was enlarged, exceedingly tender, and curved backwards, so as to form a considerable tumour, compressing the rectum. All the parts, besides the body of the organ, were perfectly tolerant of pressure. The uterine sound could not be made to enter the cavity of the organ. There were no piles.

The treatment adopted was, leeches to the os uteri, perfect rest, tonics, occasional laxatives, and a generous diet. She recovered completely; and when dismissed at the end of six weeks, the body of the uterus, though still large, had regained its normal position, and the sound entered its cavity readily.

CASE X. William Purser (for a full report of this case, *vide* JOURNAL, October 15th, 1859), aged 48, porter. He died from medullary cancer, which had destroyed the right ischium, and had evidently involved the obturator and great sciatic nerves (though, from the difficulty of the dissection, these nerves were lost), together with the origin of some of the muscles of the thigh. No external evidence of this disease appeared during life, until within a short period of the man's death, and the symptoms were consequently unexplained.

For three months, he suffered severe pain in the regions of the right sciatic notch and tuber ischii; he had also occasional pain, and deep seated tenderness, in the right groin. He maintained the thigh in a semiflexed position, and the pain was increased by extension or rotation of the limb; it was worse at night, and deprived him of sleep. He was sufficiently benefited by counterirritation and by sedative applications to be able to walk; but the symptoms soon afterwards returned with increased severity.

Original Communications.

ON THE PULVERISATION OF MEDICATED LIQUIDS.

By A. DIEUDONNÉ, M.D., Paris.

MUCH discussion having taken place lately in France, before several learned societies, about Dr. Sales Girons's new method of pulverisation of medicated liquids, we think it advisable to bring the subject before our readers.

This new process is carried on at the Hôtel Dieu of Paris by M. Trousseau; in the Maison de Santé by Dr. Demarquay; and in private practice in France by numerous practitioners. There has been a good deal of objection to it. First, it was said that the liquids thus pulverised did not even penetrate the larynx. Several private cases which have been published by Drs. Auphan, Moura Bourrouillou, Sales Girons, and lastly by M. Trousseau, have carried the point of the efficacy of the method in vocal and laryngeal disease beyond any doubt; and the most learned and staunch adversary, Dr. Durand Fardel, president of the Society of Hydrology in Paris, and justly renowned in the European scientific family, has fairly given up that point, and denies only the therapeutic effects of the pulverisation in bronchial and thoracic affections, recognising its grand value in the disease of the pharynx and larynx.

In the present state of the question, I could answer that several experiments have been performed, in which pneumonia has been produced in rabbits by the inhalation of pulverised liquids, containing two per cent. of perchloride of iron; but Dr. Durand Fardel objects, and very properly too, that rabbits are not human beings. We have only, then, to give a fair trial to the method. Our direct therapeutic means are so limited in the proper diseases of the lungs, that if we can find a method of bringing the pulmonary cells

directly into contact with the various therapeutic agents, it is certainly advisable to see if we cannot derive any benefit from it. *Adversus hostem aeterna Auctoritas esto*, said a great philosopher. Consumption is this dreadful enemy. Far be it from me to say that in this new method we have a cure for phthisis; but I do think really that, if by this we could subdue, in some degree, the inflammatory state of the lungs which accompanies the development of tubercles, or the evacuation of the tubercular tissue, we certainly should do a great deal of good, and much aid the efforts of nature, which certainly generally tends to the cure of phthisis, in the way indicated by Laennec, Andral, Louis, and others. To know the perfect evolution of a disease, is the very first rational step in applying the cure; and if these great physicians deserve our admiration and thanks, it is not for having given a successful treatment, but for having clearly illustrated the manner in which cure is effected by nature when the cure arrives, which is not, perhaps, so rare as thought generally.

With our actual amount of knowledge, there is, in my opinion, no doubt that the inflammation, local and circumscribed pneumonia, which accompany the development of tubercles, are concomitant symptoms, which favour much the evolution of a new crop of tubercles. Patients never die of a first crop, but of successive crops of tubercles, which are much favoured by the cough and inflammation which accompany the firstborn tubercles. Against the cough and inflammatory symptoms, I have found the use of pulverised tar-water very useful; and I will relate one remarkable case. I have used also with great advantage sulphurous water to relieve the apnoea and cough which accompany emphysema.

