with the outbreak or preceded the eruption; but my wider general experience furnishes me with many cases of convulsive, crowing inspiration simulating croup, which have been relieved by an outbreak of measles; and in several instances the latter disease was followed by whooping-cough. In twelve cases out of fifty the attack of measles was followed by whooping-cough at a period varying from three months to three weeks. In one case there had been a cough ever since an attack of measles twelve months previously, which developed into whooping-cough, while the child was under observation. A recent writer to whom I have already referred, Dr. Octavius Sturges,²¹ has promulgated the opinion that the whooping is simply a nervous adjunct to an epidemic catarrh,²² and he quotes Bouchut²³ thus: "Whooping-cough is transmitted like a large number of nervous affections—like hiccough, vomiting, hysterical attacks, &c."; and he complains that Dr. West has dismissed the notion with something very like contempt. There is no doubt that the disease does present some points of resemblance to the pure neuroses, but have we not overwhelming proof of a definite and distinct period of incubation?—and how upon such a supposition is this to be accounted for? His strongest argument seems to be the immunity of children's hospitals, and in this he is quite corroborated by the experience of the Hospital for Sick Children at Pendlebury, and probably the practice there may give the explanation of the fact. It is the custom to refuse to admit cases where the cough is already developed, and when a case arises it is sent home at once, except in one or two exceptional cases, which have been treated in a special ward. Now the contagion of most zymotic diseases is much less virulent in the earlier stages, and in Pendlebury Hospital, at any rate, the special wards are as carefully isolated from the general wards as are these from each other, and it is probable that the area of infection is less in this disease than in most others. At all events, we do not find that the power of infection is in any degree lost when the patients are removed to their own homes, and although we may allow that, as with other undoubtedly infectious diseases, there may be occasional sporadic cases of whooping-cough, yet we are inclined to attribute these to causes which have escaped discovery from defective knowledge and want of opportunity for complete investigation rather than allow them to form a reason for denying the specific nature of the *materies morbi*.

Continuing our history, not in chronological, but rather in an anatomical order, we find Dr. Ebenezer Watson, of Glasgow,²⁴ used topical applications to the larynx, and five years later we find him complaining of the little attention which had been paid to this mode of treatment. Gendrin²⁵ considered that the seat of irritation was in the isthmus of the larynx; and Beau²⁶ published three necropsies in which he found an exaggerated inflammatory redness of the mucous membrane which lines the supra-glottic portion of the larynx. Dr. West also mentions²⁷ finding "a state of extreme irritability about the fauces"; and a little later the observations of the former two authors were corroborated by two new necropsies by the late Prof. Parrot. Still more recently Vannebrough²⁸ by four necropsies, and E. Lelu²⁹ by two others made in 1874 at the Hôpital des Enfants at Paris, have verified the existence of similar conditions.

(To be continued.)

THREE CASES OF OEDEMATOUS LARYNGITIS THREATENING SUFFOCATION, SUCCESSFULLY TREATED BY ENDO-LARYNGEAL SCARIFICATION.

By GEORGE MACKERN, M.D. LOND.,
PHYSICIAN TO THE BRITISH HOSPITAL, BUENOS AYRES.

CASES of acute oedematous laryngitis present symptoms of so urgent a nature that usually but little opportunity is afforded of making an accurate laryngoscopic examination on which a scientific treatment may be based. In each of the following cases a satisfactory examination of the larynx was obtainable, and I venture to publish them that others may be encouraged to adopt a similar direct treatment in the dangerous condition of oedema within the larynx. These cases, though differing widely in the character of the primary disease, agree in the severity of the secondary laryngeal symptoms, and in the promptitude with which these symptoms yielded to similar surgical measures. In all complete aphonia was present, and the patients were in such evident danger of a fatal apnoea that tracheotomy instruments were kept ready at hand in case immediate relief were not given by the scarification.

CASE 1. *Solitary syphilitic gumma situated on the cricoid cartilage; gradually supervening oedema of the whole larynx.*—N. Y—, a native of Buenos Ayres, aged forty, of no occupation, was first seen by me in consultation with Dr. Alston on Dec. 13th (the middle of summer here). The personal history showed that, years before, the patient had gone through the usual stages of syphilis, and that he had recently suffered much from pains in his head and in the osseous system generally. Up to this date, however, no nodes or external gummatous formations had ever been observed. Two years previously he had suffered from what appears to have been paroxysmal hæmatinuria, and recovered under treatment at Naples. It must also be noted that he had never been troubled with his throat till the present attack. The patient stated that three weeks previously he first began to complain of pain and difficulty in swallowing, and he also noticed he was getting hoarse. As he was about to embark on a long journey up the river, he consulted his medical adviser, who, without examining the larynx, told him he might go in safety, and prescribed a simple gargle. He returned on the 12th, feeling very ill and breathing with difficulty, but he had not had any actual spasmodic attacks of dyspnoea during the voyage.

