Notes and observations on army surgery / by F. Formento Jr.

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OBSERVATIONS

— ON —

Army Surgery,

BY

Dr. F. FORMENTO Jr.,

SURGEON IN THE FRANCO-SARDINIAN ARMY

DURING THE ITALIAN CAMPAIGN OF 1859;

LATE CHIEF SURGEON OF THE LOUISIANA HOSPITAL

OF RICHMOND, etc.

NEW ORLEANS.

1863.

L. E. MARCHAND, PRINTER, 201, CHARTRES STREET,

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PREFACE.

This work is the result of two years' experience at the head of a large military hospital. It is purely professional and written in a practical point of view. Army practice is extensive and infinitely varied; every possible case of diseases and wounds comes under the treatment of the military surgeon. It would be hardly possible, therefore, that some of the remarks in the following pages should not be found worthy of the attention of the general practitioner. They also relate to circumstances and incidents that can scarcely fail to interest the whole public. Nor is it necessary to say that most of the deductions from military practice and experience herein recorded, apply not less to the treatment of ordinary cases of wounds and diseases.

Modestly hoping that the work may contribute in some degree to relieve suffering and save human life, the author submits it to the public consideration.

New Orleans, November 10th 1863.

NOTES AND OBSERVATIONS

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Army Surgery,

BY Dr. F. FORMENTO Jr,

War seems to be a social necessity. It is in human nature. It has existed ever since the beginning of Creation and will probably continue to exist as long as there are men, — consequently passions, errors and prejudices.— In spite of all the reasoning of philosophers and moralists, in spite of all the efforts of the Peace League to suppress it, war will occur, and Universal Peace remain an utopia. The sword will always be of a mighty weight in the balance of the destiny of nations.

But if wars cannot be avoided, could they not be made at least short and decisive? Is not the consideration of the thousands of victims which every war carries with it, a sufficient argument? It would be probably, if every one could be struck with the horrors, with the scenes of suffering and agony, which the military surgeon is daily called to witness.

The statistics of the best organized armies of Europe, where every man is carefully selected by the examining surgeons, and where every thing is provided for the comfort of the soldiers, show that the number of deaths in an army at war is really frightful.

In spite of all the modern implements of war, in spite of the numerous and formidable means of destruction lately adopted, those killed in battle, or who die from wounds, are but a small minority in comparison to those who die from disease.

" In the war with Mexico, the American Army lost but 1549 men in battle and from wounds, whilst 10,986 died from disease in Mexico, besides the hundreds and thousands who returned home to die among their friends from the effects of diseases contracted in camp." (Chisolm, Manual of Military Surgery.)

We are informed by the same authority that " in the Crimean service, the statistics collected by lord Penmure, Minister of War, show the English loss to have been 22,457, of which number 3,448 were killed in battle, or died from the effects of wounds. Whilst the French loss, as reported to his government by M. Scrive, Inspector General of the French Medical Service in the Crimea, exhibits the frightful loss by death of 63,000; whilst the admission into hospital numbered 114,768. This frightful mortality was caused principally by the Asiatic Cholera, which decimated that splendid army.

During the Italian campaign of 1859, the proportion of deaths from wounds as compared with those from

diseases was greater than in the Crimean war. It is true that the campaign was short, took place in the best season of the year, in a healthy conntry, where all the necessaries, even luxuries of life were afforded to the troops, and that there were no sieges with all their disastrous consequences. At Solferino, the loss of the Austrians in killed and wounded amounted to 35,000! This frightful loss was chiefly caused by the perfection of the rifled artillery of the French (then used for the first time in battle), which, placed in excellent position, fired 50 shots an hour at a distance of 2,200 metres, with mathematical precision!

When we bear in mind the material of which the armies of this country were composed, when we think that the very large majority of the soldiers were men not trained to the hardships, privations and fatigues of a soldier's life, that they were taken at first promiscuously, without surgical examination, from all classes of society, we readily understand that the mortality among the troops must have been very large. Yet, in spite of all the difficulties under which the armies have been laboring, that mortality, I think, will compare advantageously with that of the armies of Europe.

Dr. Woodward, of the Surgeon General's Bureau at Washington, in his report concerning the mortality of the Federal Army during the first year of the war, ending with June, 1862 says "During this time the general rate of the mortality of our armies was 67,6 per thousand of the average strength of those armies for that year. The rate includes deaths from wounds and injuries, as well as from diseases. The mortality from disease alone was 50,4

per thousand; from wounds and injuries 17,2 per thousand; it thus appears that three of our soldiers die of disease for every one killed in battle. In the Mexican war the mortality rate in our army was 103,8 per thousand, and in the British army during the Crimean War it was 232 per thousand."

During the last two years, from September 1861 to September 1863, not less than 5000 patients were admitted and treated at the Louisiana Hospital of Richmond; this number includes every possible variety of disease and wounds. The general mortality was 11,9 per hundred.

A fact which should be noticed here is the smaller mortality of those hospitals where the kind and devoted hand of women administered to the wants and sufferings of the sick and wounded. After the battles around Richmond, the Louisiana Hospital and one or two others, under the direction of the Sisters of Charity, were publicly cited as having lost much fewer patients than the Government Hospitals, deprived of the zeal and devotion of such angels of mercy.

Our success at the Louisiana Hospital can also be attributed, in part, to the fact that the patients were treated in a number of small wards, perfectly well ventilated and distributed in large and commodious buildings, one mile from the city, in a most salubrious position, where there was abundance of fresh air and excellent water. All precautions of cleanliness were rigidly enforced; as soon as a case of contagious disease declared itself, it was immediately removed to the "Ward for contagious and eruptive

diseases', or to the hospital tents. These I found of invaluable service, a thousand times preferable to the crowded wards of the most palatial buildings, in all cases of an asthœnic character, as well as in the treatment of wounds of the most serious nature, and especially after capital operations; all these cases did infinitely better in tents.

