decomposition by the addition of very minute quantities of antiseptics, in proportions quite too small to be in any way considered germicidal.

The *modus operandi* is probably in all cases the same: the germ is allowed to hatch, the young is killed by an antiseptic far too weak to touch its parent, and thus the race dies out. Now, it seems to me that this is the explanation of the action of antiseptic inhalations. The materials which have been found most useful are not mere gases which intermingle with the inspired air and then pass out again with it, but are vapours, gaseous forms of soluble bodies which are deposited wherever their penetrating vapour comes into contact with water.

On every moist bronchial tube, on the walls of every cavity, and even in every congested spot in the lung, the inhaled carbolio vapour condenses and carbolises the tissues; and we are, I think, forced to believe that the benefits derived from the use of antiseptic inhalations are due to this infiltration of the lungs with antiseptic material rather than to any action upon the floating germs.

It must, however, be granted at once that this impregnation of the tissues never goes to any great extent, and the question arises whether so mild a dose can have any effect in preventing bacterial growth. There is plenty of evidence to show that antiseptic inhalations diminish the irritating qualities of the expectoration, and lessen the number of bacteria in it; but there is no proof at all that it can be rendered entirely free from bacteria by any amount of antiseptic vapour; in fact, all evidence goes the other way.

Now, it has often been assumed that, if we cannot stop the growth of micro-organisms in fluids lying in the tubes and cavities, we certainly must not expect to check their development when embedded in the substance of the lung.

But the cases are different; the one is a question of dead matter, the other of living tissue. Decomposition of expectoration obeys the same laws as experiments in test-tubes; but the growth of bacilli in the living substance of the lung is resisted by the vitality of the tissues themselves. Life is the great antiseptic.

There are few points in which the difference between things living and things dead is more markedly shown than in the power live bodies possess of resisting, by virtue of their own vitality, the growth within themselves of those lower organic forms which, in dead tissues, readily take root and grow, and, by their development, rapidly reduce the lifeless elements to their lowest chemical affinities. For scores of years man's body resists decay, and then, when life departs, he rapidly swarms with myriads of bacteria; not that there is any chemical change making his body more suitable food for them, but because they are able at last to take possession, now that the resisting power of his vitality has departed.

As it is with the germs of decomposition, so it is with those of tuberculosis. When they attack the lung, they do not usually at first affect those parts which are most actively performing their functions; the very parts into which they are most freely carried by the air are least susceptible to their attacks; their active vitality is their protection; but, in the apices and parts injured by previous inflammations, they settle and breed disease. And, even when phthisis is well established, and when the air in the chest must be crowded with its germs, large portions of the lung remain for long untouched; showing, on the one hand, how great is the resistance to the disease inherent in the tissues themselves, and, on the other, giving a rough measure of the amount of help required from treatment. For, if the difference between a soil fit and one unfit for bacterial growth is to be measured, for example, by the difference between the functional activity and resulting vital resistance of an upper and a lower lobe of the lung, surely it is not unreasonable to hope that, by impregnating the pulmonary tissues with antiseptic material, which, we know, renders them less fitted for the cultivation of bacilli, we may be able to make up the lacking resistance, and so prevent the access of disease.

When we send a patient to Davos, to an atmosphere so rare that he has constantly to use the whole of his lung to get sufficient breath, instead of breathing with a portion only, as we mostly do, we really give to the whole lung the same functional activity, the same resisting power, which formerly belonged only to certain parts of it, and we know that the disease is often checked.

If, then, the tissues are so nearly able to hold their own, it ought to be possible, by adding the resistance of any antiseptic, to stop the progress of a disease which, according to the premises of our argument, is due to bacterial growth. This may all be mere theorising, but it leads to some very practical points.

First, the material used ought to be capable of absorption by moist surfaces; it should be a vapour, not a gas; and a dry vapour, not an atomised solution.

