Three or four operations are performed thus: at two to five days interval, and after three or four sittings, it becomes possible to introduce bougies of 19 to 20 milliampères diameter, on each occasion taking care not to electrolyse portions of the stricture already operated upon previously. Proceeding thus, for a stricture of 5 millimètres diameter, at the first sitting a platinum plate of 10 millimètres in height may be employed, and an œsophageal bougie be subsequently introduced of 12 millimètres diameter; at the second sitting, the platinum plate may be 14 millimètres in height, and the œsophageal bougie 15 millimètres in diameter; and at the third, a platinum plate of 16 millimètres in height, and a bougie of 19 millimètres diameter.

No accident, hæmorrhage, lesion of the walls of the œsophagus, etc., has followed these operations. This method, which has been attended with such good results in the hands of the originator—results which have been witnessed by independent practitioners—certainly seems worthy of most attentive and thorough trial. If we have, in this method, as the author's published results would lead us to believe, a mode of dealing more or less successfully with œsophageal strictures, we cannot fail to appreciate the importance of Dr. Fort's work. Our methods of dealing with this formidable disease are so very unsatisfactory, that Dr. Fort's treatment by linear electrolysis and dilatation combined, is to be welcomed as a very important therapeutical step, and we can only hope that further experiment will endorse the favourable conclusions arrived at by the originator.

THERAPEUTICS AND DIPHTHERIA.

Ehnbom (Stockholm).—*Fatal Poisoning of Chlorate of Potash from Syringing the Throat with a 2 per Cent. Solution.* "Svenska Laekare Saelskapets Foerhandlinger," May 21, 1889.

A GIRL, aged five, with diphtheritic scarlet fever, was taken to the Catharine Hospital in Stockholm, and the pharynx cleaned four or five times daily with a 2 per cent. solution of chlorate of potash by means of a syringe. Marked symptoms of poisoning by the drug began to appear on the seventh day after the admission of the patient to the hospital; on the eighth day the administration of the drug was discontinued, but the symptoms of poisoning continued, and death occurred on the tenth day. The *post-mortem* examination showed decided signs of poisoning by chlorate of potash. The nurse, who had applied the injections, had never noticed the child swallowing any of the solution. *Holger Mygind.*

Browne, Lennox (London).—*The Cocaine Habit in Diseases of the Throat and Nose.* "Brit. Med. Jour.," June 1, 1889.

THE author again directs attention to the injurious local effects of persistent application of cocaine to the naso-pharyngeal and laryngeal mucous

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membrane. "The drug loses even its analgesic action after long use. " Similarly, while in the first instance promoting salivary and mucous " secretion, it is later found that patients who long indulge in cocaine " applications suffer from abnormal dryness of the throat. Further, its " good effect in temporarily relieving capillary engorgement of the turbi- " nated bones, etc., results, if its use is unduly prolonged, in either an " anæmia with atrophy, or a no less inconvenient increase in the intensity " and chronicity of the hyperæmia. I have seen two cases in which, I " believe, anosmia to have been induced, or at least aggravated, from the " habit. Needless to add that the amount of cocaine absorbed into the " system has an injurious general effect on the health in the shape of a " debilitated vaso-motor system." *Hunter Mackenzie.*

Fowler, Walter (London).—*Poisoning by Chromic Acid.* "Brit. Med. Jour.," May 18, 1889.

SOME chromic acid, with just enough water to liquefy it, had been applied by means of a cotton-wool brush to the lingual tonsil of a woman, who, refusing to expectorate, swallowed a drop or two of it with the saliva. "A slight burning of the throat was alone complained of at the " time, but in about half an hour she experienced a violent pain in the " epigastrium, with severe and agonising vomiting of a green, ropy fluid. " She became collapsed, with a pale and anxious face, cold extremities, " a scarcely perceptible pulse, and a sense of impending death. The " pupils were slightly contracted; there was slight deafness, and she " said she could not hear herself speak." Under stimulants and the application of hot bottles she recovered in about two hours.

The author refers to a similar case reported by Tisné ("Jour. de Méd. de Paris," 1887). *Hunter Mackenzie.*

Bruer, David (Netley).—*Observations on Malta Fever.* "Brit. Med. Jour.," May 18, 1889.