This fact was so well known to the wounded that as soon as their wounds would *begin to look bad* they would themselves ask to be transferred to the tents. These hospital tents are fourteen feet long, fifteen feet wide and eleven feet high in the centre, with a wall four feet and a half high which can be raised for ventilation, and are always protected by a "fly" of appropriate dimension, rendering the tent much more cool and dry; they have a floor elevated several inches from the ground, and which should be covered, when possible, with an oil cloth. Such a tent will accommodate comfortably from 8 to 10 persons. The advantages of this mode of treating wounded men, and those affected with disease of low type, erysipelas, typhus fever, etc., will no doubt astonish many physicians of the old school, who have learned to dread, above all things, the injurious influence of air. To-day, it is proved beyond any doubt, that in the cases alluded to, as well, I might say, as in every case of disease, an abundant supply of pure fresh air is absolutely indispensable; the best directed treatment will often be a complete failure, without the observance of this rule of hygiene. Let your patients—especially your wounded patients—have plenty of air, and guard them above all, from an unrenewed and poisonous atmosphere; the consequences of this would be erysipelas, gangrene, pyœmia and death.

I could mention here several instances of patients having suffered amputations of thigh or arm, resections of the principal joints, who treated in crowded wards, were rapidly sinking under the influence of excessive suppuration, of irritative fever, of pyœmia, who took a sudden change and rapidly recovered, as soon as they were removed to a pure and healthy atmosphere. One of these cases, (a certain Mike Quinn, of a Louisiana Regiment,) with gangrene of the stump, after amputation of the thigh, and sanies of the worst character extending to the groin, where an enormous abcess was formed with numerous fistulas, was removed in a dying condition to a large and well ventilated ward, which was then unoccupied ; there was no change made in the treatment, (brandy, tinct. of iron and bark, stimulants of every kind, tinct. iod. in the fistulas, cauterisation with chlorhydric acid,) etc., which up to the time of his removal, had produced no good result ; that man began to improve as soon as he was placed in a pure atmosphere and after a severe trial of several weeks, recovered perfectly well.

Another important object of consideration in the treatment of wounds, is the dieting of the patients. How many men having suffered operations most skillfully performed by celebrated surgeons, have died from the excessive antiphlogistic diet to which they were submitted, in other words, have been starved to death. In the best organized armies, soldiers suffer from want and exposure ; the fatigues and hardships of active field duty are very great ;— most of the sick soldiers, admitted in the hospitals, after long marches, after several hours, sometimes several days hard fighting, in which they have often been reduced to half, sometimes to one-fourth ration, are completely

broken down ; they require stimulants, brandy and good food. How much more are these things needed by those wounded who have been prostrated by the loss of blood, by the sufferings of transportation and by excruciating pains ! Do not feed such patients, do not restore their strength ready to give way, keep them on tisanes and the mortality among them will be very great. On the contrary give them a good, strong, easily digested, nourrishing diet, let their wants be satisfied, let their appetite be your guide and your success, after capital operations, will be remarkable.

Not many years ago, under the influence of the system of Broussais, bleeding and excessive abstemious diet, amounting to starvation, was the general practice in the treatment of wounds as well as of disease. Since then, modern physicians have gradually abandoned such injurious practice ; surgeons have understood the necessity of feeding those who have suffered serious surgical operations ; but as it is difficult to eradicate errors and prejudices the proper dieting of patients, of wounded men especially, is far from being generally adopted. A few years ago, while in London, I was much struck with the great difference in the result of operations performed by the French and English surgeons. I then attributed the greater success of the latter, particularly to their generous diet. I recollect having seen in one of the London hospitals a man who had had a leg amputated, to whom was prescribed 2 pints of porter a day, besides other stimulants. The vast opportunity for observation I have lately had leaves no doubt in my mind as to the injurious influence of antiphlogistic treatment (bleeding, etc.) and low diet, in

most cases of wounds and especially after surgical operations. — This remark could be applied as well to many cases of disease, especially in this country, where malarial influence predominates, and diseases of low type abound.

During the first part of the war in the autumn of 1861 measles prevailed among the troops. This disease with malarial fevers, diarrhœa and dysentery, filled up the hospitals. Measles, which is generally speaking, a light disease, assumes a more serious character when it assails adults. I observed several cases of a very malignant character, leaving often very serious sequelæ, ophthalmia, diarhœa, bronchitis, persistent otorrhœa, which could be cured only with great difficulty. — These sequelæ kept a large number of young recruits in the hospitals during the whole winter months. As it is always the case with an army, in the beginning of a campaign, the number of the sick and the dead was far greater during the first months than later, when the recruits had become accustomed to the hardships of camp life. — To become a soldier, it requires a regular training, the ordeal of which is not passed successfully by all. In this country where armies had to be improvised, that want of routine was sorely felt. Not accustomed to the work, privations, hardships and fatigues to which they were, without any transition, compelled to submit, new soldiers were rapidly seized with disease, and a severe attack generally proved fatal.

I have but little to say in relation to the diseases which prevailed during the first period of the war. Quinine in moderate doses, in cases of malarial fevers, opium, calomel and ipecac and light astringents in diarrhæa and dysen-

tery, generally proved very successful. — Quinine in small doses, 2 or 3 gr. combined with a very small quantity of opium, 1/6 grain, given every morning, for 2 or 3 weeks as prophylactic, prevented, almost in every case, the return of the fever after it had been once checked. I have seen persons who had been for months and months the victims of intermittent fever, returning under the least exposure, remain entirely safe, and protected from new attacks, under the influence of this treatment, although they continued to reside in parts of the country where malaria prevailed.

As to the treatment of measles, besides light diaphoretics and other usual treatment, I would strongly recommend in every case the use of Liq. acet. ammoniæ (spiritus mindereri) which given in doses of 40 or 50 drops, 3 times a day, in a cup of warm tea, seems to possess a particular eliminating action. — Even in the sequelæ of Rubeola, I have found it very useful. — I am inclined to consider it as possessing specific properties in Rubeola. It was the principal medicinal agent used by my father, several years ago, in the cure of a case of deafness, following a very severe attack of measles. The patient was a son of Mr Martin Dural of this city, and success was complete.

