OPERATIONS AFTER AN ENGAGEMENT.

[Translated from M. Saurel's "Traité de la Chirurgie Navale," by THOMAS WELSH, M.D., Acting Assistant Surgeon U. S. Navy.]

Incisions for the Extraction of Foreign Bodies.—The treatment of gun-shot wounds by incisions is a practice which goes back to the invention of powder, and which had its origin, like cauterization, in the prejudices which Ambrose Paré has described so well; but if he saved the poor victims of these wounds from the suffering of boiling oil, the practice of incision has been continued to our time. Proscribed by Hunter, whose theories are still held by English surgeons, rejected by most of the Parisian surgeons during the revolution of 1848, it has found a particularly determined opponent in Baudens. Most of our confrères in the army have adopted his practice. It is the same with naval surgeons, who have been called to treat gun-shot wounds. Hello, whom the chances of navigation conducted to the field during the most active period of his career, expressed himself thus in a very remarkable monograph, of which we shall have more than one occasion to speak. "In a general sense I adopt the rule never to incise. I share, in this respect, the opinion of M. Baudens, who considers this practice as much more hurtful than useful; and in most cases which were presented to my observation, this operation has not been practised, which has not prevented the wounds from cicatrizing readily."

The question appeared settled, when the war in the East and the Italian campaign started it anew, and the practice found new advocates in the ranks of the army. M. Scribe, whose opinion in such matters has so much weight, thinks that the wounds produced by balls of the new form (cylindro-conical, cylindro-ogivales), demand in the majority of cases long and deep incisions in consequence of the more considerable damage they cause. He is equally a partizan of it in the irregular and ragged contused wounds caused by heavy projectiles. M. A. Bertherand is also opposed to the entire abandonment of it. But, in looking over the observations contained in his interesting letters upon the Army of Italy, it is easy to see that he does not think of making it general. M. Lagonest expresses also the same regret, but he defines with more precision the object of incisions: "The theory of non-incision has exceeded the limits which its partizans laid down. It has neglected the exploration of wounds, in the treatment of which it is frequently the indispensable condition." It is not against strangulation that this operation ought to be directed, nor is it to remedy the graver disorders which balls of new invention cause, for M. Lagonest does not share the opinion of his colleagues in that respect; he recommends incisions as a means of exploring in a sure and prompt manner the passage of a ball, of ascertaining fractures caused by them, and of extracting projectiles, foreign bodies and fragments.

As we do not pretend to introduce in this discussion the expression of our personal opinion, not having had any personal experi-

ence in battle-fields, we will refer to that of the learned professor of Val-de-Grace, and will reject with him the precautionary incision, performed in consideration of a stricture, almost always imaginary, in wounds which would get well without them. We will reserve it for cases in which it will be necessary to establish an important diagnosis, to remove a projectile, a foreign body, or fragment of bone. It is in this extraction that it simplifies gun-shot wounds, which cannot be managed with too much care. All military surgeons are agreed in recommending the immediate extraction of fragments, whether free or floating, or after having contracted adhesions with soft parts, provided the adhesions can be destroyed without too much effort. Baudens goes even farther, and advises dissecting out in some cases the angular fragments.

Perhaps it will cause astonishment, that we have attached importance to a point of practice which interests only incidentally naval surgeons, since, as we have said, wounds occasioned by balls are rare in naval combats; but as our confrères are now called to serve in expeditions which have been for a half century much more frequent than naval battles, gun-shot wounds appear in the number of the most common lesions.

Cases of Amputation.—There remains another point in surgery to discuss—the most important in naval as in land service, namely, that which has reference to amputations. They may be indicated in three principal conditions:—

1st, As a consequence of complete or incomplete tearing off of a limb by a projectile of large calibre.

2d, In complicated fractures caused by splinters of shell, and fragments of wood or iron, torn from the vessel or fallen from the mast.

3d, In gun-shot wounds, properly called, with lesion of bones or articulations, produced by balls.

In the first case there is no possible hesitation. Amputation, when it is practicable, ought to be done immediately, in the surgical sense; that is to say, when the depression has disappeared, and the accidents of the wound have not yet supervened in twenty-four hours after the accident. We shall mention, bye and bye, that the disarticulation at the hip-joint is an exception to this rule.

The question is not so easily solved for complicated fractures and gun-shot wounds. The differences between these two kinds of lesions, which we have separated designedly, are capital; and it is very necessary to make these differences prominent, as the apparent gravity of the first contrasts with the apparent benignity of the second. Fractures produced by the shock of bodies of large surface, which we have enumerated, resemble those which are observed in the ordinary practice of the hospitals, as a result of grave accidents. They are accompanied equally by a considerable swelling, rapid infiltration of blood, and large ecchymoses. Wounds, frequently very extensive, flowing of blood sometimes abundant, give

them a very formidable appearance. In gun-shot wounds, on the contrary, the mischief is latent. The injury of the bones and articulations is concealed from the view; there is no very notable change in the exterior aspect of the limb. Two small wounds, with little bleeding and generally causing but little pain, do not seem to compromise the life of the patient, and rebut the idea of amputation. All the force of conviction acquired by experience, is necessary to enable us to refrain in the first instance, and to act in the second.