Second, as no attempt to filter or sterilise the air is required, all

complex forms of respirator may be discarded. The freest possible access of air should be allowed, the vapour being breathed with it as constantly as possible; so that the simplest and most open respirator is often the best, the mere diffusion of the vapour in the room sometimes being sufficient.

Thirdly, we must combine with the treatment by inhalation, all medicinal, dietetic, and hygienic measures which tend to improve the general condition of the patient, and thus increase his vital resistance.

It is worth bearing in mind that the view of the matter, which I have so imperfectly brought before your notice, shows the harmony and unity of purpose which exists among the various means which we make use of in the treatment of consumption.

If we accept the germ-theory of the origin of tuberculosis, all treatment, both local and general alike, must aim at preventing the growth of certain bacteria in the body; the struggle is between one great life and myriads of small ones; and while all general treatment tries, by providing healthy work, good food, and pure air, and by attention to all secretions, to improve man's condition, and make him so suitable to his surroundings, that he, being the fittest, shall survive; local treatment, on the other hand, endeavours to impregnate the lungs with substances so inimical to the development of microscopic forms of life, that the parasite, planted in a soil unsuited for it, beaten in the struggle, shall cease to grow.

ALEXANDER AND ADAMS'S OPERATION ON THE ROUND LIGAMENTS.

Read in the Section of Obstetric Medicine.

By HENRY A. LEDIARD, M.D.ED., F.R.C.S.ENG.,

Surgeon to the Cumberland Infirmary, Carlisle.

In the *Medical Times and Gazette* for April 1st, 1882, I read with much interest an account, by Dr. Alexander, of Liverpool, of a method of treatment employed by him for the relief of prolapsed uterus; and I determined to put into practice, at the first opportunity, the operation, which seemed at first sight to have much to recommend its adoption. Amongst the lower classes, bad examples of procidentia uteri are met with frequently, and I have often experienced considerable difficulty in finding any instrument to give any kind of support, or that could be worn with comfort.

It was not until July 4th of this year that Dr. Adams's paper came to hand; and it is evident that full justice must be done to his independent planning of the operation upon the dead body, and demonstration of the anatomical practicability.

My own experience may be useful, although it is limited to operation upon four women, all of whom suffered from complete procidentia; and I will simply give a summary of their cases, inasmuch as a detailed account of each would be tedious and unnecessary. The ages were from thirty-three to fifty-three years; prolapse had existed from two to eight years, and pessaries were useless. The first case was operated upon on November 27th, 1882, when a prolonged search was made for the ligament on one side only, but without success, the wound taking nearly three months to cicatrise. It can be said with truth that little pain was caused, and no risk to life was in any way threatened, but the result was mortifying in the extreme, for, in spite of the rest in bed, the procidentia was as bad as ever. The case was, however, instructive, seeing that failure was, no doubt, due to fraying out the ligament instead of grasping it boldly; indeed, I came almost to the conclusion that there was no round ligament present. The tedious healing was accounted for partly by the handling the tissues had undergone, and partly by the patient being obese. I hope to induce her to allow me another trial upon the opposite ligament.

The second case was more encouraging, for the ligament on one side was quickly found, shortened, and stitched to the skin; but here again the wound was about two months before it was completely healed. She came for examination on June 22nd, the operation having been performed on January 1st. The cervix was two inches within the vagina. She "could go about much better," had "no bearing down pain," and no bladder-trouble; and this gain was produced with shortening one ligament only.

The third case was somewhat remarkable; for, although the ligament was readily found on one side, yet, when search was made at the same time upon the other, no trace of any ligament appeared. Again, slow healing followed with erythema and cellulitis of the abdominal wall, a high temperature, and dry tongue, etc., so that at the end of three months I was very glad to see the patient able to go out. The operation was performed on February 2nd, and on July 4th she came

to show herself. The uterus had never come down since leaving the hospital, and the cervix was at least two inches up the vagina. Here again this result depended upon shortening one ligament only.