During the months of December 1861 and January 1862, typhoid fever and pneumonia prevailed almost epidemically in the hospitals of Richmond. At that time these two diseases, the latter especially, killed more soldiers than any other. — Men affected with acute pneumonia in its full development, were sent from the field,

over rough roads, in the most inclement months of the year, from a long distance, to the Richmond hospitals where they very often arrived in a hopeless condition.

In typhoid fever, experience soon proved us that all depressing agents were to be carefully avoided, and that the asthænic character of the disease was to be remembered.—Saline purgatives (Delarroques method) followed by stimulants, and meeting besides the most alarming symptoms as they occured, proved the most efficacious treatment. —In cases where there was much tympanitis, dryness, and fuliginous condition of the tongue and fauces, gurgle and pain in right fossa iliaca, and moderate diarrhæa, the oleum terebenthinœ had an excellent effect; when there was any marked remission in the symptoms, quinine was given with advantage. Frequent sponging of the body with water and vinegar was of great comfort. During the convalescence of typhoid fever, as well as of most diseases of long duration, the tinct muriat. ferri was found to be the best tonic, improving rapidly the condition of the blood.

In pneumonia, dry or scarified cupping according to the general condition of the patient, which very often prohibited absolutely blood letting, followed by very large blisters on the chest, expectorants combined with chlorhydrate of ammonia, 5 grains every 3 hours and often with carb. ammonia, proved to be the best treatment. In almost every case, the patient was put on strong beef tea, milk punch, etc. The tartar emetic in large doses and other preparations of antimony, so useful in civil practice, were not admissible, extreme prostration immediately following in all the cases in which they

were used. But emetic given simply to promote vomiting, or ipecac, had an excellent effect when administered in the first period of the disease. Our practice confirms the greater gravity of inflammation of the left lung, when compared to that of the right. Bleeding was generally found more injurious than useful ; I have already mentioned the prostrated condition of the men who usually reached the hospital after several days sickness. In almost every case of disease that came under my observation, debility very soon made its appearance, and stimulants had to be given very freely ; brandy which I had seldom used in civil practice, proved a most valuable medicine. It is especially in cases of pneumonia observed in military hospitals, that a physician can see how different must be the treatment of the same disease, according to the condition of the patient, the different locality, mode of life, etc., things that have been known for a long time, and which experience confirms every day.

I have but little to say in relation to the other medical diseases which reigned in the hospitals of Richmond during the spring and summer of 1862. Diarrhœa, dysentery (generally of a mild form) and gastric disturbance continued to be the prevailing diseases. They were generally the result of suppression of perspiration and of intemperance in eating and drinking. — Unripe fruits and vegetables, indigestible food of every kind, poisonous whiskey will always be the great temptation of soldiers. — We had many cases of camp fever, so called, because it generally accompanies armies ; it is considered by many surgeons as typhus fever. — I found it very different from the real typhus I had observed in Italy. This

is a much more serious disease, and always produces great mortality among the troops — it is always the result of animal emanations. Camp fever which I observed in Virginia was rather a form of typhoid fever, of less duration ; abdominal symptoms predominated instead of the cerebral which are predominating in typhus fever ; the treatment was generally successful and consisted especially in the use of opium and stimulating tonics.

In the month of April 1862, after several months training and military preparations on both sides, began in Virginia a series of bloody battles and serious engagements which has continued with but very little remission, up to the present day. At that time, the hospitals began to be crowded with wounded of all sorts, and they have since formed the principal portion of the inmates of the hospitals.

It is curious to notice after each great battle, how suddenly all other cases of disease, disappear to make room for the wounded. These alone attract attention, excite interest and sympathy, the others sink in insignificance ; nobody seems to care any more for the poor fellow who lies—afflicted with diarrhœa or fever—close to a soldier who has lost either an arm or leg on the battle field, and who with a flash in his eyes, relates with enthusiasm the different phases of the battle. Strange human nature ! These two men have both suffered for the same cause, both will perhaps give it their life, and yet how differently they are looked upon. The wounded man is regarded as a hero, whilst the other is scarcely noticed. The sympathy excited by a bleeding

limb, by something which makes an impression on our mind through our senses will always be stronger than that which is excited by a disease we do do not see and which we know nothing about.

Before speaking of the several rare and interesting cases of wounds which I had the opportunity of noticing, and the different operations they required, I will say a few words of a disease of the most serious character, which carried off large numbers of soldiers, during the autumn and winter of 1862. I allude to small pox which was said to have been imported in the Southern Army, by prisoners of war, returning from the North where it reigned considerably. Its first origin was attributed to the fact of these prisoners having slept one night, on their way home, in a house (I cannot remember the name of the locality) which had been used shortly before as a small pox hospital by the Northern troops.— The first cases of this loa some disease were observed, I think, in the month of September and spreaded gradually until it assailed a very large number of soldiers. A large small pox Hospital was established in Richmond, at Howard's Grove, at a considerable distance from the City, in an elevated and salubrious position, and all the other hospitals received orders to have all their varioloid and variola cases removed immediately to this Howard's Grove Hospital. Vaccinations and revaccinations were practiced in the whole army, as soon as the first cases of small pox made their appearance. I do not know what has been the mortality caused by this frightful disease in the hospitals of Richmond, and in the army in general; I have however reasons to believe that it has not been as great,

as it is generally under similar circumstances. At the Louisiana Hospital, we had 13 cases, 8 of true variola, and 5 of varioloid. They were all treated in a separate building removed at a considerable distance from the main buildings, and no communication was allowed between them.