I will give a brief account of Dr. Sales Girons's method, and describe his instruments, and in comparison the instruments of my friend, M. Mathieu.

But before proceeding with the description, I will state in a few words what is understood by pulverisation of liquids. This was a great desideratum in the treatment of the disease of the larynx and of the chest. What benefit we shall derive from it for the chest is not yet quite known; I mean, it remains yet to state exactly in what disease of the chest it will be useful. For my part, I have derived great advantage in chronic bronchitis, asthma, and emphysema; and I have been able, as I have already stated, to subdue very rapidly in some cases the inflammatory symptoms which accompany the evolution of tubercles; and by this to diminish in a great measure the intensity of the cough.

But, as regards disease of the voice and of the larynx, most satisfactory results have been obtained by the several physicians and surgeons who have used it. I have lately treated successfully an artist (tenor) with sulphurous water of Labassère, pulverised by the method mentioned here, in the comparatively short time of three weeks. The disease had resisted all local applications; and the emission of the high notes, as fa 3, sol 3, was hoarse and impossible. Examinations with the laryngoscope showed nothing but redness of the mucous membrane of the glottis and epiglottis. Two daily pulverisations with the sulphurous water restored completely the impaired organ of the artist.

I beg to refer to a case of oedema of the glottis mentioned by M. Trousseau, and to the cure effected by the method, with tar and rhatany, on M. Bataille, a celebrated French professor at the Academy of Music, and author of a very remarkable work on *Phonation* (Paris, 1861.)

Although some readers are acquainted with the method of pulverisation of liquids, this knowledge is limited to a certain number of medical men. I will, therefore, briefly describe it. It is well known that certain therapeutical agents have proved of great advantage in the diseases of the lungs and larynx. Such are the various sulphurous waters, tar, balsam-resin, etc. If by some means we

could bring the cells of the lungs into direct contact with these agents, we should certainly have made a great step. For instance, if in a case of hæmoptysis we could touch, with a tannin solution, the bleeding parts, it would certainly be good to do so; if in a case of syphilitic ulceration of the larynx we could gargle this organ with iodide of potassium, as we do the mouth, it would certainly be advisable.

The problem being thus laid down, the difficulty has been to overcome the susceptibility of the entrance of the larynx.

The idea of acting immediately on the lungs is an old one. It is a very long time since fumigations with water holding in suspension various solutions have been used; but they have been almost totally abandoned as completely inefficient, and the reasons are obvious. In fumigations, nothing but aqueous vapour goes into the lungs. Various other fumigatory means have been resorted to, such as iodine, cinnabar, etc., and they are very good in specific cases; but the drugs which can be used with efficacy by this process are very few in number. M. Sales Girons has quite resolved the problem. Very likely he has been guided by natural instances.

Into a brass cylinder with walls capable of resisting a pressure of twelve atmospheres is introduced the sul-

phurous mineral water, or a solution (say a pint) of tannin, iodine, perchloride of iron, quinine, or of any drug that may be necessary for the case. To the cylinder is adapted an air-condensing pump (*pompe foulante*). At the exterior is a manometer stating the number of atmospheres. Another branch is also adopted to the instrument, with a very well fitted tap, which will enable a very small stream of the liquid to pass when the apparatus will be ready for use. The operator pumps until from four and a half to five atmospheres are indicated by the manometer; this pressure is always quite sufficient. The apparatus being charged, the tap must be turned by which a stream not larger than a needle escapes with a strength in direct proportion to the internal pressure. In this all the invention lies. If this stream were free to escape it would be quite wasted; but if directed against a metallic disc, against which it breaks itself in a cloud of vapour. The particles of which the water is composed are resolved in quite a minute state like the watery fluid in a mist; the patient has only open his mouth and make free and large inspiration and breathe the vapour, and with it the drug.

