

be thrown down when the acetic is added, but merely diluting the urine with water will cause it to disappear. Mucus, too, if present, may also be precipitated by the acid, but will give no trouble, as it is quite different in appearance to the precipitate of albumen, and will have dropped to the bottom before the solution is added; and, lastly, if the acetic acid be not used in sufficient quantity to make the urine decidedly acid, urea may be thrown down by the after addition of the potassio-mercuric iodide.

*Estimation.*—The process for this is extremely simple and rapid, and only differs from that described above in that the solution employed is of known strength, and that the quantity used both of it and of the acid and urine must be carefully noted, and the complete precipitation of the albumen proved by a second solution. Besides the solution and acid, a glass, graduated in cubic centimetres, a pipette giving drops of five centigrammes, and a few glass stirrers, are all that is required. For the precipitating solution the formula is—potassii iodidi, 3 grms. 22; hydrargyri bichloridi, 1 grm. 35; aquæ destillatæ, q.s. ad 100 cc. For the confirmatory solution—hydrargyri bichloridi, 1 grm.; aquæ destillatæ, q.s. ad 100 cc. One drop of the precipitating solution given by a pipette of the above size precipitates 0.005 of albumen; so that so many drops as it takes to precipitate all the albumen, so many times 0.005 of albumen must there have been in solution. To save trouble in calculation, the same quantity of urine should always be taken, and the best quantity to take is 10 cc., as then the number of drops of the solution that it takes to precipitate all the albumen in this quantity of urine represents so many half grammes of albumen to the litre. Take then 10 cc. of urine, and add two of acetic acid, and stir with a glass rod; then add the precipitating solution drop by drop, stirring carefully each time, until the precipitate is no longer resolved in the albumen in excess—i.e., as yet unaffected by the reagent; then after each drop of the solution put a drop of the urine on a porcelain dish and watch if a yellowish-red colour appears on adding a minute drop of the confirmatory solution. As soon as it does, all the albumen is precipitated and the process is finished, and the amount of albumen per litre will be at once arrived at by taking the number of drops employed of the precipitating solution, subtracting three as having been used in excess to make the yellow colour perfectly clear, and then considering the rest as so many half grammes.

The chemical reactions and data upon the above depends are  $2\text{KI} + \text{HgCl} = \text{HgKI} + \text{KCl}$ . When the double iodide of mercury and potassium thus formed is added to albuminous urine sufficiently acidified, all the albumen is precipitated in combination with the mercury and iodide of the reagent, in the proportion of the equivalent of HgKI, weighing 393 to 1 equivalent of albumen,  $\text{C}^{56}\text{H}^{70}\text{Az}^{11}\text{O}^{33}$ , weighing 1004, while the potassium is taken up by the acid of the urine. As long as any albumen remains in solution the double iodide of mercury and potassium will not form red iodide of mercury when bichloride of mercury is added to it, but it does so as soon as all the albumen is precipitated. The solution formulated above is such that every drop of 0 grm. 05 contains 0 grm. 00196 of HgKI, and therefore in accordance with the equivalents given will precipitate .005 of albumen.

The rapidity and simplicity with which the volumetric estimate of albumen may be performed by this method, as above described, are self-evident, and it has been thoroughly tested by the writer in the Hôtel Dieu of Marseilles, and its convenience and utility found to be very great, as it offers a ready means not only of watching, as is most important, the diurnal variations in the amount of albumen in a patient's urine, but of comparing, as is most interesting, the different quantities present in diverse cases and in various diseases.

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#### DEVONSHIRE HOSPITAL AND BUXTON BATH CHARITY.

By Dr. Robertson's report, presented at a meeting of the Committee of Management on the 7th inst., it would appear that the definite cost of the extension of the hospital has not yet been ascertained. Meanwhile the benefit resulting from the enlarged accommodation is already apparent in the increased number of patients and the proportional alleviation of suffering through the instrumentality of the institution. The returns of cards stating the ultimate result of the treatment received have been satisfactory both in quantity and kind.

## NOTES ON THE ANTISEPTIC METHODS EMPLOYED IN THE SURGICAL PRACTICE OF THE BASE AND FIELD HOSPITALS: EGYPTIAN CAMPAIGN.

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VARIOUS antiseptic methods having been employed by the surgeons of the Army Medical Department in the treatment of the wounded during the Egyptian campaign, it may be of interest to many to read the mode of application and the results which I had the good fortune to observe.

*Treatment of First Wounded at Base Hospital, Ismailia.*—The wounded sent down from the front after the first engagements had been, and were, treated at the base hospital, Ismailia, mostly with dressing of carbolic oil, some with the carbolic or the chlorinated soda lotion. In these cases it was found that if not dressed for forty-eight, or even twenty-four hours, the wounds were septic and the dressings odorous, and unless the latter had been covered with gutta-percha tissue, in this climate not only the lotion, but the oil, evaporated, and with the dried coagulated blood and discharge became glued to the wound, so as, even after sponging or soaking in water, to be in most cases with difficulty removed, and the cause of discomfort and of pain to the patient.

