II.

Observations on some Important Points in the Practice of Military Surgery, and in the Arrangement and Police of Hospitals. Illustrated by Cases and Dissections. By John Hennen, Deputy Inspector of Military Hospitals. Svo. Edinburgh, 1818. pp. 508.

Never was there a period in which we had so much reason to boast of our state of military and naval surgery and medicine. Each succeeding publication and memoir display a professional zeal, and a successful practice, which shed, comparatively, as great a lustre around the medical as the military departments of our army and navy. The history of the last campaign has proved equally that the French were our superiors neither in the field of battle, nor in the skillful treatment of those who bled in that field. While the battle raged, our sol-
1818. Mr Hennen on Military Surgery, &c. 371

diers were enemies,—when wounded, there was no difference between friend and foe; and the surgical department of the armies of both nations had a struggle, equally severe, for the mastery, which has been succeeded by mutual esteem, and been softened down into generous emulation.

The volume now lying before us, is valuable in every respect. Its author, engaged for many years in active service, has passed through the various ranks of his department in the most interesting scenes. Thoroughly acquainted with the duties and difficulties of each situation, and conversant with every evil which the soldier suffers from disease and the chances of war, he has in this volume given the result of his experience, for the benefit of his successors, and, we may add, of his contemporaries. For there is no surgeon, however extensive his practice, who will not here find much that is new and important. Nor is this to be wondered at, if we were merely to consider the opportunities possessed by its author; but he has been no less diligent and judicious in his labours in the closet than in the field, and has displayed an intimate acquaintance with the older authors, that we could scarcely have expected in one who had not spent the best of his days in the quiet cloisters of a college.

After a few introductory remarks on the progress and present state of military surgery, he proceeds to point out the duties of the medical officer in an active campaign; the preparatory steps on taking the field; the general nature and first treatment of wounds; the organization of receiving-hospitals; and the general surgical and medical treatment of the wounded. He then discourses, in succession, of the extraction of foreign bodies; of contusions and other serious injuries; of the injuries of the bones, joints, muscles, blood-vessels, and nerves; of the general affection of the system from wounds; hospital gangrene, mortification, and tetanus. He next enters at very great length into the subject of amputation; and concludes with observations on the injuries of particular parts, illustrated by a most valuable selection of cases, treated by himself or his friends, and which should teach us not to distrust the narrations of the earlier observers because they seem incredible, nor to believe that any singular case which has fallen under our observation has had no parallel.

We must always keep in view, that our author is a practical army surgeon, and that he writes of what he saw in service, and for those who are to practice in the field.

The whole of the question concerning the proper time of amputation, is discussed with great good sense. Mr Hennen has enumerated the cases requiring operation on the field, or shortly
after removal to the fixed hospitals, and the reasons for this determination.

1. When an arm or leg is carried completely off by a round shot.

2. Extensive injuries of the joints.

"I would still, however, lay it down, as a law of military surgery, that no lacerated joint, particularly the knee, ankle, or elbow, should ever leave the field unamputated, where the patient is not obviously sinking, and consequently where certain death would follow the operation.

3dly, Under the same law are included, by the best and most experienced army surgeons, all compound fractures close to the joints, especially if conjoined with lacerated vessels or nerves, or much comminution of the bone, particularly if the femur is the injured bone.

4thly, Extensive loss of substance, or disorganization of the soft parts, by round-shot, leaving no hope of the circulation being carried on, in consequence of torn arteries or nerves.

5thly, Cases where the bones have been fractured or dislocated, without rupture of the skin or great loss of parts, but with great injury or disorganization of the ligaments, &c. and injuries of the vessels, followed by extensive internal effusions of blood among the soft parts."

The propriety of amputation on the field being admitted, the question naturally suggests itself, what is the proper period? instantly on the receipt of the wound, or consecutively? Mr Hennen replies from experience,

"With as little delay as possible. While hundreds are waiting for the decision of the surgeon, he will never be at a loss to select individuals who can safely and advantageously bear to be operated on, as quickly as himself and his assistants can offer their aid: but he will betray a miserable want of science indeed, if, in this crowd of sufferers, he indiscriminately amputates the weak, the terrified, the sinking, and the determined. While he is giving his aid to a few of the latter class, encouragement and a cordial will soon make a change in the state of the weakly or the terrified; and a longer period and more active measures will render even the sinking, proper objects for operation."

