About six months ago the difficulty appeared to increase suddenly, so that it was only after great exertion that she could manage to get anything into her stomach; after she had taken food, it was vomited up in the course of ten minutes or so. All attempts to take solid food were given up some time ago, and, during the last three weeks, she could not even take the liquids, and had been fed entirely by means of nutrient enemata.

On admission into the Westminster Hospital, the patient was greatly emaciated, with a sallow jaundiced skin. She complained of deep-seated pain in her chest and throat. There was increase of pain on deep pressure over the supra-sternal notch. No tumour could be felt in the neck, or any other part of the body. The heart-sounds are clear but weak; there was no dyspnoea or alteration in the voice. The patient's lung-sounds are healthy; but, on deep inspiration, the breath-sounds were heard less clearly over the back of the right than over the left side. The abdomen appeared normal, the large intestine containing numerous hard lumps of feces, which disappeared after a large enema.

An attempt was made to pass œsophageal bougies, but they were stopped at a point about twelve inches beyond the lips, and some bloody mucus was found attached to the end of the bougie when it was withdrawn. As the patient was rapidly failing, it was determined by Dr. H. Donkin and myself that gastrotomy should be performed as soon as possible.

On May 24th, I made a curved incision about three inches long, from the median line, parallel to the border of the ribs. After the bleeding had been arrested, the peritoneal cavity was opened to the extent of the wound, which subsequently was extended by means of curved scissors. The stomach was seen beneath the liver, and a fold of its anterior surface was seized and drawn through the wound. This fold of the stomach was then transfixed by a needle and thick silver wire; this latter was secured to the skin of the chest so as to retain the fold of the stomach outside the wound. The edges of the wound in the abdominal walls were then brought together with sutures, excepting that part of them through which the fold of the stomach protruded; this fold was about the size of half a walnut.

The stomach was not stitched to the walls of the abdomen, but, in order to prevent the traction on the silver wire cutting through it, a harelip pin was thrust through the protruding fold of the stomach. The pin transfixed the fold, and rested, on either side of it, against the chest and abdominal walls. A small fold of lint, smeared with the oxide of zinc ointment, was laid over the wound. No antiseptics were employed; in fact, no dressing besides that referred to; and the patient's temperature, from the time of the operation, never rose beyond the normal point.

On the fourth day after the operation, the silver wire loop was removed, but the harelip-pin was retained. On the seventh day, a very small opening was made through the protruding fold of the stomach into its cavity, and through this opening a No. 7 elastic catheter was passed. The harelip-pin was not removed until the twelfth day after the operation. After that time the patient was entirely fed through the tube which had been introduced into her stomach. At the end of a month she was able to get up and move about the ward, a small fistulous opening remaining through which a properly applied tube was fitted, and through which she was able to inject her food. She passed natural motions, and her health had so much improved that she passed from my hands into those of my colleague, Dr. Donkin, under whose care she had been when admitted into the hospital.

Dr. EDWYN ANDREW (Shrewsbury) said that the operation was generally too long delayed, from the opposition of patients, which not only caused great debility, but prevented enemata from having their full nutritious effect, as it was known, in starvation, that the lacteals had much diminished action. In the operation, the incision should be rather far from than near to the ribs, owing to the contraction of the muscles which took place, drawing the peritoneum under the ribs. As the colon had been opened by good operators, instead of the stomach, he would mention a very ready test; that was, that the external coats were much thicker over the stomach, and might be readily pinched up by the finger and thumb; so that, if they were once felt in the dead body, this mistake could not occur. In a case operated on, four sutures were introduced in connection with the peritoneum, and one suture to show the central part of the stomach exposed, and pointing out where an opening could be safely made; as, owing to the contraction which took place, the position of parts became much changed. Although death occurred in this case, he considered it due to not having completed the second part of the operation, from fear that the adhesions were not sufficiently strong; and the knowledge gained would induce him to urge an operation in a similar case.