The utmost cleanliness was observed, chlorine fumigations were made daily and all other hygienic principles strictly enforced. But above all, we insisted upon thorough *ventilation* of the wards, for we are of opinion with a large number of modern surgeons, that *air* is the *only* true desinfecting agent, and that, without it, all the others are of no value. Out of 13 cases of small pox, we lost 4, one of whom (F. Taylor, of the 9th La. Regt.) had organic disease of the heart, and another (Dan. Joyne, of the 1st La.,) had suffered two amputations of thigh ; he was progressing very favorably after the second operation, performed at the hospital (the first was performed on the battle field ; the lesions of the bone extending several inches above the line of section, it was necessary to reamputate) when he was suddenly taken with variola which in a few days carried him to his grave. Private J. K. Stewart, of Comp. C. 2d La. Regt., was just recovering from his numerous wounds, compound fracture of right fore arm and left fibula, besides three flesh wounds, when he was taken sick with small pox which fortunately, was not very severe. In spite of his debilitated condition he recovered perfectly well.

Our treatment consisted principally in saline purgatives, cooling drinks, and enemata in the view of abating

the force of the eruptive fever and keeping down the number of pustules when these were confluent; in cases in which the eruption seemed deficient, the liq. acet. ammmon. readily promoted it. Opiates given once or twice a day had an excellent effect in moderating the restlessness, tremors and delirium which generally occured.

During the period of suppuration, the strength of the patient was supported by a nourishing diet, by wines and cordials, and liquor. sodæ. chlorinatæ. administered internally in view of its antisceptic properties. The eyes were carefully washed with water and vinegar, — and the pustules of the eye lids touched with the lunar caustic to prevent dangerous ophthalmia. — As to the prevention of the pitting or seaming of the face, which was not so important in our class of patients, mercurial ointment smeared from time to time, was the only thing used.

Before coming to that part of our observations which refers to gun shot wounds and to the operations they required, I will speak *en passant* of a few surgical cases of daily occurence in civil praetice.

Among many others, I could mention a case of urinary infiltration, from stricture, extending to the upper internal part of thighs, to the perineum, scrotum and abdominal parietes up to the umbilicus, and complicated with an enormous inguinal hernia of years standing. This case occured in an old man (Amy Leroy, of the 10th La. Regiment), and was successfully treated by numerous deep incisions, (12), one opening the whole length of the scrotum, half of which mortified, by injections of pure tinct. iod. and Labarraque solution, and introduction of

catheter in the bladder; tinct. chloridi ferri in large doses internally 20 drops every two hours] tonics and stimulants,—This old man, after being on the verge of death [extreme prostration, diarrhæa, hectic fever] completely recovered.

One case of radical cure of Inguinal Hernia by Weirtzer's method (Robert Magee. 6th La.); the operation failed in two other cases, of many years standing and in which the rings of the canal were very much dilated.

One case of complicated fracture of skull [D. C. Clough 5th La Co I] from blows and injuries received in a street fight,—A large piece of the left parietalis bone was detached and extracted—most violent cerebritis took place. The patient was twice saved from imminent death by the application of a large blister covering the whole scalp.

Finally, several cases of varix cured by the injection in the veins of per chloride of iron, a large number of ablations of hemorrhoidal tumors by the "Ecraseur", etc.

About one half of our operations were *secondary*. that is, were performed after suppuration was established. Now every surgeon knows that an operation performed in the first 24 hours that follow the injury, before febrile reaction sets in (primary), is much more apt to succeed than an operation performed at any other period.

There seems to be but one exception to this rule; resection at the hip joint is more successful when secondary than when primary, although the success in neither case, is far from being very satisfactory. In the Histoire Medico Chirurgicale de la Guerre de Crimée par le docteur Adolphe Armand, we find that out of 36 primary resections at the hip joint after gun shot wounds, but one was cured, and 35 died; out of 12 secondary resections at the same joint, 3 were saved and 9 died. It is also

generally admitted that amputations rendered necessary by traumatic lesions are more dangerous than those we perform for chronic organic lesions; in other word, that an operatiou performed for disease succeeds better than one performed for injury. Out of 24 amputations for organic alterations, in young subjects from five to fifteen, 8 deaths, 16 cures; for traumatic lesions, out of 4 amputations, 4 deaths. (Malgaigne, archives générales de médecine, avril 1842.)

Among the successful amputations of thigh performed at the Louisiana Hospital of Richmond is one in the upper third, (secondary) which so seldom proves satisfactory; here is the observation:

L. Dwyer, private, 14th La. Regt. Comp. F. entered the hospital July 1st 1862. Wounded at Gaines Mill, on the 27th June, at the union of the upper and middle third of right thigh. When he entered the hospital, his leg was in a fracture box, he suffered but very little, and we had no idea of the gravity of the case until several days after, when the fever having subsided, and the suppurative process being well established, we probed the wound with the finger, which revealed terrible lesions. There was but one opening in the anterior upper part of the thigh; it was small, regular, linear, and resembled more an incised wound than a gun shot wound; it led directly to the bone which was crushed; numerous spiculæ of all sizes and dimensious were distinctly felt; a very sharp pointed fragment extended downwards beyond the reach of the finger, a buck shot was extracted with the forceps from the wound. The projectile(what was it)? was probably lodged in the bone. A consultation was held with Dr. W. C. Nichols, of this city, and we both came to the conclusion, that the lesion was such as to necessitate the immediate amputation. The patient was yonng, strong and vigorous. The circular amputation was immediately performed (July 8th) the incision of the integuments included the bullet hole so little tissue was there left above to cover the bone. The fracture was found not to extend, very fortunately,

above the opening of the projectile, but several large fragments extended downwards to 4 inches above the knee joint; the bone was completely crushed; two heavy pieces of lead, flattened and irregular, and three buck shots were found lodged among the fragments. — This man recovered perfectly well, after a long and profuse suppuration during which his strength was sustained by tonics and stimulants; he was keeping a fruit store in Richmond when I left.