In a general sense, complicated fractures demand only exceptionally the sacrifice of a limb. In the marine arsenals, where most of the work demands the employment of considerable force, where enormous masses are continually being put in motion, these accidents are observed every day, and form the bulk of the practice of our hospitals. Experience there has taught us to rely upon the resources of nature and continual irrigation; these cases must be grave, before amputation is decided on. The perforation of the skin, the issue of fragments and their partial denudation, and the extensive contusion of soft parts, are not regarded as sufficient reasons. The destruction of the skin and bruising of the muscles and bones must be pushed to a great extent, together with the lesion of important vessels, to demand this operation. Such wounds undoubtedly take a very long time to get well. In fractures of the leg, for example, six months and more must elapse before the patient can walk. They require constant care, and numerous incisions to open abscesses and to take out sequestra; and when the patient leaves the hospital, we are tempted, in looking at his deformed and emaciated limb, which swells and becomes violet colored after a few hours in a vertical position, to ask if we have rendered a true service to the patient, and if it had not been better to have resorted at once to amputation, which would have spared him such long suffering. This is not the moment for deciding. We must wait months, and frequently years, to judge of the result. Then unhopd-for changes are witnessed; the callus has diminished in size; the muscles have recovered their form and energy; the articulations, stiffened by long inaction, have recovered, by exercise, to a degree which could not have been anticipated. The limb is not recognizable; the patient has forgotten his pains, and the surgeon congratulates himself on the perseverance he has exhibited. In a word, when we can have supervision of a patient, and the proper methods of treatment at our disposal, abstinence ought to be the rule and amputation the exception in complicated fractures.

The same rule of conduct will not apply to gun-shot wounds. When a ball or long musket-shot comes in contact with a long bone, it is shattered in its length and breadth; a large number of sharp irregular splinters enter the soft parts and remain there, and cause interminable abscesses. Frequently, unsuspected fissures extend to the neighboring joints. The bone is very much contused. Free access of air is opened to site of the lesion, where, often, projectiles

and portions of clothing are lodged. These disorders are frequently more extensive than a superficial examination would lead one to suppose. Thus, surgeons who come for the first time to the battlefield are led to a false security. Those who have had experience, on the contrary, have always insisted on the gravity of these lesions and on the necessity of resorting at once to immediate amputation. That was the practice of the distinguished surgeons of the republic and empire. It has been condemned when a long period of peace caused the teachings of the past to be lost sight of; and we have seen, at different times, the practitioners of the hospitals take a stand against these extreme surgical rules. Contrary opinions have arisen in the schools; and when war has opened the field of observation, army surgeons have carried there the conservative doctrines they have learned in the schools. Facts have very soon modified their opinions; we now see almost all of them inclined towards the necessity of an active intervention, and to return partly to the practice of their ancestors. The reaction is, however, not complete, and at present they amputate less than formerly. Conservative surgery was largely represented in the wars of the East and of Italy, but it protested only against exaggerations. The rules which seem to be established now, are the following:—

Gun-shot wounds of the upper extremities rarely demand immediate amputation. "I am convinced," says Baudens, "that in cases which seem imperatively to demand it, it can be dispensed with, if we have the boldness to dilate the wounds widely, to touch their seat in order to carefully extract all the loose fragments, and to excise, if there should be need, the fractured extremities of bones at their articular heads, if they are broken." It is unwise, on the one hand, to underrate the gravity of wounds; or, on the other, to depreciate the value of a member, although shortened and deformed. A mutilated hand, so long as the thumb and little finger are preserved, will be far better than an artificial limb the most ingeniously contrived.

NOTE.—"The experience in the Crimea upon the interesting questions relating to amputations has demonstrated that extreme measures ought to be widely applied in war. If we hesitate in doubtful cases, or if we rely too much upon conservative surgery, we are not long in repenting of it on seeing patients die of wounds when amputation would have saved them. We have had frequent and sad experience of this."—(SCHRIVE, *Medico-Chirurgical account of the Campaign in the East*, p. 461.)

"Too often the surgeon is disarmed by considerations of personal condition, age, &c., and sees his patient die with four limbs when he could have lived with three."—"A. BERTHERAND, *Campaign of Italy of 1859*." *Medico-Chirurgical Letters*, Paris, 1860, p. 196.