M. Mathieu has produced another instrument, which a drawing is here given. c is the handle of the pressing pump; by moving it up and down, the air

compressed into a brass reservoir E. About fifty movements are sufficient to charge the apparatus. M is a safety valve, which allows the condensed air in the reservoir to escape, if the pressure is too high. A is a tap which is turned to let the air escape when the patient is ready. D is a glass reservoir in which the liquid is enclosed. In turning B a communication is established between E and D; if, after that, A is opened, the air will rush with a strength in direct proportion to the pressure into E, penetrate into D, escape by K into F, carrying the medicated liquid in a mist, as illustrated in the present figure with the alcohol-lamp J. The water can be brought at the temperature of 90° Fahrenheit for instance. There has been very much said about the temperature of the water when it escapes the apparatus, both in regard to Dr. Sales Girons' and to M. Mathieu's apparatus. But by the repeated experiments of M. Poggiale of the Academy of Medicine, and Drs. Gavaret and Pietra Santa, it appears certain that, whatever degree of temperature the liquid possesses when it is in the apparatus, it falls immediately to the level of the temperature of the air of the apartment. This is rather a delicate point for some patients; and renders it necessary not to administer the pulverisation in a room with a temperature lower than 70° Fahrenheit, in order not to inject in the pulmonary cells of a delicate subject a liquid at too great a difference of temperature.

There remain many important points to discuss; but being limited by space, I will briefly report here one

single observation in which it appears that the pulverisation produced good effects.

CASE. Mr. W., aged 19; his parents still living. He had been ill for eighteen months; during the whole of which period he had had cough. The cough, at first dry, had been followed by abundant expectoration. His appetite had gradually failed; he had no diarrhoea. He had ceased his work, that of a light porter, for four months, and was now quite unable to do the least work. His face was pale; he had pains in the back, and behind the sternum. The cough was incessant. There was marked degree of emaciation. His tongue was yellowish with a bitter taste of the mouth. Feb. 4th, 1862. The chest was narrow; there was a depression under left clavicle, and immobility of this part of the chest. On percussion, there was dullness on the right side under the clavicle; but on the left side, dullness in a space as large as two and half inches by one inch and a half three-fourths. On auscultation, prolonged expiration was heard under the right clavicle; and on the left side in a point corresponding with the above dullness, well marked pectoriloquy. Mucous rhonchus was heard in this part of the chest. The patient having no diarrhoea and the anorexia being complete, I began to administer a full dose of ipecacuanha. The next day I prescribed chalk and magnesia, to be continued several days, with a bitter mixture; and ordered the chest to be rubbed with dry linen, and tincture of iodine to be painted on the chest every other day, and two inhalations of pul-

verised tar-water every day. On Feb. 8, the cough was greatly relieved. The tongue was moist and rosy. The patient began to eat his food with pleasure, but could not yet eat meat. He was ordered to continue the bitter mixture and pulverised tar-water as before, and to take two teaspoonfuls of tincture of cinchona daily. On Feb. 12th, the patient began to eat meat, and to feel more strength. He had taken a little walk. The cough was almost entirely gone. The treatment was continued. On Feb. 24th, the patient ate and slept well; he coughed very little, and felt his whole being quite changed. On April 5th, the patient had been so well for some time, that he had been able to resume his situation. I have ordered him some few movements with a stick, in the way that I have seen it used by M. Laisné in Paris, at the gymnasium of the Enfants Malades, in order to extend the chest; twice a week iodine tincture on the chest; and one sulphurous water injection into the lungs with the pulverisator. Since that time to the present day, the young man has continued his daily occupation. His cough is very little and rare; his appetite excellent. The pectoriloquy still exists under the left clavicle; how long this will last I do not know. But what struck me is the rapid cessation of cough; that it is entirely due to the pulverisation, I cannot say with certainty, but I have also had several other cases in which the same effects have been produced, and especially in emphysema.

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ACUTE LARYNGITIS: TRACHEOTOMY: RECOVERY: WITH REMARKS.

By HAYNES WALTON, Esq., Surgeon to St. Mary's Hospital, and to the Central London Ophthalmic.

On the 27th of June, I was sent for by Mr. Turner of Kensington, to see a person, as the summons expressed, "with throat-affection and difficulty of breathing". I took, therefore, with me such instruments as might probably be required. I reached the house at half-past one o'clock. The patient was a man between fifty and sixty years old.