Dr. ARNISON (Newcastle-on-Tyne) said his personal experience had been limited to one case; but he had seen six or seven others in the hands of his colleagues in the Newcastle-on-Tyne Infirmary. All were sooner or later fatal, with the exception of the last, under the care of Mr. Page. In that case, in which the operation was done a few weeks ago, the patient survived in an improved condition. The stricture was believed to be non-malignant. The patient was not much reduced at the time of operating; and the incision was made through the thickness and in the direction of the fibres of the rectus muscle, with the view of getting a kind of sphincter-action.

OAKUM AS A SURGICAL DRESSING.

Read in the Section of Surgery.

By ROBERT ESLER, M.D., Belfast.

OAKUM is made from old ship's rigging which has been soaked in tar, and then reduced to its original state of flax or hemp. This is done to some extent by the sailor during his leisure time, but more extensively in gaols, workhouses, and penitentiaries, where oakum-picking is imposed upon the inmates as an occupation of profit.

During the American war, oakum was very extensively employed in the field-hospitals as a surgical dressing. The first account I can find of its use in this country is from the *Lancet* of 1870. At that time it was used in Great Ormond Street Children's Hospital, and in St. George's Hospital. During 1870, Professor Lister put the antiseptic qualities of oakum to the test. His observations are recorded in the *BRITISH MEDICAL JOURNAL* of January, 1871.

About eight years ago, I commenced to use this substance in the Children's Hospital; and in October, 1877, published my observations in the *Dublin Journal of Medical Science*. Since that time, oakum has been in use in all the hospitals in Belfast, and at the present time is considered by some of us as absolutely indispensable. In the old Charitable Society's hospital, I have been using it in the following class of cases: burns; erysipelas; ulcers; abscesses; and vaginal displacements; and in this substance I think we have a better dressing than in any other ready-made agent we possess. One of its most obvious advantages is that it effectually keeps down any offensive odour. The serum from a wound is drained as it is discharged, and flows freely into this porous substance; and on opening the dressing the pleasant tarry smell is a great contrast to the offensive odour which is common in connection with dressings of surgeons' lint.

In amputations, it forms a soft and comfortable pad for the stump, and is a good vehicle for the application of carbolic acid spirit lotion or other antiseptic. In the treatment of abscesses, it takes the place of a poultice by dipping it in warm water and covering with waterproof tissue; and its application, after opening an abscess, permits the easy discharge of pus, and is certainly conducive to quick healing. In all cases of erysipelas, I envelop the part in oakum, and am so satisfied with the result, topically, that I do not at present seek any other agent.

As a dressing for burns and scalds, I look upon oakum as invaluable. It may generally be applied to the granulating surface with impunity, and is more easily detached than almost any other dressing. I account for the fact in this way. When a fibre of dry cotton is placed under the microscope alongside a fibre of linen, you will perceive that the cotton is round and smooth, while the linen is sharp and angular; but, on the application of water, their behaviour is different. The cotton-fibre is found to twist in a spiral manner, while the linen fibre remains unmoved. It is a popular theory that cotton is not so good a dressing as linen; and this hygroscopic difference may account to a large extent for the difference in their behaviour when applied to moist surfaces, and the ease with which linen can be removed, as compared with cotton.

In uterine and vaginal affections, oakum can be turned to good account. The healthy effect of the application of this tarry substance, when applied to the mucous surface of the vagina, is most marked. Unhealthy discharges are absorbed, and a tonic effect produced. In cases of prolapse and other displacements of the uterus, when it is difficult or impossible to get pessaries to relieve, you can secure twenty-four hours' respite to your patient by filling the vagina with oakum; and, by dipping your first plug in glycerine, you gain immensely in cases of subinvolution, from the quantity of fluid extracted from the parts.