*Treatment of Wounded at and after the Battle of Tel-el-Kebir.*—The wounded brought from the field to the advanced field hospital after the battle of Tel-el-Kebir were dressed with the iodoform and boracic acid dressing, in the following manner. The wound and skin around were purified by washing with a strong watery solution of carbolic acid (1 in 20), and the surface of the wound sprinkled lightly with the powder of iodoform; a piece of protective dipped in carbolic, in the absence of boracic lotion, was next applied to the wound, just sufficient to cover it, and over this a couple of layers of boracic lint, fixed by means of a gauze bandage, the latter, from its lightness, being preferable in this climate to the ordinary linen bandages. Of these cases, some in which the discharge was profuse, were dressed again the next day at Kassassin, and others were not seen again until they arrived at the base hospital at Ismailia. Of the latter, the following day those in which the discharge had not appeared on the surface of the dressing, and the patient expressed himself as comfortable, remained untouched; so that there were cases not redressed until two or even three days after the reception of the wound. In these cases, just as in those dressed the day after the engagement, the dressing was perfectly sweet and the wound healthy; and last, but not least, the dressing was removed with facility, and the patient prevented thereby from suffering either discomfort or pain—the latter, of course, being due to the action of the protective, which, while enabling the discharge to run from beneath it and permeate the boracic lint, at the same time prevents the latter from adhering to the wound. Some of these cases, more particularly the severe ones—e.g., shell wounds—remained in the hospital for some days before being transferred to ships for England, and during this time their progress was carefully watched, and in all cases the same condition remained of a healthy inodorous wound, and consequently the iodoform and boracic-acid dressing met with such approval on the part of the surgeons that all the wounded who have passed through the base hospital, and those already in it since the action at Tel-el-Kebir, have, with few exceptions, been dressed at one time or other in the manner described. Of the cases already in the hospital, two may be cited as examples—one, a sailor with compound fracture of the femur, the other a private with an extensive shell wound perforating and lacerating the calf of the leg. In both these cases the wound had been dressed with the chlorinated soda lotion; nevertheless the discharge was offensive, and the wound, especially in the second case, presented a sloughing and generally unhealthy appearance. The application of iodoform and the boracic dressing acted with marvellous

rapidity, the fetor being corrected, the sloughs separating, and the wounds presenting healthy granulating surfaces. In the case of the compound fracture, the wound, after a second application, was not dressed again for five days, when the patient was ordered on board the *Lusitania*, and, before leaving, the splints and dressing were readjusted. The wound in this case had remained perfectly sweet, and, doubtless, would have continued so if left untouched for a week, the time recommended by Professor Lister when a similar dressing has been applied after the performance of skin-grafting on a large sore.

*Antiseptics after Operations.*—After the extraction of a bullet, swabbing the cavity of the wound with a solution of chloride of zinc (forty grains to one ounce of water), rendering the wound antiseptic, and the introduction of a drainage-tube giving free exit to discharge, and encouraging the wound to fill up by granulation, gave excellent results; and a similar treatment was equally serviceable in gunshot wounds with sloughing tract and a tendency to the pocketing of discharge. After amputations, also, the forty-grain solution of chloride of zinc proved invaluable for swabbing the flaps, not only as a powerful antiseptic, but as a styptic also, stopping all oozing and hæmorrhage from small vessels. Arteries requiring ligation were secured by means of the sulphurous or green catgut introduced by Professor Lister, and used in this campaign for the first time in military surgery. This form possesses all the advantages of the carbolic gut over silk, and over the former of greater strength, decreased rate of absorption, and from a point of view of transport in the small amount of space occupied in packing, compared with the cumbrous bottles of the carbolised gut.

In the wards a lotion, consisting of one part of the forty-grain solution of chloride of zinc with three parts of 1 in 20 carbolic, proved of great value in encouraging the separation of sloughs and rendering the wound antiseptic. This was especially brought to notice in the case of a Life-guardsman whose arm had been amputated at the shoulder-joint for a severe gunshot wound. Extensive sloughing occurred within the flaps and pocketing of pus. The removal of a couple of stitches, the introduction of a large-sized drainage-tube and syringing out the wound thoroughly with the lotion mentioned brought away the sloughs, gave free exit to the retained pus, and produced such a marked change in the appearance of the wound and general condition of the patient, that from that time the balance was turned in favour of recovery. For correcting the fetor of wounds, iodoform shaken up with 1 in 20 carbolic and syringed into the interior of the wound, also proved useful in the wards. Finally, a case of amputation of the arm by the circular method, performed at the Base Hospital, Ismailia, with Listerian precautions, tended to prove that Listerism could be carried out with equally good results in military as in civil hospital practice. It may be added as a point of interest that in spite of the iodoform having been used in some cases over large wounds more freely than was recommended, with the exception of one or two cases of headache and general malaise which may have been due to other causes, there were at any rate no marked symptoms of iodoform poisoning, which has been commented upon so much of late and considered a drawback to its use. These slight symptoms, if due at all to the iodoform, only serve to emphasise the necessity of following Professor Lister's instructions of lightly dusting and not thickly covering a wound with the powder.