The causes of death after amputation are various. Fever, whether symptomatic or endemic, and mortification seizing the stump often cut off our patients. Sometimes the febrile affection is of a chronic nature, and soon degenerates into hectic, with cough and every symptom of phthisis, and often the patient sinks, as it were, at once arrested by the hand of death. Dissection throws some light upon this interesting subject, and the results are classed by Mr Hennen under the following heads:
"1st, Inflammation of the vessels. In some cases the veins, in others the arteries, and in others again both the veins and arteries, will be found inflamed, from the point of the stump to the very article or ventricle; and in many parts, either lined with coagulable lymph, or filled with purulent matter to various distances.

"2d, Metastasis to some of the great cavities, or organs. Large quantities of purulent matter are sometimes found, in fatal cases of amputation, in the thorax, either in the substance of the lungs themselves, or floating loose in the cavity; or serous effusions, and great congestion of blood in the body of the lungs, with conversion of them into a sub-tance resembling liver, designated by the appropriate appellation of hepatization, by the French surgeons. In the abdomen, abscesses are often discovered, particularly in the liver, and at a very short period from the removal of the limbs. In the adjacent joints also, matter is frequently found.

"3d, Diseases of the bones, or of the joint close to the amputated part. These admit of the easiest recognition in the living subject, and are various in extent and degree, and when not proceeding to the last stage, or not having superinduced great general debility, may be in some measure alleviated. They are always attended with inflammation, and separation of the periosteum, although in some cases the cicatrix remains sound over the end of the stump; and it is only after a separation of the soft parts, in consequence of an abscess, or ulceration, that the bone is found denuded for various lengths, sometimes close up to a joint, and lying an extraneous body in the centre of the muscular mass, exciting and keeping up a degree of irritative fever, which but too often proves fatal."

The morbid changes, which are the consequences of compound fractures, are well described.

"The ravages of disease were most extensive in the cases of compound fractures, which have remained disunited, and which I have examined after the fatal result, or after the limb has been removed. In the soft parts I have met with enormous abscesses, extending far and wide around the fracture, so that the ends of the bone have been constantly immersed in the contents; and the muscles, in many cases, and in some the periosteum, separated for several inches from them. The infiltration of matter has extended far in the interstices, and in the fleshy bellies of the muscles themselves, in some cases, dissecting these organs very completely one from the other; in others, partially destroying them; and, in numerous instances, leaving no distinction of parts whatever, but a flabby, putrid, offensive mass of decomposed animal matter, the more fluid part of an intolerable fetor, and having thready masses of cellular substance floating in it; while the more solid have had so little cohesion, that they were easily broken down by the handle of the scalpel, bearing in many instances a most striking resemblance to chewed paper, or the pulp of rags.

"The blood-vessels have been observed very often lacerated, and
Coagula in various stages, from recent formation up to hard consolidated masses, have been found diffused from them, separable into different layers, and retaining, even when removed from the diseased parts, and washed repeatedly, a very nauseous putrid smell. The bones have not, in some instances which I have examined, participated as much in disease as the soft parts; nor have the joints in the vicinity of the fracture appeared to suffer nearly so much as might have been imagined. This exemption has only occurred in two cases; and in both, in officers of high rank and sound constitutions, who most punctually fulfilled all the directions given to them by me, and were exemplary in their strictness of regimen.

"In the remainder of about fifty cases that I have examined myself, or been present at the examination of, and thirty examined by gentlemen in whom I place the highest confidence, more or less of disease was observable in the bones, exclusive of the solution of continuity effected in them. The appearances, which were sometimes separate, but much oftener combined, were generally as follows: roughness of the extremities of the fracture; denudation of the sides of the bones, and worm-eaten absorption of them; inflammation and ulceration; exfoliation of various sizes, and of different stages of looseness on the extremities of the fractured ends, but not often including the whole circle; the same on the sides of the bones in the vicinity of the fracture; the same at a distance from the fracture, but not continuous with it; line of separation between the bone and its epiphyses or processes, very evidently marked, and of a vascular appearance; (this last appearance I have seen only at the ends of the bone farthest from the source of circulation; and in such cases, abscesses were formed over the diseased points;) loss of the cancelli in the medullary cavities of the bones, with destruction of the medulla itself, or conversion of it into an offensive, bloody ichor, filling almost the entire canal; loss of the cancelli, with a bloody fungus, filling the medullary canal like a stopper; looseness of adhesion of the muscles to the bones, to such an extent as that separation could be effected by the handle of the scalpel or by the finger; the whole neighbourhood of the fractured bone of a greasy unhealthy appearance; and, finally, necrosis, or complete death of the bone, with deposition of new osseous matter; the deposition being irregular, distorting the limb to a great degree, and evidently unhealthy."