This may be considered as an exceptional case; in the great majority of cases, amputations in the upper third of thigh are fatal. In the Crimea all those that were amputated in the vicinity of the trochanter died. Baudens blames amputation in the superior third of thigh. His experience proves that in compound fracture of upper portion of thigh, more patients are saved, when attempts are made to save the limb, than after amputation. He succeeded by the use of the fracture box and inclined plane in saving a patient who had a compound fracture on a level with the trochanter, although he had extracted two inches of the shaft of the femur. In a similar case, I also extracted 2 inches of bone immediately below the trochanter, but was not so fortunate; the patient died 3 days after.

If there is any doubt as to the propriety of amputating in the upper portion of thigh in compound comminutive fracture, there can be none when the lesion exists in the inferior portion. Every surgeon knows that the dangers of operations diminish as they are performed at a greater distance from the trunk. If attempts are made to save the limb, the chances of death will be almost as great as in compound fracture of the superior portion (the majority will die after excessive sufferings), especially in

military hospitals where exist so many unfavorable circumstances, while by amputation many will be saved.

I will remark here that amputations in general seem to be less successful in our days than formerly. This is probably due to the difference in the projectiles now used, compared to those of former years. In fact the conical ball (which causes more deaths and wounds than other apparently more frightful projectiles of war) produces much more crushing and comminution, much more splitting of the bones, extending often to the joints, than the round ball, the nervous shock is consequently greater, and that may have some influence in the results of amputation. I have seen a man, who had received a gun shot wound (Minié) which had penetrated and shattered the knee joint, die less than two hours after the injury, from the shock — there was no hemorrhage ; the patient remained pale, cold and faint, with weak, irregular, tremulous pulse, and want of conciousness, until he died.

After the terrible naval engagement which took place June 1st 1794, Dr. Fercoc, surgeon major of the vessel le *Jemmape*, wrote to Larrey, that out of 66 primary amputations, 2 alone died from tetanus : one of these had had his two arms amputated. — after the engagement of Neuberg, Percy performed 92 amputations, 86 recovered ; Larrey cured 12 out of 14. — After the battle of New Orleans in 1815, out of 45 primary amputations, 38 recovered (Guthrie).

It was after an amputation of thigh that I observed the only case of tetanus that occured in the

hospital. This formidable complication declared itself in a young, healthy subject, 14 days after the operation, apparently without any cause, when every thing was progressing favorably.

Our mortality after amputation of the superior extremities was 1/8; after amputation of inferior extremities 1/5. These amputations were necessitated by comminutive fracture, especially in the lower extremities, by wounds implicating large joints, by mortification, finally, when after an attempt at saving a fractured limb or a perforated joint, life was threatened by continued irritation and excessive suppuration. I always preferred the circular method to any other, on account of its leaving less sof parts to suppurate to slough, thereby diminishing the dangers of the operation, and of its mor rapid cicatrization.

In all our operations, we invariably used chloroform, and although its full effect was obtained, and that period of *tolerance*, as Dr CHASSAIGNAC of Paris, calls it, reached in every case, we never met with the least accident or even inconvenience. I consider it of *utmost importance* that an operation should never be *begun* while the patient is still in the period of *excitement*, as I have frequently seen it done. During this period. the nervous power of the patient is *considerably* increased, several strong men are required to hold him, his muscles are all in spasmodic contraction and sensibility is far from being abolished.

The Surgeon who refuses his patient the full benefit of

this most wonderful agent, of this blessing of God, is barbarous, ignorant and not worthy of his age. — Do not operate until your patient is fully under the influence of chloroform, untill the period of anæsthesia, of complete insensibility is reached. That period can be protracted more or less, for an indefinite time, by renewing at intervals the inhalation of chloroform.

During the Italian campaign, I saw cases of traumatic tetanus, in which the patient was kept under its influence for ten and twelve hours. In England, women are daily delivered under the influence of chloroform. By administering it with proper precautions (the patient being placed *horizontally*, the head not higher than the body, the first inhalations being well diluted with air, etc.), by being guided *exclusively* by the effects of this powerful agent in each individual case, the dose required to produce anæsthesia varying infinitely, you will have no cause to fear any accident. In the Crimea, chloroform was administered in more than 60,000 cases and never caused a single accident, and still we find, as Chisolm so verily remarks, some of the old school, who are in authority, sneer at its pretensions and magnify its dangers.

Eight resections at the shoulder joint, two at the elbow, one at the wrist, and one in the continuity of the humerus were performed and treated at the Louisiana Hospital.

They all succeeded remarkably well, with the exception of one at the shoulder joint, in which case the desarticula-

tion ought to have been performed at first, instead of the resection, as will be seen by the observation at the end; the patient recovered with the loss of his arm. In all the other cases the patients regained a very useful limb.

Resections at the shoulder-joint gave excellent results; the patients, besides running much less danger than in the desarticulation, recovered with limbs possessing all the motions with the exception of the deltoid, which muscle remained more or less paralized, on account of the inevitable division of some of its nerves.

All cases of gun shot wounds interesting large joints that came under my observation required either resection or amputation; — I at first attempted to save life without operation, by cupping, leeching, bold incisions in the joint to give exit to the pus, cold irrigation, etc. but with no good result. Apparently trifling injuries were followed by excessive inflammation with destruction of the whole joint. Resection is more applicable to the superior than to the inferior extremities; amputations of the latter will always be more frequent. In the arm, sensibility and mobility are much more essential than solidity which is absolutely required in the inferior extremities to sustain and carry forward the body; considerable extent of the bones of the upper extremity can be removed without rendering the limb useless; whatever may be the shortening after resection, if the hand is saved *that* alone is of an *immense* advantage, while the least shortening of the leg has very great inconveniences.

Resection ought to be performed in preference to ampu-

tation in every case of compound fracture (gun shot) of arm, where the nerves and arteries are not injured nor the soft parts extensively lacerated. When the bone is not extensively crushed, an attempt ought to be made to save the limb, without operation. Paste board and gutta percha splints, moulding themselves perfectly to the shape of the limb are very useful in this case. Spiculœ should be immediately extracted and the wounds left open to give free exit to the pus. — By following this course, I succeeded in several instances to save the limb without any deformity.— Among others, I will only mention here Lieut. Johnson of the 5th La. Regt., who recovered from severe compound fracture of upper portion of humerus, with perfect use of limb, and without any deformity.

