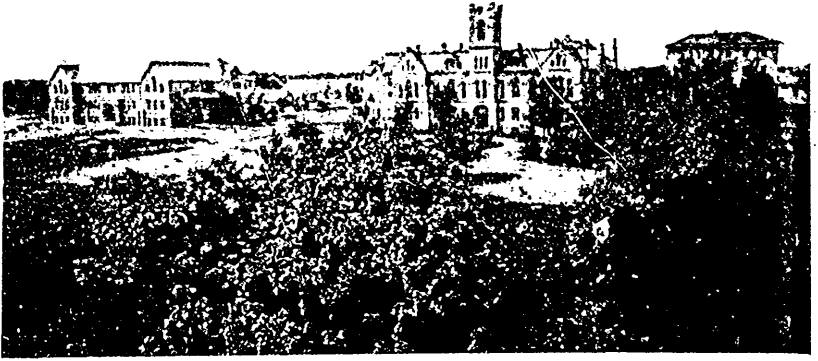
V. BARBER.

DR. W. T. CONNELL

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