THIS is an endemic disease of long duration, characterised by fever of a continuous, remittent, and intermittent type, and with the almost invariable occurrence of relapses. The following are the symptoms pertaining to the respiratory system: — "Epistaxis occurs in about " one-sixth of the cases. Cough at one time or another almost always " occurs, and is marked in one-half the cases. Expectoration is " sometimes profuse, and is often streaked with blood. Even when " there is no cough the breathing is found to be unsatisfactory, and " on auscultation sounds harsh and bronchitic. Not uncommonly slight " touches of pleurisy are experienced in the severe and protracted cases. " Dyspnœa was noted in one case, and on examination no grave condition " was found to account for it. Pneumonic consolidation is rare, not " occurring in more than two per cent. of cases." *Hunter Mackenzie.*

Staveley.—*Eleven Cases of Intubation in Young Children.* "Lancet," November 16, 1889.

THE details of eleven cases are given, O'Dwyer's instruments being used, and tracheotomy being resorted to in those cases in which it was

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thought that an open wound would give better relief. This was the case in three patients—large quantities of mucus obstructing the tube, and giving rise to constant and ineffectual cough. The author thinks that the tracheotomy tube gives a better chance than intubation in feeble children, when there is broncho-pneumonia present with the diphtheria. No serious difficulty in feeding was experienced, fluid food being given in all cases. After the tube had been inserted, the string was left attached in all the cases except one, the free end being secured to the left temple by strapping, and not withdrawn, as usually recommended. The hands were fastened to the side of the bed with a flannel bandage, sufficiently long to give the child freedom to play with its toys, and yet not reach the mouth.

The advantage of having the string was found in one case where the tube slipped below the vocal cords, but was readily withdrawn. The author's experience with O'Dwyer's tubes is, that should there be any membrane or collection of mucus exciting cough in a fairly vigorous child, the tube acts as a moderately tight wad, offering just sufficient resistance, that an energetic cough causes its immediate expulsion, and with it, any mucus or loose membrane that may lie below it. Complete relief, which is of very variable duration, is due to the temporary displacement of the œdema of the cords, from the pressure exerted by the tube.

A tracheotomy tube, on the other hand, cannot, when tied in, be expelled, and the removal of the inner tube is frequently quite insufficient to enable the child to rid itself of the cause of the obstruction, and a skilled nurse or medical officer, should be within call. The amount of practice required to intubate, fairly rapidly, cannot be compared with that required for tracheotomy. Two assistants are essential in intubation, one to hold the child, and another to steady the head and control the gag. Too much stress cannot be put on the importance of keeping the patient's body and head held fair and square before the operator. The results obtained by the author in the eleven cases mentioned, and in five others subsequently intubated, were, seven recoveries and nine deaths. The average age of the fatal cases was under two years, and of those cases which recovered, five years. *R. Norris Wolfenden.*

D'Espine and E. de Marignac.—*Experimental Researches upon the Diphtheria Bacillus.* "Rev. Méd. de la Suisse Romande," Jan. and Feb., 1890.

KLEBS in 1883 published experiments, in which he found two different micro-organisms in diphtheritic products. In Prague he had found micrococci, and in Zurich bacilli constantly present in diphtheritic false membranes. He concluded that there were probably two forms of diphtheria, in the one of which micrococci were present (at Prague) and in the other of which bacilli were met with (at Zurich). Loeffler found Klebs' bacillus in the deeper layers of the false membrane, and obtained pure cultures of it, demonstrating experimentally its eminently pathogenic properties. The bacillus lived and died *in situ*, being never found in the blood, or viscera, but acted upon the constitution by producing a poison. The streptococci which have been found in false membranes predominate

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especially in post-scarlatinal diphtheria, and to them is due the necrobiosis of the tonsil occurring in this form of diphtheria. Contrary to the diphtheria bacillus they are found in internal organs (heart, liver, spleen, and kidneys). Their pure cultures never produced false membranes in animals, and they are therefore not pathogenic of diphtheria. The inoculation of Lœffler's bacillus upon scarified surfaces always produced false membrane identical with human diphtheria, their inoculation in cellular tissue produced vascular lesions, œdemas, hæmorrhages, etc. Lœffler, however, remarked that the bacillus had not been isolated in some typical cases of diphtheria, it had further been found in the saliva of a healthy child, and animals which survived the inoculations did not present paralytic phenomena. Later on, Lœffler demonstrated a pseudo-diphtheritic bacillus which had no pathogenic action upon animals. Hoffmann asserted that he had isolated the true diphtheria bacillus in a case of measles, and in another case of true diphtheria the isolated bacillus had all the virulent properties of Lœffler's bacillus, except its toxic powers upon animals, and in others the virulence varied. Prudden has isolated, in 22 out of 24 cases of diphtheria, a streptococcus to which he gives the name streptococcus diphtheriæ, and is disposed to identify it with streptococcus pyogenes and erysipelatis. He found it always very abundantly in false membranes and sometimes in the viscera (kidneys, liver, spleen, etc.) His experiments upon animals gave the same results as Lœffler's, *i.e.*, local inflammation, sometimes death from septicæmia, but never the production of false membranes. He never found Lœffler's bacillus in any case. Experiments by Fraenkel would tend to show that the streptococcus would produce certain inflammatory complications, such as abscess, rarely met with in diphtheria. Prudden and Northrup, in seventeen cases of diphtheritic broncho-pneumonia, have isolated and cultivated the streptococcus which have probably been the origin of the broncho-pneumonia.