When seen on Dec. 13th, he was a tall, thin man, of dark complexion. He had an anxious expression, and the voice was reduced to a mere whisper. Respiration was slow and laboured; the inspirations noisy, but not accompanied by "downward excursions" of the larynx. There was a short, dry cough, and occasionally a scanty mucoid expectoration. He had passed several bad nights, being unable to lie down on account of dyspnoea. He had had no actual spasms—i.e., severe and sudden attacks of dyspnoea, thus contrasting with the other two cases, where this symptom was very pronounced. (I would draw here particular attention to this, as serving, perhaps, to distinguish a gradual oedema from the more acute variety; in the former case the respiratory centre had time to accommodate itself to the increased amount of carbonic acid in the blood, while in the latter the poisoning was more acute.) Externally there was nothing noticeable about the larynx except some tenderness on pressure. On laryngoscopic examination the mouth and pharynx were quite normal. The examination was made by the aid of a Mackenzie lamp, and a good view of the larynx was obtained with ease; in fact, there appeared to be some anaesthesia of the soft palate and parts around (toxic effects of CO₂ circulating in the blood?), which allowed of free use of the small mirror. The epiglottis showed no marked change, the tip and edges being merely somewhat more congested than usual. The larynx proper, however, was intensely congested, the right half being more especially so. The mucous membrane over the arytenoid cartilages and ventricular bands (false vocal cords) was much swollen, the lumen of the glottic opening being reduced to a mere chink, through which the air passed in frothy bubbles. The swelling was not equal on both sides owing to the greater tumefaction of

²¹ Lectures on some of the Distinctive Characters of Disease in Early Life. Medical Times and Gazette, July 4th, 1885. Lecture iii.

²² Sturges, loc. cit. I quote his conclusions here, so as to avoid any misrepresentation. "1. Convulsive (or whooping) cough is a purely nervous phenomenon, the expression of a special liability of childhood in respect of spasm, of which other illustrations are to be found in laryngismus and spasm of the glottis. 2. Pulmonary catarrh in young children may at any time give rise to convulsive cough, and does, as a fact, frequently give rise to it apart from any special infection." Of the second proposition the evidence he quotes does not seem to me to be conclusive.

²³ Maladies des Nouveau-nés.

²⁴ Edinburgh Monthly Journal, December, 1849.

²⁵ Gazette Médicale de Paris, 1850.

²⁶ Archiv. Générales de Méd. Paris, 1856.

²⁷ Op. cit., p. 454.

²⁸ De la Coqueluche et particulièrement du Siège, et de la Nature de l'Affect. Thèse de Paris, 1859.

²⁹ Du Siège de la Coqueluche, et de son Traitement. Paris, 1874.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—At the next quarterly meeting of this Association, to be held at Bethlem Hospital, on May 19th, at 4 P.M., Dr. Savage will read a paper, entitled "A case of Insanity cured by removal of the Beard in a Woman;" and Dr. Percy Smith one on "Notes on a case of Ovariectomy in an Insane Patient."

the right side, and the chink of the glottis appeared oblique and inclined towards the left. The vocal cords were not visible, being completely covered by the greatly swollen ventricular bands. On the right half of the cricoid cartilage, just behind the corresponding arytenoid cartilage, a whitish swelling was seen, circular in shape, about half an inch in diameter, with its circumference sharply defined, and its surface smooth and glistening, contrasting vividly with the surrounding congested tissues. When touched with the laryngeal probe, the tumour felt elastic and semi-fluid. No ulcerations of any sort were to be seen in the larynx. Reserving the question of the nature of the tumour for discussion later on, it was evident that its presence, in the absence of all other causes, was the cause of the cedema, because the parts immediately surrounding it were intensely inflamed, and the cedema, on the whole, was greater on that side of the larynx.

