application to superficial sores, in the treatment of which it will be found invaluable.

Chloride of zinc, though long known as a surgical remedy, owes its reputation largely to its employment by Mr. Campbell de Morgan, of the Middlesex Hospital. It is remarkable as well for the potency of its action as for the duration of its effects; thus, besides being a most efficient corrector of putrefaction, it has the advantage of preserving or picking the part to which it is applied for about three days. But as, like boracic acid, it is non-volatile, and is moreover a powerful caustic to the tissues, its employment is confined in Mr. Lister's practice to a limited number of cases. He makes use of a solution of forty grains to the ounce of water for application to the surfaces of the wound, after operating on a part where decomposition is already present, or on one which communicates directly with one of the natural cavities of the body (as, for example, after removing piles or cutting a fistula); and in this way, even if putrefaction be not completely eradicated, its noxious products cannot influence the general cavity of the wound during the three days prior to granulation, when the tissues are specially prone to irritation and absorption. For the method of employment in the former class of cases, I may refer to that of J. W— given below, and to that of W. M'K—, who, besides other injuries, had sustained a severe compound fracture of the ring-finger of the right hand, which was not submitted to Mr. Lister's inspection till several days after the accident, when it was found that the wound had putrefied and was much inflamed, having assumed a sloughy appearance, while the proximal phalanx was necrosed. Mr. Lister amputated the finger, removing the necrosed phalanx with dressing forceps, and fashioning two lateral flaps from the inflamed tissues. After removing as far as possible the adherent sloughs, the raw surfaces were freely treated with the solution of chloride of zinc, and a piece of lint soaked in carbolic oil (1 to 10) was inserted between the lips of the wound, which were not brought together at all, and the whole hand was loosely enveloped in the antiseptic gauze. The oiled lint was changed by the nurse every three hours during the first day, and afterwards the little and middle fingers were bandaged together and the ordinary gauze dressing applied, the case being from this time treated as though it had been "aseptic" from the first. The wound rapidly assumed a healthy appearance; while the discharge, which had previously been copious and foully offensive, became serous, and rapidly diminished in amount, remaining free from putrefactive odour to the last. Very soon after the operation symptoms of tetanus appeared, which eventually proved fatal to the patient; but it must be added that this is only the second case of tetanus that has occurred in Mr. Lister's practice during the last six years, and, as in both of these decomposition had been allowed to take place, it is only fair to infer that in them, at least, it had something to do with the disease. It is also worthy of remark that in Mr. Lister's wards all arrangements as regards bedding, utensils for urine, &c., are so planned as to avoid as much as possible the vitiation of the atmosphere by putrid emanations, and this circumstance no doubt aids the antiseptic management of the cases in bringing about the perfect immunity from pyæmia and hospital gangrene, which, considering how crowded the beds are, constitutes one of the most remarkable as well as beneficent features of the treatment.

After operations about the face or mouth, the action of chloride of zinc is found to be exceedingly beneficial. Thus, in the case of S. F—, half of whose lower jaw was removed by Mr. Lister on Jan. 15th, 1873, on account of a very large and rapidly-growing sarcoma, the chloride was applied freely to the surface of the wound, while over the incision in the skin a boric dressing was placed, under which union by the first intention went on without interruption. There was not the slightest offensive smell about the patient's breath on the second and third days after the operation, and he was thus saved from the irritation, to say nothing of the risk, which is so often connected with this period in such cases.

All those who have applied a lotion containing carbolic acid to a raw surface must have noticed, as a result, that the serous discharge of the first few hours is much greater in amount than that which occurs in similar cases where simple water is used; and this evil—for an evil it is—is probably a

necessary one in connexion with the antiseptic treatment, as it can hardly be supposed that an agent powerful enough to destroy the living causes of putrefaction should be absolutely unirritating to the higher animal tissues. It involves, however, the necessity for providing a very free drainage at first; but as, if decomposition do not occur, no subsequent inflammation is anticipated, and as in most cases early union of the cutaneous surfaces is of very great importance, the simple method of attaining this result by leaving a wide interval between the stitches is seldom advisable. Accordingly, Mr. Lister makes use in almost all his cases of the drainage-tube, his modification of which is as follows: A piece of india-rubber tubing provided with suitable holes is cut obliquely at the inner end, so that it may not be closed by pressing against the flat surface of the interior of the wound, while through opposite sides of the tube, close to its outer extremity, two pieces of silk are passed with a fine needle, and the ends of each are cut at a distance of about two inches, and fastened together by a knot. It should be of such a length that when inserted as far as possible into the wound, its outer end, previously cut obliquely or transversely, according to the direction of the sinus, may be exactly level with the surface of the skin, a position which the pieces of silk will be found to maintain. With such an arrangement the discharge is shed with great perfection, and the surgeon may place the stitches as close together as he pleases.