## CASE OF LYMPH SCROTUM, ASSOCIATED WITH FILARIÆ AND OTHER PARASITES.

By PATRICK MANSON, M.D.

TEHHAI, male, aged thirty-four, of Tchin Kang, Tehhiah-thop, a cotton carder; both parents are deceased, his father having died of a cough, his mother of old age; young brother well; has no sisters; as far as he knows there is no elephantiasis in his village. The scrotal disease for which the patient applied began when he was twenty-six with inflammation and abscess; inflammation and elephantoid fever frequently recurred. Six years ago a lymphous discharge from the scrotum began; the scrotum was then larger and more tense than at present. Ten months ago the patient had a long series of genuine ague attacks they

began as quotidian, after a time became tertian, and finally quartan. The illness lasted for seven months; he became very weak, coughed, and lost appetite; for the last month the scrotal discharge, which hitherto had intermitted, had become constant, and in consequence he was reduced to a condition of extreme debility.

Sept. 2nd, 1881.—Scrotum is larger than a man's head, and the penis is buried in it; femoral glands are most affected, especially those on the left side, which are large and varicose; only one or two are similarly affected on the right side. The greater part of the scrotal tumour looks and feels like an ordinary elephantiasis, but on the thigh aspects of the mass, especially on the left side, there are patches of large tense vesicles, and on the upper and anterior surface of the tumour, about two inches from the preputial orifice, there is a long dilated lymphatic quite an eighth of an inch in diameter. Lymph constantly escapes, spurting in a fine stream from a vesicle on the right side and from any vesicle that is handled at all roughly. Several pounds of lymph must have escaped to-day. The discharge is white, like watery milk, coagulates rapidly, and contains filariæ. Several were found during a brief examination of lymph drawn in the forenoon (at 11 o'clock). Blood drawn from the finger at 6.30 P.M. contained filariæ. He had no elephantiasis of the legs, nor did he give a history of chyluria.—3rd: As it was evident that the continued lymphorrhagia would kill the man in a very few days, I removed the tumour in the forenoon. It weighed over three pounds, and had the usual section of lympho-elephantoid scrotum. A scrotal hernia on the right side, firmly adherent to the bottom of the scrotum, gave much trouble in dissecting up the sac. Large lymphatics in the upper and outer corners of the wound discharged much lymph, and were therefore ligatured.—21st: The patient died this morning of dysentery and exhaustion. For some time before the operation he suffered from vomiting of food, and ever since the operation there has been difficulty of swallowing. The symptoms were those of stricture of the œsophagus. Watery arrowroot was about the only food he could swallow. Dysentery set in soon after the operation. At the time of his death the wound, though indolent, was clean and sweet, and was in no way responsible for the fatal termination.

*Post-mortem examination, on the same afternoon.*—Thin and wasted; feet œdematous. On opening the abdomen the bladder was found to be rather distended. The whole of the mucous membrane of the great intestine, from the ilio-cæcal valve to the anus, was covered with ulcers. A number of parasites, twelve in all, were found lying in the sub-peritoneal fascia, about the iliac fossæ and behind the kidneys. A similar parasite was found lying free in the right pleural cavity. Some of these parasites were coiled up in loose knots, and others lay extended. On being drawn from under the peritoneum they exhibited languid movements like those of tapeworm. The œsophagus, where the left bronchus passes in front of it, was ulcerated and thickened, the ulceration and thickening extending completely round the tube, and being about an inch and a quarter in breadth. The œsophagus and bronchus opened into each other by a small ragged hole in the ulceration, admitting a penholder, and in the left bronchus were two full-grown female lumbrici, that had evidently passed into this unusual situation immediately before or after death through this hole. The œsophagus was firmly attached to bronchus, and at the site of ulceration was so narrowed that the little finger could not traverse the stricture. The ulcer was very irregular, and in different places its surface was pitted with rough holes running into the walls of the tube under the mucous membrane. Lymphatics of groins over saphenous opening much enlarged, especially on the left side; they were firm but not hard, and gave the idea that the outer part of the gland had been distended, but had now collapsed and lay loosely on a very hard nucleus. Lumbar glands large, but nothing remarkable. Examined blood from lungs and spleen, and from both obtained a few filariæ. The juices expressed from the left groin gland contained filariæ in considerable abundance.—24th: The parasites referred to as having been found in the subperitoneal areolar tissue were long tape-like animals, twelve to fourteen inches long, one-eighth of an inch broad, and about one sixty-fourth of an inch in thickness. They were dead white, and moved distinctly when taken out of the body. The extremities were rather thicker than the rest of the body, and were rounded off. A hurried glance with the microscope showed one extremity to be lipped. I placed them in a mixture of