He was in bed, with his body supported erect by pillows and attendants, and gasping for breath. His face was red and bloated; his tongue protruding, and swollen to twice the natural size, and loaded with whitish secretion; and a copious salivary discharge was escaping. He was unable to swallow; nor could he speak. From his jaws to his clavicles, the integuments were red and swollen. I listened to the back of the chest, but could hear no vesicular murmur, the absence of which, together with the violent efforts that were made to sustain breathing, and the peculiar grunting noise produced during the short expirations, unmistakably showed that there was stoppage in the larynx, and to an extent that would soon destroy life.

I advised the immediate performance of tracheotomy. As a rule, I should prefer laryngotomy in laryngitis, whether idiopathic, erysipelalous, or caused by swallowing hot water or chemical irritants; but here I rather expected extension of disease to the breathing apparatus below the true vocal cords. The sufferer and his family consented; and, with Mr. Turner's assistance, and that of a non-professional person who was at hand, I proceeded to operate.

I raised the shoulders by pillows, and allowed the head to fall back a little, so as to place the neck on the stretch, and make the anterior portion prominent. The swelling of the soft parts prevented me from feeling the cricoid body; and I could only judge of its position from what I felt of the thyroid, and by that determine where to begin my incision. There was free

bleeding at first, but it ceased readily. Having hooked up the trachea, and attempted to open it, I found the rings ossified, so that I was obliged to hack through them as best I could with the scalpel; but I penetrated it where I wished, and, I may say, with very little delay. After the spasmodic breathing, the cough, the violent expulsion of thick mucus, and of blood produced from the lining membrane of the trachea, and all of only a few moments duration, relief was established. Within half an hour from the period of my visit, the breathing was regular and quiet. It was requisite to keep some covering over the tracheotomy-tube, to prevent coughing. A piece of flannel was employed. The amount of œdema in the neck may be inferred from the fact of the head of the tube being more than an inch from the surface.

The disease was purely idiopathic, and had been rapid in its course. It was only on the 24th—three clear days before—that illness was felt. On the 25th, Mr. Turner was applied to for soreness of throat; and he detected coldness of surface, depression of pulse, dejection of spirits, loss of voice, and an erysipelalous appearance of the tonsils, of the fauces, and of the soft palate. On the 26th, the symptoms were more advanced, in spite of all treatment; the breathing was affected; the tongue enlarging; and the saliva flowing very copiously.

The day after my operation—the 28th—my patient was breathing nicely; his countenance astonishingly changed for the better; his neck less swollen; and the secretion from the trachea more healthy. He did not cough, and he made signs to express his great relief. The vesicular murmur was thoroughly established all over the chest. He had passed several hours in sleep. The tongue was improving, and the saliva was lessening. Late in the day, a few teaspoonfuls of beef-tea and brandy were swallowed. Through careful watching by Mr. Turner and his partner, Mr. Towers Smith, this fortunate man progressed with unusual quickness, and in seven days the tube was removed, and the wound strapped up. At this time the tongue was natural, and there was no trace whatever of unhealthiness in swelling or otherwise of the parts within the mouth. There was, therefore, so far a complete restoration to health.

Such a triumph of practical surgery is not so common as to render publication of the facts unacceptable. Indeed, I give publicity to the case for the sake of example, to show how a valuable life was saved, and to encourage young surgeons to do likewise under the same circumstances. But it must be remembered that I am alluding especially to the application of the operation to adults, and in idiopathic laryngitis. Of tracheotomy in general I shall not make a remark, beyond that I am fully aware of its almost inutility in the croupy affections of children, and which is no more than should be expected, recovery being the very rare exception.

I have seen life lost in laryngitis by temporising with leeches and other measures, when opening the trachea would in all probability, and according to the testimony of the *post mortem* examination, have given a good result. In a case to which I was called, the physician in attendance overruled my opinion and my advice to operate, and death soon ensued. The healthy state of the trachea, and the œdema of the upper part only of the larynx, plainly showed the opportunity that had been lost.

This is the light in which I regard the laryngeal affection with reference to the treatment by operation, whether the larynx is the sole seat of the inflammatory action, or participates only in that which is around and above it: it may be called a mechanical view of the matter. In the throat, as elsewhere, these inflammatory or erysipelalous attacks will and must run a certain course and pass through certain stages, however little or much they may be counteracted or modified; and I be-