Darier, Flügge, Babes, Sörensen, and d'Espine have isolated and cultivated Loeffler's bacillus. In 1888, Roux and Yersin verified Loeffler's researches, with the important addition that they were able to produce experimentally in pigeons and rabbits late paralyses, which resembled post-diphtheritic paralysis in the human subject, and they obtained solutions from their cultures which acted as chemical poisons retaining pathogenic action. In 1889, continuing their researches at the Pasteur Institute, they succeeded in producing the same paralyses in a dog, and also toxic albuminuria. In 1889, d'Espine made experiments to show the action of various antiseptics upon Loeffler's bacillus, which he demonstrated to be the specific bacillus of diphtheria. Kolisko and Paltauf also found the bacillus in fifty cases of diphtheria, and never in the pseudo-membranous sore throat of scarlatina and measles. Ortmann also isolated the bacillus in fifteen out of sixteen cases from diphtheritic false membranes, and Spronck, of Utrecht, repeated the experiments of Roux and Yersin, producing late paralyses and albuminuria from the injection of filtered cultures in the rabbit and pigeon. He also, with Wintgens and Dœts, isolated the bacillus from the false membranes, in seven cases of diphtheria. Zarinko, from twenty cases of epidemic diphtheria

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isolated and cultivated Loeffler's bacillus in eighteen, which in eleven cases of catarrhal origin (common catarrh, scarlatina, measles) the bacillus never occurred. In eighteen cases where examination of the apparently normal pharynx was performed, the bacteriological results were negative.

D'Espine and de Marignac isolated Loeffler's bacillus in eleven cases of diphtheria. These results were negative in four cases, of which only two exhibited the clinical aspects of diphtheria, in one of the others, of scarlatinal origin, the streptococcus was found, also in the last case of "diphtheria" of the wound after resection of a knee.

The normal diphtheria bacillus resembles the tubercle bacillus in length, and its form varies much with the age of the cultures, the medium of cultivation and method of coloration. The authors give the following method for detection of the bacillus in false membranes. A small thin piece is stretched over a cover glass, dried over a flame, and rapidly coloured with gentian blue. The bacilli appear under the form of slightly curved sausage-shaped organism, strongly coloured, and having nearly always the same length. They are most numerous in recent membranes. Gramm's method of coloration is serviceable to detect saprophytic bacilli from diphtheritic, in false membranes, the former being entirely decolorised, the latter not.

The authors formulate their conclusions as follows :—

1. The bacillus is found only in the false membrane, and never in the blood or viscera.
2. In the guinea-pig and rabbit, an œdematous enteritis, often hæmorrhagic, is generally met with, and this attains its maximum in the duodenum.
3. Subcutaneous inoculation of the diphtheria bacillus never causes fever ; on the contrary there is a lowering of temperature.
4. The glands of the region inoculated are swollen or injected.
5. The diphtheritic poison profoundly alters the composition of the blood, which becomes black from charging with CO^2, and remains fluid after death.
6. Albuminuria in experimental poisoning is frequent, but not constant.
7. Diphtheritic paralysis, experimentally produced, is not a paralysis in the proper sense of the term, but is perhaps a general muscular enfeeblement.
8. The virulence of the authors' living cultures has never varied so long as they remained pure, were not too old, and had not been modified by light, heat, vacuum, etc. Cultures kept for fifteen months have retained all their virulence.

The authors discuss the action of light and drying, of oxygen and its deprivation, and of heat and antiseptic substances upon the bacillus of diphtheria. With regard to the latter they find that boracic acid, chlorate of potash, alum, and lime water have little destructive influence upon the bacilli, while salicylic acid $\frac{1}{1000}$, and even $\frac{1}{2000}$, citric acid and citron juice are very active in arresting the development of Lœffler's bacillus. The survivance of the bacillus in the dry state can be prevented in sick rooms by good aeration, disinfection of walls, floors, and clothing, and as

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milk is a medium for extraordinary propagation of the bacillus, its use should be interdicted when coming from a house in which diphtheria has occurred.