In injury of the hip joint, resection should also be preferred to desarticulation which proves speedily fatal in the immense majority of cases. In the Crimea not a single coxo femoral desarticulation proved successful while the result was a little more satisfactory in cases of resection. —They saved 1 in 6, and would have saved more, had the general conditions of the troops been better. (Chisolm.)

The dangers of resection compared to those of amputation are much less. — In the Schleswig-Holstein army, out of 54 amputations of the arm 19 died, whilst, out of 40 resections under similar circumstances only 6 died.

The reader will find hereafter the detailed observation of a case of resection at the elbow joint (Capt. H. Myatt's) followed with extraordinary success.

The principal rules for all resections are that the in-

cisions made to reach the injured bones should be performed on that side of the limb where there are no important blood vessels and nerves, that they should be sufficiently long to expose and dissect easily the heads of the bones. It is recommended besides that as much periosteum, and as little synovial membrane as possible should be retained, the first is necessary to the formation of new bone, the second is apt to inflame. No reunion by first intention is to be expected; suppuration will generally be profuse and long continued; guard against *debility;* give your patient good nourishment and stimulants. — Use cold water dressing and apply no bandage, no splint of any sort to the limb until healthy granulations fill up the cavity caused by the extraction of the bones, it will then be time to apply the tumefaction bandage for removing the œdema of the limb, and the necessary lspints (paste board or gutta percha,) and also to guard against anchylosis, by passive motions in the pseudo-joint. As soon as fever has subsided, and suppuration is well established, the patient should be permitted to leave his bed.

Several cases of desarticulation at the shoulder joint (flap and ovalar method) performed on the battle field, were treated at the hospital, and not a single one died. A tibio-tarseal desarticulation (D. LEBLANC, of the Donaldsonville Artillery) and a desarticulation of Chopart (E. TURCK, Comp. C. 7th La. Regt.) had also excellent results.

At this hospital I always prescribed that the dressing of wounds should be extremely simple discarding as much as possible lint, charpie and bandages which used to be considered indispensable. I at first did so from necessity, lint and linen were scarce articles,— but I soon found that a simple

compresse wet in cold water and often renewed was more advantageous than elegant bandages which kept the parts warm and irritated. — Wounds cicatrize much better and sooner by the water dressing. Cold irrigation was used with utmost advantage in all cases where violent inflammation threatened or existed. — After operations, the wound was united by means of the suture, and no adhesive plaster used. I cannot say that I ever witnessed a case of union by first intention after a capital operation, but frequently saw wounds heal with but very little suppuration. In almost every case, the flabby condition of the wounds required some stimulant and astringent application; solution of nitrate of silver more or less concentrated, and tincture iodine were generally used with benefit in promoting healthy granulation. In cases where there was much fœtor, the liquor sodæ chlorinatœ (Labarraque's solution) was invariably used.

A small number of penetrating wounds of the chest were treated at the hospital, the majority of those wounds causing immediate death and not bearing transportation from the field. I however had the opportunity of seeing several cases of gun shot wounds *of the lung* in which the patient was saved.

M. KENNEDY, 19 years old, [Comp. D. 1st La. Regiment] wounded near Richmond on the 21st June 1862.—The ball [Minié] entered the chest on the left side, between the 9th and 10th rib in front, and was extracted two weeks after, in the back, 1 1|2 inch from the spine, opposite the 8th rib.—There was hemorrhage from the mouth, from the wounds, escape of air, etc.—This patient recovered with hernia of the lung, protruding under the skin, between the 9th and 10th rib in front, of the size of a pigeon's egg.—His general condition was good.

In cases of penetrating wounds of the chest venœsection finds its most useful application; it often checks internal hemorrhage, which otherwise would have been speedily fatal, diminishes dyspnœa and infllammation. Opium should be given freely and frequently, it quiets the cough, diminishes respiration, allays pain, and by its antiphlogistic properties operates directly against inflammation ; digitalis and veratrum viride should also be given to controle the action of the heart. Ice should be used freely internally and externally. The patient should lie on the wounded side.

If profuse hemorrhage is caused by the lesion of an artery which can be reached such as the intercostal, or the internal mamary (this very seldom occurs) the wound should be enlarged and the bleeding vessel ligated. McLeod states that during the crimean war, he neither saw nor heard of an instance of injury to the intercostal artery.

When the hemorrhage does not proceed from the lesion of these arteries, the wound should be accurately closed. The blood coagulating in the cavity of the chest will compress the bleeding vessels, and hemorrhage will generally cease. Besides, the closure of the wound will exclude the introduction of air which would cause the decomposition of extravasated fluids, and will to a certain degree, prevent emphysema.

It is only in cases of imminent suffocation, or when the presence of suppuration (empyema) threatens to destroy life, that the wound should be dilated or the thorax opened to give free exit to the pent up fluids.

The presence of foreign bodies (which is more than probable in shot wounds of the chest, when there is but one orifice and the clothing has been perforated) will add greatly to the dangers of such wounds; sharp spiculœ from fractured ribs are the most dangerous. The search made for them should however not be too protracted, and no probe used except the finger.

When not easily detected, the wound should be closed with diachylon and the general treatment insisted upon. Their presence is not *absolutely* incompatible with life, not even with health. Several examples are recorded in surgical books, of men having lived for number of years with enkysted balls or other foreign bodies remaining in the lung.

The most extraordinary case of penetrating wound is the following :

GUN SHOT WOUND,

PENETRATING RIGHT LUNG AND LIVER;—RECOVERY.