The fourth patient has had both ligaments shortened, an interval of three weeks intervening between the operations, the ligaments being stitched to the pillars of the ring as well as to the skin. She was undoubtedly the healthiest of those operated upon, and the wounds healed as, I take it, they ought to do, *i.e.*, in about three weeks. The result thus far promises well, for the uterus is well up the vagina; but, seeing that the ligaments were shortened on May 18th and June 11th only, it is too early to judge of the probable permanent result.

Such is a brief report of my experience of this simple operation, in the Cumberland Infirmary, and I trust that no surgeon will be deterred from practising it by reading the account of my two failures to find the ligament sought for. The operation is almost bloodless and painless; and I am not at all sure that a slow healing of the wounds, provided the ligament remains in the new position, is not advantageous—inasmuch as the patient is confined to bed and to rest, thereby affording sufficient time for the parts to consolidate before again being put on the stretch.

In one of my cases, ether was used, and some bronchitis followed. I certainly never expected that the result would have been a success, for coughing was about the last thing wished for.

The plan I have followed is to wind the ligament, when pulled out, round a piece of stick, and leave it like a pedicle projecting through the wound, to fall off naturally; so that a sort of stump can be seen in the cicatrising part, that is, if healing be primary. I unwound the ligament from the sticks in two instances. I found the band measured two and three inches respectively. In all cases, full antiseptic precautions were taken, and the subsequent dressing was Listerian until suppuration appeared. I do not think, however, that anything more than strict cleanliness and careful adjustment of the wound is necessary, together with sponge-pressure and a gauze bandage; whilst the sooner the ligament is found, the less handling will the tissues be subjected to, and the less disturbed will they be in consequence. Careful stitching of the ligament, both deeply and superficially, is no doubt most important for the lasting success of the operation; and Dr. Alexander's recommendations, as to the "method of retaining the ligaments in their new position," should be strictly adhered to. (*Liverpool Med. Chir. Journal*, p. 116, January 1883.)

In the last case operated upon, a sponge was placed in the vagina, and changed daily; it was retained without causing any discomfort, and was probably useful in steadying the uterus whilst healing went on; and I can imagine that, in cases where chloroform caused sickness, or ether setup bronchial irritation, such a practice might prove beneficial.

I note that Dr. Adams, in his paper already alluded to, mentions that the peritoneum does not follow the ligament "under the necessary traction;" but, in one of my operations, this membrane certainly did follow the ligament, but was easily stripped back with a finger; there would, however, be a risk of peritonitis were a funnel-like process of this membrane dragged along and transfixed with the needle. The surgeon will soon learn to pull with knowledge; for any violence would probably lead to rupture of the ligament, as well as injury to the peritoneum.

The spine of the pubic bone is undoubtedly the point to be aimed at, for near it will the ligament be found; and I fully endorse all that has been laid down by Dr. Alexander, as to grasping the fat which projects from the external ring with forceps, and pulling upon it until the ligament appears.

Finally, I am disposed to believe that this operation will receive all the recognition from surgeons that it deserves; and that, ere long, we shall hear of its performance, not only in this country, but elsewhere.

POSTSCRIPT.—On July 27th, I shortened the round ligament on the left side of the patient on whom I first tried this operation and failed to find the ligament. On this occasion it was found without difficulty, and drawn out about two inches.

WATER FROM THE CHALK FOR LONDON.—Though it is generally believed there is some connection between stone in the bladder and chalky water, the connection has never been satisfactorily explained. The Leatherhead and District Waterworks Company have sunk an artesian well, which yields, it is said, three million gallons "of pure and brilliant chalk-water of the finest quality" daily. This water is to be collected in a reservoir on the chalk hills, about 300 feet above the level of the Thames at London Bridge. It is suggested that this supply may eventually be of use for London. Should this suggestion be carried out, it will be an interesting pathological experiment on a gigantic scale.

CASE OF ORBITAL ABSCESS COMMUNICATING WITH THE BRAIN.

Read in the Section of Ophthalmology.

By A. EMRYS-JONES, M.D.,

Surgeon to the Manchester Royal Eye Hospital.