Another way of accomplishing the same thing is by means of the sponge, the use of which is indicated in those cases where a cavity remains the walls of which it is desired to keep in apposition by the uniform pressure which this method provides. The sponge, previously soaked in a strong watery solution of carbolic acid and thoroughly squeezed, is applied over the wound between the protective and the folded gauze, the whole dressing being firmly secured by a bandage. Unless combined with a drainage-tube, a pretty wide interval must be left between the stitches. As an example of its employment, I may refer to the case of E. F—, a young lady four years of age, from whom Mr. Lister removed an enchondroma of the size of a hazel-nut, growing from the posterior border of the scapula. At the operation, which took place on March 5th, 1873, the arm was held well back by an assistant, so as to render the tumour prominent under the skin, and an incision 1½ in. to 2 in. long was made down on to this parallel to the edge of the bone; while another, 1 in. long, was carried outwards at a right angle, from the centre of the first. After cutting through the superficial fat and the overlying muscle, an oblique notch was made in the scapula on each side of the tumour, and the piece enclosed between the two was then removed with cutting-pliers. When the arm resumed its natural position, the edge of the bone was at some distance from the wound. No stitches were employed; but protective was placed on the incision, and over this the sponge, and then the gauze dressing, and the whole was well secured by a bandage. The sponge was removed on March 6th; and neither then nor at any subsequent period could anything be pressed out of the wound, nor was a trace of pus seen from first to last. On March 21st a sound cicatrix, evidently some days old, was disclosed on finally removing the dressing.

(To be concluded.)

A NOTE CONCERNING THE HYDRATE OF CHLORAL.*

BY HENRY J. MANNING, B.A., M.R.C.S.,
MEDICAL SUPERINTENDENT, LAVERSTOCK HOUSE ASYLUM.

I HAVE under my care two gentlemen, the subjects of monomania with occasional exacerbations of excitement and obstinate sleeplessness, whom some short time since I put under the following treatment:—In the one case, an elderly man, I prescribed five grains of chloral hydrate twice daily, with thirty grains on alternate nights; in the other, a man in the prime of life, ten grains of chloral hydrate twice a day, and forty grains, combined with ten minims of Battley's solution, every night; insisting also on daily walking ex-

* Paper read before the Salisbury Medical Society, Feb. 1873.

ercise for two or three hours. In the first case, after some seven or eight weeks' treatment the patient became unaccountably depressed and very weak, especially in his lower limbs, this weakness increasing until he was compelled to give up his daily walks from sheer inability to put one leg before the other. In the other case, after twenty-five days' treatment, there appeared the same depression, the same weakness, and, suddenly one morning, complete loss of power in the lower limbs, and a very alarming condition of collapse—cold surface, fluttering pulse, and so on. There was no loss of sensation, nor was there any hyperæsthesia; but there was, in the one case partial, and in the other absolute, loss of muscular power in the lower limbs.

Casting about for an explanation of these alarming symptoms, it occurred to me that the hydrate of chloral might be at the bottom of them. The drug was at once stopped, and (in accordance with the recommendation of Dr. Liebreich, who first introduced the drug into medical practice, and who states that strychnia is its antidote) liq. strychniæ was prescribed in each case. Gradually muscular power was restored, and in the course of a few days both patients had regained their usual condition.

I had been so much in the habit of prescribing hydrate of chloral in similar cases without having encountered anything like an untoward result, that I was slow to believe in it now; but the similarity of the symptoms in the two cases, and their cessation on the discontinuance of the drug, leave no room for doubt as to their origin. Indeed they can be attributed to nothing else.