Julien Arnaud, 21 years old, of the 15th La. Regt. Comp. K. was admitted at the Louisiana Hospital of Richmond, May 13th 1863; wounded at Chancellorsville May 3d, by a Minié ball entering the right hypochondriac region in front, at the point of union of the cartilages of the 8th and 9th rib, and coming out behind opposite the 11th rib which it fractured, at 4 inches from the spine. Shortly after the injury, considerable hemorrhage from the mouth as well as from the wounds, ceasing spontaneously during the night ; for 3 or 4 days he continued to to spit blood.

On admittance (May 13th) the patient was very much troubled by hiccup and vomiting which had lasted for 5 days; complete prostration; constant and hacking cough, expectoration, after much effort, of pure bile; bile comes out also in quantity from the 2 openings; stools liquid and whitish, but regular; the patient had vomited all the food he had taken for the last 4 days.

Diagnosis: Gun shot wound penetrating the liver and base of right lung.

Ice was prescribed in small pieces, constantly kept in the mouth and swallowed — the patient took it with avidity. In the afternoon vomiting ceased and iced weak brandy toddy was prescribed. This was the only nourishment for two days. Pulse weak and frequent; no pains except when coughing — sleep regular — great dullness at the base of the lung; auscultation impossible on account of the incessant cough. The wounds were dressed with dry charpie applied in thick layers and always found saturated with bile, at each dressing, 3 and 4 times a day.

May 16th. Less bile in the secretions which are getting more purulent; no vomiting; prostration much less; cough still frequent and sputa assuming a mucous character. — At the evening dressing a small spicula is extracted in the posterior wound. Ice and punch are continued, with the addition of beef-tea, milk and soup.

May 21st. Patient complains of pains along the false ribs; some diarrhæa; whitish stools: 1 grain of opium every 4 hours and starch injections.

May 21st. Diarrhæa almost ceased ; secretion by the anterior wound very much diminished ; while the wounds are being dressed, a bubble of air comes out with *noise* from the posterior wound ; expectoration which does not contain any more bile, and cough, are less — the patient sleeps well at night, and takes more nourishment and stimulants. The passages still liquid have regained their natural colour.

The amelioration is kept up regularly to the 10th June. At that time fever supervenes, the cough increases, the sputa become rusty, and aulscultation reveals partial pneumonia of the inferior part of right lung. For several days the patient takes with benefit small doses of opium and calomel. On disappearance of acute pulmonary symptoms, chlorhydrate of ammonia is prescribed (20 gr. in 4 doses a day) and also the Muriat. Tinct, Iron (15 drops 3 times a day. The sal ammoniac is continued for 8 days, and the tincture of iron for seral weeks. — The patient improves. On the 28th he walks about the yard ; his appetite is good and he is gaining his stregth.

In the first part of July, the wounds are completely closed ; no more cough, all the functions are natural. — The right inferior part of the thorax is very convex ; the 9th rib is separated from its cartilaginous attach with the 8th, and the anterior margin of the 10th rib can be easily felt under the abdominal parietes, about 2 1/2 inches above the superior edge of the iliac bone (cresta iliaca). Air penetrates the right lung in its two superior thirds. Two months after, I had the opportunity of seeing Julien Arnaud ; he was in excellent health.

In general hospital No. 1, in charge of Dr. Gibson, (Richmond) I observed a case of gun shot wound of lung with emphysema extending to three-fourths of the whole body !

In one instance, I observed a partial paralysis of the inferior extremities, after a gun shot wound of thorax [not penetrating]. The ball [Minié] had entered near the external margin of the right scapula and deeply lodged itself near the vertebral column, so at least it was supposed, for the ball was not to be found. The external wound healed without any trouble, but the patient (General Joseph Johnston wounded at the battle of Seven Pines, near Richmond,) remained for a long time unable to ride or walk any distance, even with the help of a stick. — Falling from his horse, in receiving that wound, the general had besides broken one of his inferior right ribs. — There was no pain; the general health was good, but the patient complained of extreme weakness in his legs, with sensibility somewhat diminished, and motions greatly impaired. — What was the cause of this semi-paralysis which existed for at least two months ? It would have been necessary to know the exact seat of the ball, and that could not be ascertained; some time before I saw the patient, an incision had been made to find out the ball, which still remained.—The most careful examination could no where discover it. I prescribed cold shower baths on the spine, and strychnia internally [1-12 grain twice a day] and externally.

This treatment — "*un peu aveugle*" — had the best results. — I had attended the General at Amélia Springs.— Three or four weeks after, he walked one morning from Richmond to the hospital and back [over two miles.]— He had completely recovered the use of his legs, could ride very well, and was preparing to take the field.

We observed but few wounds of the abdomen, these wounds being generally too serious to bear transportation. It was in a wound of this kiud in which the ball had en-

tered two inches below the umbilicus and had ranged downwards in the thickness of the parietes towards the left horizontal ramus of the pubis, there remaining, that I experienced for the first time the instrument imagined by Professor Nélaton, of Paris, at the time he was called to La Spezia, to visit Garibaldi and decide whether the ball was remaining in the Dictator's foot or not. The object of the instrument is to detect, in doubtful cases, whether a ball is remaining or not in a wound. The instrument I used, was Luer's modification of Nélaton's and had just been brought from Paris, by my friend Dr. Estorge of Opelousas.—It consists of a hollow canula of the size of an ordinary grooved conductor, through which moves a probe (une tige) terminated at its end in two small branches shaped like a spoon, with cutting edges capable of cutting or scraping a small particle of lead, when pressing directly against the ball. When the instrument is withdrawn from the *trajet* of the wound, and a small parcel of lead is found in the spoons, there is no doubt as to the presence of the projectile; but this may remain in the wound and not be detected by the exploring instrument, for instance, if the projectile be of some other metal than lead, if it be surrounded with coagula, with a piece of cloth or other foreign substance, etc. The instrument is, I think, more ingenious than really useful. The surgeon's finger will always be the best and surest guide, the only one upon which he can rely; without it, it is impossible in most cases, to have a correct idea of the amount of injury.