Mr Hennen successfully espouses the cause of short cut ligatures against Mr Guthrie, having experience on his side in opposition to opinion.

"The campaign of Waterloo furnished me with many additional proofs of the excellence of this plan; and whatever may be the intention, whether to heal the wound or not, I now never hesitate about cutting short the ends of the ligatures. A single thread, well waxed, (or at most two,) is quite sufficient for any ligature; the artery should be well drawn out from its sheath, and the ligature placed as high as
as possible. The natural retraction of the vessel will in most instances carry it out of sight, and unless gangrene or excessive sloughing take place, it will frequently never more be heard of, and I verily believe never will do harm."

The merit of the discovery, it appears, is due to Dr Maxwell of Dumfries, who has continued to use them since 1798. Throughout the whole of this practical volume, the advantages, we may almost say the necessity, of venesection and depletion, are made most manifest. In almost every curable case, the effect of excitement is chiefly to be dreaded, and chiefly to be counteracted; and it is very seldom that stimuli, or strengthening diet as it is called, is required as useful, even in cases of the greatest debility from the mere abstraction of stimuli, as in profuse hemorrhagy. A mouthful of wine to get the better of syncope, is all that is to be allowed. Rest, quiet, mild and moderate nourishment, will complete the recovery of the patient.

On the subject of hospital fever, Mr Hennen is extremely short; but we heartily join with him in hoping that some of the army physicians, who served in the peninsula, will give us a detailed history of it as it occurred in that country. Although he seems to have no doubt of the contagious nature of the fever to which he gives the name of typhus, yet he places his chief reliance on pure air, and is a decided enemy to fumigations.

"Some of the villages in Portugal, which had been occupied as hospitals during the peninsular campaigns, became so saturated with contagion, that a few hours residence insured to many, a paroxysm of headach or fever, if a copious, bilious vomiting, or diarrhœa, did not prevent its accession. The inefficiency of fumigations is now pretty generally acknowledged by their most sanguine admirers; where I have lately employed them, it has been more from a compliance with custom, than from any conviction of their utility. That some of them correct the fetor of the discharges from suppurating surfaces, is well known, and in such cases they have their merits; and if they cheer the spirits of the wounded, or tend to promote the circulation of air, they are not to be entirely rejected; but where they, in the slightest degree, interfere with thorough ventilation, or cleanliness, they must be hurtful. A very striking proof of the inefficacy of the process of Guyton Morveau, for purifying infected air, or obviating contagion, was mentioned to me in conversation some time since, by a learned and industrious professor. In his examinations of several of the continental establishments, he found that one of the earliest victims to a contagious fever, which raged at the principal hospital of a large capital, was the man who ex officio fumigated all the wards, and respired scarcely any thing else but a medicated atmosphere." p. 220, 221.

The fact to which he here alludes occurred at Torgau, and
although nearly correct, yet in a question of this kind, much reliance is not to be placed on a single case, however apparently decisive. It is from an extensive and multiplied experience that we are to expect the true solution of our doubts; and Mr Hennen, perhaps, should have stated the result of the whole experiment rather than an isolated fact; especially at the present time, when there is so much alarm in this country concerning the prevalence of fever, and so much anxiety about the means of preventing it. The experiment was made upon a very large scale, and with the utmost accuracy and impartiality at Torgau, under the superintendence of Dr Graefe, Surgeon General of the Prussian army, and is well described in detail by Dr Richter. Three nearly similar wards were selected, each containing 40 beds, and No. 1 was fumigated with muriatic acid; No. 2 with oxymuriatic acid, and No. 3 with nitric acid. The fumigation was repeated with closed windows every two hours, so as to keep up constantly a slight acid smell, but so as not to excite coughing in healthy lungs. The experiment was continued for six weeks, and the whole circumstances were daily recorded, with the accuracy, regularity, and minuteness which are so praiseworthy in military hospitals. In No. 1, two of the attendants were infected, and six patients died; in No. 2 one, and in No. 3 three attendants were infected; and what is very remarkable, a young man, whose only business was to diffuse the nitrous fumes. In each of these wards seven died. To enable us to draw a satisfactory conclusion, however, we should have known the proportion of attendants infected in nearly similar wards, which were merely well ventilated, and which were kept equally clean and well regulated. From every thing which Dr Richter has said on the subject, we are warranted to infer, that he believed in the efficacy of fumigation. Thus he says:

"In order if possible to obtain some results on the prevention of contagion by the said vapours, there were placed in a fourth ward ten typhus patients of the worst description, in whom putrid symptoms were particularly predominant, together with thirty other patients labouring under various complaints, syphilis, scabies, chronic pulmonary affections, wounds and dysenteric diarrhoea, and the oxymuriatic fumigations made with great regularity and accuracy. The result was here certainly very favourable; for of these 30 patients, only one itch patient caught typhus. It must, however, be mentioned, that also in this ward the order, cleanliness, and good treatment of the sick, were exemplary."