Owing to the dangerous amount of dyspnoea present, I was afraid to attempt the removal of the tumour at once, but determined to reduce the cedema directly. Accordingly I passed a guarded laryngeal lancet with the aid of the mirror, and made several punctures into the cedematous mass. Some drops of dark blood immediately escaped, and I was quite astonished at the little spasm and irritation excited by the operation. Strong blistering fluid was then painted over the thyroid cartilage in front of the neck, and hot inhalations of compound tincture of benzoin were recommended for five minutes every hour, also ten grains of bromide of potassium with two grains of the iodide to be given every two hours during the night. The effect of the inhalations was to cause a considerable flow of frothy and blood-stained mucus and saliva. Next morning I found that the temperature had become lowered from 101.8° to 100°, and that the patient had slept for about an hour. He was still suffering much from dyspnoea, and finding that the cedema had decreased but slightly, I again scarified, and very freely this time; a more abundant flow of blood was the result, and a strong spasm. I had to change the bromide of potassium for the soda salt and to leave out the iodide, on account of stomach irritation. Next day he was much better, had slept at intervals during the night, and his face had a less anxious expression, but there was still much stridor on inspiration. On the next morning, as considerable improvement had taken place and the chink of the glottis was more open, I determined to cut into the white tumour, believing it to be an abscess. With a long curved bistoury and the aid of the mirror I cut right across it, but with a negative result—scarcely a drop of blood. Then with sharp laryngeal forceps I seized the tumour and removed it easily from its bed; no hæmorrhage resulted, and but slight spasm was provoked. The site of the tumour was pale pink, granular-looking, and was probably eroded cartilage, as it felt rough to the laryngeal probe. On examination, the tumour was of the size of a hazel-nut, of firm consistence, semi-transparent, and its capsule was tough, fibrous, and quite adherent; it had been completely divided by the bistoury. The microscope showed the little tumour to be a typical gumma. The case then went on well to recovery. Some ulcerations appeared along the free border of the right ventricular band, but there was no exfoliation of cartilage or any more cedema. The patient was put on iodide of sodium, and in three weeks' time his voice had almost recovered its natural timbre and he had gone to the seaside to recruit.

Remarks.—The diagnosis of the white swelling lay between abscess and a syphilitic gumma. If abscess, it would probably be of perichondritic origin, and against this were (1) the short history of laryngeal trouble, (2) the little pain, and (3) the slight tenderness on pressure. As a rule, in perichondritis of the larynx there is much pain, and considerable tenderness on pressure externally. Against the gumma was the absence of all other signs of syphilis in the larynx; there were not even ulcerations on the epiglottis. I decided on abscess on account of the physical signs, the white appearance, and the elastic feel to the laryngeal probe. Another point of interest in the case was the tolerance for examination and instrumentation.

CASE 2. Acute cedematous laryngitis by contiguity from pharyngitis; great swelling of left arytenoid cartilage and ventricular band; endo-laryngeal scarification, followed by recovery, with ankylosis of the crico-arytenoid articulation and permanent immobility of the left vocal cord.—R. C—, a short, thin, dark-complexioned man, a native of Paraguay, aged forty-six. I was called to see this case in consultation on the tenth day of his illness, which began with acute

pharyngitis. The laryngeal symptoms had come on only during the last two days, and were urgent from the beginning. I found the patient propped up in bed, with an anxious expression of face, severe inspiratory dyspnoea, quick and small pulse, moist skin, completely aphonic, unable to swallow on account of dysphagia, and with a temperature of 101.6°.

On examination the pharynx was much inflamed, and the left side was so swollen and the mucous membrane of such a peculiarly livid hue, that I inclined to the opinion that we were dealing with a case of pharyngeal erysipelas. Externally, the left side of the neck was swollen and brawny to the touch, and there was much tenderness on pressure over the left side of the thyroid and cricoid cartilages. The laryngoscopic examination was difficult, and was made by the aid of direct sunlight in the courtyard, to which both bed and patient were conveyed. The epiglottis was found to be excessively red and injected, but not swollen or cedematous. The whole left side of the larynx proper, however, was immensely swollen, and the mucous membrane of a dark livid colour. The right half of the larynx was somewhat congested, and the glottic chink was pushed over and lay obliquely towards the right, but a small portion of the right vocal cord could be seen.