To briefly sum up. Oakum is a clean, handy, healthy, and cheap dressing. It is easy of application, and I think it is antiseptic in the sense of forming a barrier to the ingress of germ-life to the part to which it is applied. Tar is in itself a good wholesome agent, a substance of

complex composition. It contains creasote, turpentine, paraffin, and eupione, and is obtained by the destructive distillation of *Pinus Sylvestris*. Carbolic acid has largely taken the place of this cruder compound; but Dr. Whitley says that there are virtues possessed by tar which are not equally enjoyed by its more fashionable rivals. In oakum we have a form of tar-dressing which I heartily recommend to those engaged in hospital-work.

THE DANGERS OF LEAD-STYLES IN THE TREATMENT OF LACRYMAL OBSTRUCTION.

Read in the Section of Ophthalmology.

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

Surgeon to the Royal Eye Hospital, Manchester.

I WILL only occupy the time of the Section for a very few minutes, in relating a case that occurred in my practice at the Eye Hospital, which illustrates the dangers that may occur occasionally, even when following out a recognised method of treatment.

On February 16th, 1884, Wm. H., aged 35, was admitted an in-patient to the Royal Eye Hospital. He said his left eye had been troubling him for five months with constant watering and discharge of matter. On admission, I found distension of the left lacrymal sac, and, at the same date, the duct was "Webered" in the ordinary way; there was abundant hæmorrhage. For the four succeeding days, Robertson's silver probes were passed, night and morning, without any difficulty. As he had only been taken into the hospital on account of the distance he came, we considered it advisable to introduce a lead-style, of the usual size and shape, and send him home. On February 20th, this was done, and I saw nothing of him again until March 7th, *i.e.*, in about a fortnight. He then said that he felt his eye painful on his way home; the eyelids were swollen and puffy; and, in a day or two, there was a very profuse discharge. His doctor was sent for, and he removed the style. On examination, I found total necrosis of the left cornea, intense purulent discharge, and thickening of the conjunctiva.

You will all admit that this is a most unpleasant result, and to the patient a most disastrous one; and the very possibility of such an occurrence compels me to bring it to your notice. I have searched diligently for a similar case, but have not succeeded in finding one, and I sincerely hope that this is unique.

Lead-styles have been highly recommended, on account of their pliability, and the ease with which they can be made to fit any duct; and I have never before met with anything to suspect danger, nor am I at present prepared to say it was the particular composition of the probe that produced the mischief.

There was nothing about the size or the shape of the probe uncommon, and I do not think there was any infection about it. We know that considerable purulent discharge may occur from the duct, without implicating in the least the conjunctiva and cornea.

In this case, there may possibly have been a slight abrasion of the conjunctiva, which would prove a starting-point for violent purulent conjunctivitis, implicating the cornea secondarily. I shall be glad to hear the opinion of any of the members present.

Dr. ANDREW (Shrewsbury) thought it very doubtful if the bad result of Mr. Jones's case was due to the probe, as the action of lead on the secretions was certainly rather beneficial than otherwise. One case that occurred in his practice, of a tangle-tent breaking off, caused very little disturbance after remaining in several months.

NOTES ON TRAUMATIC TETANUS.

Read in the Section of Physiology and Pathology.

By A. W. HARE, M.B.,

Senior President of the Royal Medical Society of Edinburgh; Assistant to the Professor of Surgery in University of Edinburgh.

THERE has been for some years difference of opinion amongst pathologists as to the true nature of the changes present in tetanus; some authors holding that the lesion is wholly nervous, others looking upon it as a humoral disease.

A large number of very careful researches¹ on this point have shown that, in some of the central organs of the nervous system, as the spinal cord and medulla oblongata, as well as in the peripheral nerves,

changes take place, of the nature of an increase in the connective tissue elements; and, in certain parts, also, a breaking down of grey nerve-elements has been observed.

Dr. Coats comes to the following conclusion in his *Manual of Pathology*: "The cause of the irritation in tetanus is not at all clear. It seems likely, however, that here, also, there is an irritant in the blood, just as there is in hydrophobia" (page 467). In this, he distinctly supports a humoral theory, and agrees with the views of Billroth,² Richardson,³ Bauer,⁴ and Poland.⁵

On the other hand, some valuable cases, pointing rather to a purely nervous cause, appear in Dr. Macdougall's very interesting papers in the *Lancet* (July 19th and 26th, 1884), in which the occasional value of the resection of nerves in such cases is well exemplified.