I have looked in vain through the English literature of the subject for any precisely similar cases of chloralisation. There is, however, abundant evidence that when taken for any length of time hydrate of chloral produces a hyperæmic condition of the skin and a diffuse inflammatory erythema of the face and chest, which Dr. Brown-Séquard ascribes to a temporary paralysis of the vaso-motor centres of the head and neck; and Dr. Crichton Browne, following this lead, throws out the suggestion that if the use of the drug be continued, this paralyzing influence may extend to the spinal cord and medulla oblongata, which seems actually to have happened in the two instances I have related. The latter writer, who has charge of some 600 insane patients in the West Riding of Yorkshire, found this erythema result in 19 out of 40 cases—i. e., nearly one-half; and in one fatal case of chloralisation which occurred in his practice he observed that the patient after each dose of chloral became flushed a deep red over the face and neck, and staggered in his walk as though intoxicated—pointing to a partial locomotor paralysis. Then the deaths that have occurred from over-doses of chloral hydrate have not occurred with symptoms of narcotism, but have been sudden—a sudden lowering of the pulse and failure of the heart's action, pointing to a powerful paralyzing influence on the sympathetic. Add to this that in the German literature of the drug, particularly in the writings of Drs. Erlenmeyer and Liebreich, it is pointed out that the long-continued use of the hydrate of chloral produces decubitus, and that the latter gentleman found that in a case of progressive paralysis the symptoms became rapidly worse after its continued use, and again improved after the use of the drug had been abandoned,—and I think we may fairly conclude that, in addition to the depressing influence of this drug, which is, I believe, universally admitted, there is also a tendency, if its use be prolonged, to produce a locomotor paralysis. As to how this is brought about I give no opinion, except that it seems to me quite consistent with the proposition of Dr. Liebreich, that hydrate of chloral, when dissolved in the stomach and taken up in the blood, becomes converted into, or evolves, chloroform. I think one may readily conceive a paralyzing influence being brought about by a continued current of small quantities of chloroform through the circulation. However, we know but little of the *modus operandi* of any one drug in the Pharmacopœia; and of hydrate of chloral, inasmuch as it is the last, we know the least.

It may, perhaps, have seemed that in the cases I have related the quantities prescribed were unusually large. If so, I would remark that in the earlier days of its use such doses as sixty grains every three or four hours, in cases of delirium tremens or tetanus, were common enough; that Dr. Richardson himself has stated sixty grains to be a proper dose for an adult, and has no fear of pushing it to doses of 120 grains; and that in one hospital a dose of 170 grains

was given by mistake and there was no ill result. It is true that practitioners have now settled down to twenty-five grains as a medium average dose; but in asylum practice we find the average doses of many drugs to be practically inert—e. g., tincture of hyoscyamus, of which the official dose is stated as fifteen to twenty minims, is constantly prescribed in asylums in half-ounce doses or even more; bromide of potassium, of which the official dose is five to fifteen grains, is frequently prescribed in asylums in half-drachm doses. And so with hydrate of chloral, although the average dose may be twenty-five grains, the asylum medium dose is from forty-five to sixty grains; and these doses I have constantly prescribed with safety.

I do not, of course, intend to generalise on the strength of two cases. Still less do I wish to throw any doubt on the usefulness of hydrate of chloral; on the contrary, I believe it to be one of the most useful and most certain drugs, taken as a simple sedative and hypnotic, ever introduced into practice. But I am also convinced that it requires careful watching; and I have thought it my duty to place these two cases on record. They form a clinical fact; and they seem to me to point to, at any rate, one danger which may arise from a too prolonged use of this agent.

A Mirror

OF

HOSPITAL PRACTICE,

BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

ST. GEORGE'S HOSPITAL.

MALIGNANT DISEASE OF THE FEMUR; AMPUTATION AT THE HIP-JOINT; RECOVERY.

(Under the care of Mr. POLLOCK.)

AMPUTATION at the hip-joint is one of the most dangerous operations in surgery; but it has been sufficiently successful to justify its performance in cases like the following, where the whole of the femur must be removed. The danger of severe hæmorrhage during the operation has been almost entirely removed by the use of the tourniquet, first suggested by Professor Pancoast, and subsequently, but independently, by Professor Lister. The usual method of performing the operation is to make antero-posterior flaps; but some surgeons prefer lateral flaps, making the outer one first, thus leaving the femoral vessels to be divided with the inner flap. Both plans have their advantages.

For the following notes, taken by the clerk, Mr. Tamplin, we are indebted to Mr. Cresswell Baker, house-surgeon.

F. D—, a boy aged thirteen years and a half, was admitted on Nov. 20th, 1872. The history of the case is as follows:—In July, 1872, he first experienced pain in the thigh; and about the middle of September a tumour, about the size of a hen's egg, was detected by Dr. Daniels, at the junction of the middle and lower third of the femur. A month later, Mr. Pollock made a puncture into the swelling; but only a little blood escaped. For two weeks before admission the pain increased in severity, the size of the swelling almost doubled, and the patient lost flesh rapidly.

On admission he was pale and emaciated. There was a swelling occupying the middle third of the left thigh, extending from the inner to the outer side, across the front of the limb, upwards to within nine inches of the anterior superior spine of the crest of the ilium, and downwards to within one inch and a half of the patella. The greatest circumference was fourteen inches, the sound limb in the same situation being eleven inches. Ordered liberal diet, and to have five grains of the iodide and of the bromide of potassium three times a day.

Nov. 21st.—Slept badly; no pain in the limb. To have an