With the aid of the mirror and Mackenzie's lancet, I cut deeply into the cedematous mass in the larynx. About a teaspoonful of dark blood escaped, but such a terrible spasm of dyspnoea resulted that for a moment I thought the patient would succumb. The spasms before this had been frequent but not very alarming. Recourse was had immediately to steam inhalations of compound tincture of benzoin, and blisters and poultices applied over the thyroid cartilage externally. With great difficulty a mixture containing bromide of potassium was swallowed, as the act of deglutition invariably brought on a paroxysm of dyspnoea. In a day or two the urgent symptoms had passed off, and the case subsequently did well. When I last saw him (more than two years after the operation) he had no respiratory trouble, but his voice was hoarse, and he had tumefaction of the left crico-arytenoid articulation, with fixation of the corresponding vocal cord in the cadaveric position.

Remarks.—This case may be put down as one of very acute laryngitis propagated from an erysipelatous pharyngitis, and the paroxysms were frequent and dangerous owing to the acuteness of the laryngeal complication. The permanent injury to the crico-arytenoid articulation is not to be wondered at when we consider the delicate construction of this joint and the septic nature of the inflammation propagated from the pharynx.

CASE 3. Acute cedematous laryngitis of three days' duration; cause uncertain; extensive cedema of the epiglottis and upper rima glottidis; scarification, with immediate good result.—C. M—, a Scotch gentleman, aged thirty-six. No history of previous illness, nor had he ever suffered from his throat before. I was called to see this case in consultation with Dr. Ayer, at half-past nine o'clock one morning. I found the patient sitting up in bed with a most anxious expression of face, great inspiratory dyspnoea, short dry cough, dysphagia, complete aphonia, quick pulse, skin moist, pale face, and a temperature of 101°. The illness, which was only of two days' duration, had begun with hoarseness and dysphagia; fever, with headache and loss of appetite, had also been noted. He had passed a sleepless night, was very restless, with threatening paroxysms of dyspnoea, and had got rapidly worse since five o'clock in the morning. Examination, by means of direct sunlight, revealed a normal pharynx. But the epiglottis was immensely swollen and congested, especially its laryngeal surface, which resembled a roll of sausage of a dark purple colour. A glimpse only of the posterior part of the upper rima glottidis could be obtained, which showed a certain amount of swelling and congestion there also; the rest of the larynx was completely hidden by the swollen epiglottis.

As the symptoms were very urgent, I at once punctured the epiglottis with a Mackenzie lancet, but the tough tissue of the epiglottis appeared to resist, and only a few drops of blood escaped. I went home to get a more powerful instrument, and on my return at 11.30 I found that several severe paroxysms had taken place, necessitating the use of nitrite of amyl. The second operation was more successful, about a drachm of dark blood escaping. Blistering and steaming inhalations were then used as in the other two cases, but no bromide was given owing to the dysphagia produced by the swollen epiglottis. The dyspnoea gradually became less, and

no more paroxysms took place. The urine was found to be albuminous, and the temperature remained above 100° for nearly a week, although the throat gave no more trouble, and the voice was completely restored in a fortnight.

Remarks.—The etiology of this case is by no means clear in the face of what authors state—namely, that the occurrence of extensive cedema of the larynx in simple uncomplicated acute laryngitis is extremely rare. In this case there was a history of rigor at the commencement of the illness, but there were no other symptoms of an influenza type present. The presence of albumen in the urine and the continued high pressure made me suspect an acute diphtheria at first, but a most careful laryngoscopic examination failed to show the presence of any membranous deposit. From the acuteness of the attack, the great swelling in the larynx, and the lingering convalescence (three weeks), with feverishness, I, however, concluded that some zymotic or other septic cause must have been at work.

Buenos Ayres.

ON A NEW SYRINGE OR INJECTOR FOR SURGICAL PURPOSES.¹

By ROBERT KIRK, M.D. EDIN.,

OUT-DOOR PHYSICIAN-ACCOCHEUR TO THE GLASGOW WESTERN INFIRMARY.

THE object of this instrument is to produce perfect diffusion of liquids injected into closed cavities. With our present appliances we have no means of doing so, and in the case of hydrocele we resort to shaking and manipulation of the scrotum for this purpose—a proceeding, however, which is impossible where internal cavities are concerned. Now, it is a matter of daily observation that liquids are driven and widely diffused by means of vapour, an illustration of which is the familiar phenomenon of a pot “boiling over.” Nearly two years ago it occurred to me that in ether, which boils below the temperature of the blood—namely, at 95° F.,—we had an agent exactly suited to the purpose in view. Accordingly I proceeded to treat such cases of hydrocele as came in my way by injecting the sac with ethereal solutions of carbolic acid, heating the liquid to near its boiling point before injection. The acid has been somewhat extensively used for hydrocele in America, though in much larger quantity than I thought necessary, and I have never exceeded five grains in each case. Of four cases thus treated the first three were very successful; the pain was much less than with the iodine treatment—indeed, was practically *nil*, while the recovery was rapid, the patients being allowed to resume their ordinary employments in a week. It is now seven months since the last of these cases was treated, and there has been no return of the affection in any of them. The ordinary piston-syringe, however, proved in all the cases a very unsatisfactory instrument for the purpose, as it was very difficult to draw heated ether into it; and the failure of my fourth case, which was complete, the effusion returning in a few months, was entirely due, as I believe, to the extremely faulty action of the piston on that occasion. This led me to devise the injector I am about to describe.