Returning, however, to the humoral theory, the question has still to be settled as to what the nature of the irritant may be, which is thus assumed to circulate in the blood-stream; and to this point I wish shortly to draw attention.

In the first place, in regard to this theory, are there any comparative considerations which would lead us to the idea that the irritant so circulating in the blood is of the nature of a micro-organism? I believe there are. If we take, for instance, the case of anthrax artificially produced in the mouse,⁶ we shall find that, amongst other symptoms, we have some of a distinctly tetanic character, especially as the disease approaches its fatal issue. This is presaged by increasing frequency of spasms affecting various groups of muscles, and, finally, chiefly affecting those of respiration. The spasm which proves fatal passes on, without any intervening relaxation, into rigor mortis. We have here a disease, which is on all hands now acknowledged to be due to a micro-organism, and a disease which, in its later stages, presents a singular resemblance to tetanus, as it occurs in the human subject.

Many other equally analogous conditions are found amongst micro-organismal diseases which can be produced on animals; but this analogy alone, taken with the conclusion of so many pathologists that the disease is of a humoral nature, clearly defines the direction which future investigations as to tetanus in the human subject must take.

As a step in this direction, very imperfect though it be, I shall beg to lay before you some observations made on a case of traumatic tetanus which occurred recently in the wards of the Edinburgh Royal Infirmary, under the charge of Professor Chiene, to whose kindness, and to the kind assistance of Dr. Mackay, the resident surgeon, I am indebted for the opportunity of investigating the case, and of bringing it now under your notice.

Six days after the operation, which was one for the radical cure of hernia, it was noticed that the wound had become septic. Four days later, the patient experienced slight stiffness of the lower jaw, which was at the time attributed to his having caught cold. The case was a rapid one; for, within thirty-six hours, tetanus in one of its severest forms was distinctly established; and, notwithstanding the administration of chloral and bromide of potassium, the fatal issue occurred within forty-eight hours after the commencement of the attack. At that time, preparations were complete for examining the patient's blood, with a view of detecting micro-organisms, if present; this was necessarily postponed for a time. Thirty minutes after death, however, blood was obtained from a vein in the neck which had been divided in the operation of laryngo-tracheotomy. This was spread on cover-glasses in thin layers, dried, and stained with methyl-violet. It was found that micro-organisms were abundantly present, and the drawings before you show their characters. There are also drawings of the discharge from the wound, which was loaded with micro-organisms; and of sections of tissue taken from the anterior abdominal wall. The last, however, is an observation of no great value, as the tissue could not be obtained till twenty hours after death. The microscopic specimens from which these drawings are taken are now placed under the microscopes for inspection.

Through the kindness of Dr. Sims Woodhead, I was enabled to observe the effects of the blood and discharge from the wound, respectively, when inoculated into rabbits. The inoculation of blood from the patient was quite without effect; that of the discharge produced a passing erythema only.

The negative results thus obtained do not, however, affect the general question of the causation of traumatic tetanus in the human subject; nor the probability that, in the case just cited, the organisms observed in the blood were in some way connected with the occurrence of the disease. This observation is merely brought before the Section

² *Surgical Pathology and Therapeutics*, 1881, p. 389.

³ *Transactions Epidemiological Society of London*, vol. i, p. 28.

⁴ *Ziemssen's Cyclopaedia*, vol. xiv.

⁵ Article "Tetanus," in *Holmes's System of Surgery*.

⁶ See Koch, *Traumatic Infective Diseases*, New Sydenham Society, p. 34.

¹ Rokitsky, *Sitzungsberichte der Wien. Akad.*, 1857; Rose, in Pitha and Billroth's *Handbuch der Chirurgie*; Lockhart Clarke, *Med.-Chir. Trans.*, 1865. Coats, *Med.-Chir. Trans.*, 1878.