A. D., a boy aged 2 years, first came under my care at the Eye Hospital on December 23rd, 1882, when his father gave the following history. Three months previously, he was playing with a tin-whistle, and he knocked it against the corner of the right eye; there was a good deal of bleeding at the time, and, although he had been under medical treatment since, he was not getting any better.

On examination, I found the right upper eyelid everted, with its mucous surface raw, and exhibiting numerous cicatrices, and discharging a considerable amount of muco-purulent matter. From the swollen and distorted condition of the eyelid, the cornea was almost hidden from view, but it was intact, and no other morbid appearances were noted at the time. Under a roller-bandage and pads, and occasional application of nitrate of silver solution (ten grains to the ounce of water), the discharge lessened, and he was allowed to leave the hospital on January 6th, 1883, with the eyelid much less swollen, and so less everted.

On February 3rd, 1883, he was readmitted. His aunt informed me he had frequently vomited his food since he was last seen; the right eyelid was still everted, and the eye was noticed to protrude in a downward direction. Having put him under chloroform, I cautiously proceeded to make an exploratory puncture with a grooved needle, which I pushed about an inch and a quarter upwards, in the direction of the tumour; the result was negative; but, while doing this, I noticed, for the first time, a distinct pulsation, and consequently desisted from further attempt.

On March 2nd, 1883, he was again anaesthetised, and carefully examined; my colleague Dr. Little kindly assisted in the examination, and all we could discover was a pulsating elastic tumour, possibly of an aneurysmal nature, pressing the eye downwards.

On May 21st, 1883, I received a telegram notifying the death of the child, from my friend Dr. Gray, of Dalton-on-Furness, who had attended the boy, and to whom I am indebted for the history of the patient's final illness, as well as for assistance in making the *post mortem* examination. A fortnight before his death, the boy had been quite comatose, moving his right arm up and down continually for the last few days, and quite paralysed on his left side. The last two days, the eye was pushed forwards and downwards to a much greater extent, and there was violent pulsation. Dr. Gray noticed some hypopyon, which, however, again disappeared, and this was accounted for by the presence of a corneal perforation. The temperature had never risen above 99°, and the eye receded immediately after death. It may be mentioned here that no ophthalmoscopic changes could be detected at any time.

On *post mortem* examination of the orbit and cranial cavity, I found the following appearances. Just above and behind the eyeball, and attached to it by numerous bands of organised fibrine, there was a pouch-like sac, with a very dense laminated wall, which freely communicated with the cranial cavity through a circular foramen in the orbital plate of the frontal bone, of about an inch in diameter; the margins of this opening of the sac were firmly adherent all round to the sharp edges of the said foramen. The sac was filled with pus, and, on examination of the cranial cavity, we found that the abscess had extended backwards into the brain, which contained fully a pint of pus in a cyst-like cavity in its anterior lobe.

REMARKS.—The case appeared interesting from the difficulty of the diagnosis. While the history of the injury pointed to an abscess, the failure of the exploratory puncture, the presence of pulsation, although unaccompanied by a distinct *bruit*, and the absence of fluctuation, led us to consider the tumour to be an aneurysmal one. I have no doubt now that the tin-whistle entered the orbit, and wounded the periosteum, and that this was followed by periostitis, ending in suppuration. The process must have been slow, to judge from the highly organised and laminated structure of the cyst-wall; and the absorption of the circular piece of the orbital plate must have occurred at an early period. This once accomplished, it is easy to understand the further growth of the abscess and the origin of the pulsation.

CARDIFF MEDICAL SOCIETY.—At the annual meeting of the Cardiff Medical Society, the following office-bearers were appointed:—*President*: C. T. Vachell, M.D.; *Vice-President*: C. E. Hardyman; *Committee*: D. Edgar Jones, A. P. Fiddian, M.B., Herbert Vacher, M.D., Albert Plaen, M.B.; *Hon. Secretary and Treasurer*, T. Garrett Horder.