Experiments in injecting the urinary bladders of oxen with ethereal solutions, while they were held in a vertical position, having shown that a temperature of from 110° to 120° F. was necessary to produce perfect diffusion of the injected liquid, with inflation of the viscus, it occurred to me that the vapour-pressure of ether would of itself be sufficient at this temperature to drive the liquid, and this principle will at once explain the construction of the instrument. It consists, as represented in the accompanying woodcut, of a cylinder into which passes a tightly-fitted thermometer, and which is further provided with a filling aperture, closed by a screw stopper, and lastly, with an exit tube which dips down to the bottom of the cylinder. This tube is furnished with a stop-cock and terminates in a nozzle with a very fine aperture, and of such a size as to fit into an ordinary hydrocele cannula. The vapour-pressure within this cylinder acts on

the liquid and drives it through the tube, and the vapour alone cannot escape till all the liquid has been driven out. Such is the vapour-pressure of ether that the heat of the hand expels the liquid with considerable force; at 80° F. it is driven out in a stream six or seven feet long, and at 85° the internal pressure is sufficient to expel all the liquid which the vessel can hold when full. Ether can also be made to drive other liquids at temperatures quite comfortable to the body. Three parts of rectified spirit and one of ether produce sufficient pressure at 120° F. to completely empty the cylinder; and at about the same temperature seven parts of water and one of ether (the latter in this case partly going to form a layer on the surface of the water) are completely driven out. Water dissolves one-tenth its volume of ether, and the value of this addition of the highly volatile agent to it, by enabling it to penetrate cavities and permeate tissues more deeply, must be abundantly obvious.

Here let me draw attention to a fact, although it is one depending on well-known general principles—namely, that though the ether may be superheated in the cylinder, it instantaneously cools on being liberated, so that the hand can be comfortably held in the stream when the thermometer stands at 212° F. This fact may lead to some applications of importance. It shows us that we have almost any amount of diffusion power at command, and that we could easily diffuse a liquid through a cavity as extensive as the largest ovarian cyst with a comparatively small quantity of ether. It seems to me also not improbable that it may have been lost

sight of in the construction of ether inhalers, and that it may enable us to devise one which will render the administration of this anæsthetic more convenient and pleasant than it is by present methods, if not also to render available anæsthetics of higher boiling points than those at present in use. I showed at the Pathological and Clinical Society of Glasgow how, by injecting an ox bladder, the liquid is diffused in the cavity by means of this injector.²

I have only further to mention that Dr. H. C. Cameron has already injected a hydrocele with the instrument, the solution used consisting of five grains of carbolic acid and ten minims of chloroform in three drachms of ether, which was thrown into the sac at a temperature of 120° F. As the scrotum became tolerably well inflated before the injection was completed, the operation was interrupted, and some vapour and liquid allowed to escape before the remainder in the cylinder was injected. Some liquid was again allowed to escape in the same way—perhaps, indeed, rather too much,—and, as we afterwards thought, quite unnecessarily. The result will be carefully watched and recorded.

Since the foregoing was written the injector has been used, at the suggestion of Dr. Cameron, and with a very good result, to syringe the bladder in a case of subacute cystitis, of which careful notes have been kept. I have also used it to syringe the ears, in this case driving nine parts of water by one of rhigolene, which boils at 86° F. For a vaginal douche the instrument seems to me to be well adapted, the injection of water containing one-tenth of ether at 100° or 110° (along with any antiseptic that may be thought necessary), offering a considerable advantage over ordinary methods.

¹ Subject of a paper read before the Pathological and Clinical Society of Glasgow, March 9th, 1886.

² A bladder suspended vertically, and capable of containing 100 oz., was injected and inflated with an ethereal solution of picric acid, and it was shown that the acid was deposited over the entire inner surface of the bladder.