In another place he says:

"Among the different kinds of acid fumigations the oxymuriatic, without doubt, deserve the preference for the inhabited wards, because they in no respect have any hurtful effect on either the sick or the healthy, and are evolved most steadily, so that it is easiest to maintain
in the wards a pleasant sourish smell. Perhaps, however, the muriatic acid fumigations, on account of their greater sharpness and very quick evolution, are more effectual for destroying the contagion on clothes and other substances in fumigating rooms. The nitrous acid fumes are to be rejected in every case."

Strong, however, as this evidence may seem in favour of fumigations, it is greatly reduced by what follows. Dr Richter tells us, that

"even (his favourite) oxymuriatic acid fumigations acted prejudicially on all breast complaints, and, therefore, are not applicable in an epidemic accompanied with inflammatory pulmonary affections. This was in fact the case in Torgau towards spring, especially among the Prussians. Almost every typhous patient had some peripneumonic affection; and on this account, in the Prussian hospitals, the acid fumigations could only be employed with great precaution, and at last were laid entirely aside."

But this is not all; Dr Richter was desirous of discovering a fumigation which might destroy the contagion without injuring the lungs, and he expected, for what reason we know not, to find these properties in camphor. Camphor fumigations were accordingly tried, and with remarkable success.

"That they also truly involve, render inactive, or destroy the typhus contagion, and are, therefore, capable of preventing infection, and the farther spreading of the disease, the observations made in Torgau seemed to prove in the more striking manner. For they were employed in the Prussian hospitals, with the worst typhus patients, who mostly were affected with the highest degree of its putrid modification, and covered with petechiae, with such extraordinary success, that not a single case occurred of infection taking place in the wards of these patients."

Such was, we have no doubt, the fact; but a great deal of information is still wanting to make us acquiesce in the conclusion, that camphor has the direct power of rendering contagion inactive.

Since we have said so much upon the subject of fumigation, we shall mention another form of it whose employment is to us new. Dr Richter was led, from observing the bad effects of acid fumigations in pulmonary complaints, to try in them the inhalation of ammonia gas, by decomposing in the wards a solution of sal ammoniac by quicklime.

"The effects upon patients were in fact most striking; the respiration previously short, quick, and very confined, became slower and more free, and also the quickness of the pulse was lessened without any exception, at least five, often even ten or twelve beats in a minute, and the short quick respiration, and the quick pulse did not return
until the fumes were entirely dissipated. Several patients found themselves actually much relieved by the continued use of these ammoniacal vapours, although their complaint was too far advanced to be radically cured."

We meant to have noticed Mr. Hennen's Observations on Hospital Gangrene, but we shall have an opportunity of speaking of it at more length in the next number, when we intend to review Mr. Blackadder's recent publication on this very interesting subject.

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**III.**

*Medico-Chirurgical Transactions.* Volume VIII. Svo. London, 1817. pp. 617.

We have so often borne testimony to the value of these Transactions, that it is sufficient for us, on the present occasion, to say, that the volume now before us is equal to any of those which have preceded it.

If we were to attempt either to extract every observation that is valuable in it, or to point out the particular merits or deficiencies of each paper, or to set down all that their perusal has suggested to us, the space which we can spare for critical analysis in a single number would not suffice; while, to select one or two communications either for praise or censure, would be partial and unjust. We shall therefore content ourselves with giving little more than an arranged view of the subjects treated of, which may serve to facilitate its consultation, while we earnestly recommend to our readers to give these volumes a place in their own libraries, or at least to recommend them to the library of some public institution to which they may have access.

Connected with operative surgery, Mr. Lawrence communicates in No. 18. "Further Observations on the Ligature of Arteries; to which is added, a Case of Popliteal Aneurism, attended with some unusual circumstances." 490—502. Confirming the advantages of short cut small silk ligatures for securing arteries; having constantly employed them both in his hospital and private practice, without any unpleasant occurrence, since his first communication on the subject in 1815.

Mr. Astley Cooper details "three cases of calculi removed from the urethra without the use of cutting instruments," p. 427.