Irrigations of salicylic acid, one to two per cent., repeated every hour or two hours, is the best local treatment. *R. Norris Wolfenden.*

Thoresen (Norway).—*The Relation of Diphtheria to the Soil.* "Norsk Magazin for Laegev.,' May and June, 1889.

ON account of Dr. Schon's statement reported below, Dr. Thoresen gives his experiences, based upon the observation of about 600 cases, and comes to the conclusion that there were far more cases in houses built upon sand or gravel. He, however, thinks that the soil has very little importance as regards diphtheria, except inasmuch as people living in houses with bad drains, etc., become weakened, and consequently more susceptible to infection. He considers want of cleanliness the most important factor. Amongst these 600 cases, he never saw the infection occur twice in the same patient. Incubation was always very short, and sometimes even only a few hours. *Holger Mygind.*

Schon, C. (Norway).—*Experience of Diphtheria.* "Norsk Magazin for Laegev." Jan., 1889.

ACCORDING to the author's experience in Norway (where diphtheria for some time has been very prevalent), the inhabitants of houses built upon sandy soil are less exposed to the disease, even if they do not pay much attention to cleanliness. *Holger Mygind.*

Jönsberg (Norway).—*Remarks on Diphtheria.* "Norsk Magazin for Laegevidenskaben," Feb , 1890.

AN account is given of an epidemic of diphtheria, which was stopped by cleansing all the ground surrounding the houses of the district (removal of manure, etc.), and covering it with large quantities of "Brambani's disinfecting powder." *Holger Mygind.*

Dedichen (Norway).—*Diphtheria Communicated through Milk.* "Tidsskrift. for praktisk Medicin," No. 5, 1889.

A REPORT of a slight epidemic of diphtheria, in which all the persons affected had drunk milk from a place where there had been cases of diphtheria. *Holger Mygind.*

Berentsen, B. M. (Chicago).—*Remarks on Diphtheria.* "Norsk Magazin for Laegevidenskaben," Sep , 1889.

IN this article the author recommends tonsillotomy in cases of diphtheritic tonsillitis, where the general health is not too much affected, the author having, however, only treated three cases in this heroic way. He advocates local treatment of diphtheria (removal of false membranes and the use of solid nitrate of silver). *Holger Mygind.*

Pearson. — *Diphtheria.* "Brit. Med. Jour.," Feb. 22, 1890. Sheffield Med. Chir. Soc.

PARTICULARS of six cases of diphtheria, under his care at the Borough

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Fever Hospital last autumn, were related by the author. In three of them he performed tracheotomy. The first two cases were a brother and sister, aged respectively nine and six years ; another brother had died of diphtheria at home. They had both been ill about twenty-four hours before admission. Tracheotomy was performed on the boy the following day, and was followed by great relief. With the exception of a slight hæmorrhage from the lungs five days after, and some bronchitis, the child progressed favourably up to the ninth day after the operation, when, in the act of micturating, pulmonary apoplexy occurred, and the patient died in about three minutes. The necropsy showed congestion of the base of the right lung where the hæmorrhage had taken place. In the case of the sister tracheotomy was performed on the sixth day after admission. The cannula was removed four days after operation, and the patient made a good recovery. In a third case Dr. Pearson did tracheotomy at the child's home, subsequently removing it to the fever hospital. The cannula was worn for eighteen days. There was some trouble from bronchitis, and subsequent paralysis of the palate and of some of the pharyngeal muscles, but the patient was ultimately discharged cured. The other three cases were all from one house, a mother and two children. The mother's case was hopeless from the first, and she died six days after admission, the *post-mortem* examination showing extension of the membrane into the smaller bronchi and catarrhal pneumonia. Neither the son nor daughter, aged nine and fifteen respectively, had any very urgent symptoms, and both were discharged cured. In four out of these six cases albuminuria was present, paralytic phenomena in three out of the four who recovered. The general treatment was stimulating—champagne and brandy freely. *R. Norris Wolfenden.*

Rondot. — *Treatment of Diphtheria by Bichloride of Mercury.* "Gaz. des Sciences Médicales de Bordeaux," May, 1889.

THE author prefers solutions of sublimate, 1 in 500, to which he adds 5 grammes in 1000 of tartaric acid. His primary object in treatment is to act upon the parts covered with exudation, avoiding the production of excoriations of the mucous membrane, which favour the penetration of pathogenic microbes into the blood. Internally, Rondot gives 4 to 6 milligrammes of bichloride of mercury daily. Under this treatment the author, without including cases of simple diphtheria, has had 10 cures in 29 patients tracheotomised, although his patients were placed under most unfavourable surroundings. *Joal.*

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