ON THE TREATMENT OF GUNSHOT-WOUNDS BY CHLORIDE OF ZINC.

By WILLIAM R. E. SMART, M.D., C.B.,
Inspector-General of Hospitals, R.N.

IN a contribution to these pages "On the Treatment of Gunshot-Wounds", Mr. De Morgan has advocated strongly "the use of a solution of the chloride of zinc, thirty to forty grains to an ounce of water, applied freely in the crevices and dark corners of the wound, sponging it in until the whole surface is creamy, then covering the wound with lint wetted with a solution of five grains to the ounce of water, keeping the covering constantly wetted with this lotion". He says: "With no more care than this I have had rapid cure, without suppuration, in crushed and lacerated wounds". As a reason for advocating this mode at the present moment he states: "As an antiseptic, carbolic acid has, so far as I can learn, been as yet almost exclusively employed." In this he errs, inasmuch as the antiseptic properties of the chloride of zinc have been appreciated and relied on by naval surgeons through the last thirty years, especially in the treatment of sloughing ulcer, owing to its having been, until recently, the only disinfectant and antiseptic supplied from naval stores.

Having had much experience of its use in gunshot-wounds also, much after the same plan as Mr. De Morgan recommends, I can state that I agree with him entirely on the great value of the remedy; and, I may add, that I also "have returned to it after the use of other antiseptics".

Carbolic acid was unheard of when the necessities of the time and confidence in the properties of the chloride of zinc led me to employ it in almost all lacerated gunshot-wounds; and it rarely failed of good results, except where the wounds, being of the trunk, were from their nature mortal. I will not aver that I have not known sloughing and pyæmia to occur where it has been used; but I have doubted whether these occurrences might not have been averted by treatment in the first instance analogous to that which Mr. De Morgan terms "sponging".

My experience of the antiseptic has been recorded recently in the *Lancet*, in a paper "On Hospital Gangrene", in which I have stated my belief that, wherever a tendency to that affection exists, the faces of stumps should be washed after amputation with Burnett's solution of full strength.

I would now go further, on Mr. De Morgan's evidence, and would advocate with him its use in all gunshot-wounds; but as to the use of sponges, excepting in operations, I would always substitute glass-syringes and caoutchouc-bottles in military surgery. I could adduce many instances in proof; but will limit this communication to a simple selection from my case-book of a very severe case, in which its value was strongly pronounced, in the favourable casting of destroyed tissues in a terribly lacerated wound on the inside of the thigh treated on this plan, when the stump of the forearm amputated on the same occasion, and cased up in the usual way, commenced an unhealthy action, which would have ended in sloughing.

Case of Gunshot Laceration of both Hands and inner surface of the Thigh. October 1854.—J. M., aged 26, petty officer, while stooping and raising a heavy shot or shell, was struck by a cannon-ball that passed between his thighs. His left hand was carried away, and his right hand received compound comminuted fractures of the ring and little fingers, and a laceration of the thumb. The soft parts on the inner surface of the right thigh were extensively wounded over ten inches in its long, and eight inches in its transverse, diameter; the integuments and the deep aponeurosis being removed to that extent. The gracilis was divided, and the superficial fibres of the long and great adductors were torn off. A thin covering lay over the femoral artery, which was seen pulsating through it. The genitals escaped injury.

The surgeon of the batteries amputated the left forearm and the right ring and little fingers, and proposed to amputate the thigh, to which the sufferer would not consent, preferring death, which seemed certain. On the following day, he was sent to my care on board the hospital-ship at Balaklava. He was a fine specimen of a seaman, much respected by his shipmates and officers, full of spirits, and hopeful of the result, in good health, having but recently landed from his ship. The wounds of the thigh and hand were dressed with lint steeped in a lotion of Burnett's solution, one part to nine parts of water, and covered with oiled silk. His pulse was tranquil and his tongue clean. He took nourishment and an anodyne at night. On the fourth day after the accident,

aggravation, the pains become more acute, and extend towards the shoulders and hips." Gall-Stones, p. 518.—"These pains (at the margin of the liver and in the epigastrium) are in most cases very severe, and of a burning or boring character, etc.; not unfrequently they extend over both hypochondria, and also radiate towards the back, the right shoulder, the neck, etc."

the stump of the forearm was exposed; and, it being found inflamed, and threatening to slough at the margins of the incisions, the alternate sutures were removed, and the same lotion was applied on steeped lint between the lips and over the surface.

On the fifth day, sloughs were found suppurating on the thigh-wound, and others were detached, leaving a clean suppurating surface: there was no extension of death of parts beyond the laceration.

He was then sent into the offing at Sebastopol, where the same mode of dressing was persevered in for the time; and he enjoyed the purest of air and the best possible attention. Under those most favourable circumstances, he recovered without further loss of limb.

Had this case occurred alone in my practice, I should have needed no other to satisfy me of the great value of chloride of zinc in the primary treatment of gunshot-wounds; and I trust that, in our auxiliary hospitals at the seat of war, Mr. De Morgan's advice will be fully acted on and the results recorded.

NOTES ON THE EPIDEMIC OF RELAPSING FEVER IN LIVERPOOL.

By ROBERT GEE, M.D., M.R.C.P.,
Physician to the Liverpool Fever Hospital, etc.

IV.

In my last communication it was stated that the epidemic was still on the increase, and it was feared that the ample provision then made would not prove adequate to the demand for hospital accommodation. That apprehension has been realised, and it has been found necessary to erect an additional temporary wooden shed to meet that demand.

In anticipation of this step, as the daily admissions were very numerous, information was solicited from the parochial district medical officers on the following points.

1. Was there any sign of abatement of fever in their districts?
2. Was the disease pretty evenly distributed over the whole of the districts, or were large portions still uninfected?
3. The number of cases attended at their own homes.

The replies may be summarised as follows.

1. There was no abatement but in one out of the twelve districts; that district being the one least affected by the epidemic.
2. In half the number, the disease had not appeared but in portions of the districts.
3. The number of fever-cases under treatment in their own dwellings at that date (September 22nd) was 169.

The inference to be drawn from the above was that the epidemic had not exhausted itself, and that it was undesirable to delay in making provision for a still larger influx of cases, and a second shed was accordingly ordered to be built near the Kirkdale Hospital.

The replies to the third question enabled us to calculate, with tolerable accuracy, the proportion of cases treated at home to those sent into hospital; the proportion being 15.1 per cent.

To show the importance of removing patients from their own dwellings, the following extracts from the above reports will amply suffice.

One gentleman states "that a great drawback to their treatment in their own dwellings, is that at least nine-tenths of them have no bedstead or bedding, and barely room to put up such furniture for all the inhabitants: their usual habit being to sleep on mats or straw on the floor." Another states "that no abatement in the epidemic can be expected so long as the patients are to remain, as I have seen them, two, three, four, and five in one bed together; living and sleeping in miserable dirty cellars where the remainder of the family have to perform their domestic duties, and possessing a great aversion to soap and water."

At a meeting of the Workhouse Committee, held on September 29th, one member stated that, while sanctioning the erection of an additional shed they were providing for an increasing epidemic, he thought something should be done to get at the source of the disease, and means taken to check its course; and as the Health Committee of the corporation had greater powers than they in that direction, he suggested that they should have some communication with that body in reference to the matter. It was resolved that the parochial medical officers should be requested to attend and give their opinion as to whether the Health Committee could do no more than they were doing to prevent the spread of fever. That meeting was held on the following day. The medical gentlemen stated without reserve that fearful overcrowding existed in some parts of their districts; that the courts and streets, especially the former, were in a filthy condition; that animal and vegetable refuse was