This examination of a wound should always be made

before reaction sets in and as soon as possible after the injury or when suppuration is well established.

Penetrating wounds of abdomen are as dangerous as those of the chest. They should never be probed, except to ascertrin whether the wound is penetrating or not, this circumstance making all the difference in the gravity of the case; and foreign bodies that have penetrated beyond the abdominal parietes should not be searched for. Chisolm very wisely remarks that in all perforating wounds of the abdomen, as we cannot tell, in the absence of symptoms, whether the intestines have been injured or not, there are two fundamental rules of treatment never to be forgotten, aud which are required in every instance :

1°. Give opium freely and frequently, with a double object, viz : of controlling the peristaltic action, which alone can prevent extravasation of the contents into the peritoneal cavity ; and for its antiphlogistic effect, to equalize the circulation, allay pain, suspend nervous irritability, and prevent inflammation.

2°. Avoid the use of purgatives.

For three or four days at least after the occurence of injury, in which the intestines are known, or are *supposed* to be wounded, absolute rest, the most abstemious diet, and the liberal use of opium (1 grain of gum opium every 4 hours) in connection with cold water or iced dressing, will compose the entire treatment.

Should the intestines be perforated, which is proved

by the escape of fœcal matter) they should be carefully closed with suture ; should they be extensively injured, they should be left in the external opening — hoping that adhesions will take place, and an artificial anus will form; the injured portion of the intestine has sometimes been excised, the intestine sewed and reintroduced in the cavity of the abdomen, the patient recovering. Dr GASTON of Columbia, S. C. had under his charge a lunatic who attempted suicide by opening his abdomen, drawing out his bowels, and cutting off two feet of intestine. The two ends of the intestines were brought together, secured by carefully arranged sutures, aud returned within the abdomen. The patient made a perfeet recovery (Chisolm.)

In case of hemorrhage from the division of the epigastric or mesenteric the wound should be dilated, and the arteries ligated.

The treatment of gun shot wounds of the abdominal viscera or blood vessels is on the whole entirely unsatisfactory, and the large majority are fatal.

Among the observations given at the end will be found an interesting case of gun shot wound of the bladder.

I had also the opportunity of treating several cases of gun shot wounds of the genitals with considerable infiltration, ecchymosis, darkish hue and enormous swelling ; these lesions, so serious, in appearance, generally healed very quickly. In one case, the urethra was perforated by a Minié ball which penetrated the scrotum without

injuring the spermatic chord or testicle, and lodged itself in the perineum, one inch from the anus — the ball was extracted, a catheter intoduced into the bladder, the wounds healed without leaving a fistula. In an other case, in which the loss of substance of the urethra was considerable, there remained a fistulous opening which au autoplastic operation afterwards cured perfectly. I never observed any hemorrhage from these wounds.

In a third case, the scrotum was transfixed by a ball which lodged itself in the inner part of the thigh ; the spermatic chord was cut, and the testicle suffered complete atrophy; its size was reduced to that of a bean. The testicle was uninjured in all the cases I saw.

I shall now say a few words of gun shot wounds of the head. These are always serious, hewever trivial they may appear. *Nullum vulnus capitis læve* is an aphorism which must be borne in mind. The slightest injury sometimes gives rise to violent inflammation of the brain. In wounds of the scalp without injury to the bone as well as in compound fracture of skull (shot wound) with or without depression, the surgeon will insist upon the antiphlogistic treatment rest, quiet, etc. I have seen repeatedly the free use of the lancet relieve threatening symptoms of compression from extravasation of blood.

In concussion of the brain, in which there is momentary suspension of the functions of this organ, unless the pulse be feeble and intermittent, or the insensibility and the unconciousness too protracted, leave the case to nature, be satisfied with dashing a little cold water on the face, and avoid

giving stimuli as they would increase the effusion of blood in case the brain be lacerated. Like syncope, concussion will sometimes save life ; if blood vessels have been torn, condition which is at first ignored, *during concussion*, the blood may have coagulated, and hemorrhage, always so serious, may by that means be avoided.

Bleeding shall never be used in ***concussion***, it would be sure to hasten death.

This condition may be accompanied with more or less extensive lesions of the cerebral mass, congestion, extravasion, laceration, etc. In some instances, although the concussion has been strong enough to produce instantaneous death, no lesions of any kind have been found in the brain. It is impossibls at first to diagnose the pathological condition of the brain ; after the patient has recovered from the shock, we should watch carefully his condition, place him in a cool room, use cold water on his head, avoid all stimulants and wait for the symptoms. If the lesion has not been such as to produce laceration and extravasation in the substance of the brain, the patient will gradually recover; should symptoms of compression declare themselves, the surgeon should insist upon a general and local antiphlogistic treatment; bleeding, cupping, bladder filled with ice or cold irrigation on the head, purgatives, etc.

Compression is to be feared for several days and even weeks after the injury, it may be caused either by extravasated blood,, by portion of the skull, or some for-

eign body making pressure upon the cerebral mass. Its symptoms are coma, stupor, paralysis general or local, according to the seat and extent of the part which is compressed, stertorous and blowing breathing, — "*le malade fume la pipe*"—slow and full pulse, pupils dilated and insensible to light.—Unless the causes of compression be removed, this state generally very soon terminates fatally.

Trephine was formerly considered the proper treatment in similar cases. —It was performed at the seat of injury, for there the cause of compression (either bone, foreign body or extravasated blood) was expected to be found. But it often occurred that the operation was useless; the lesions existed in some other part of the skull, a blood vessel had been torn in an opposite point to that of injury, or portion of the skull, or the ball had been driven into the cerebral substance too far from the external wound to be reached. It is unecessary to remark that unless the foreign body is superficial, and easily detected, it would be madness to probe the brain. Modern military surgeons are generally greatly opposed to trephining, except in cases of compound fracture, with depressed fragments, existing in connection with symptoms of compression; even in those cases the propriety of trephining is doubted by many of vast experience —who think that the loose fragments of bone should be simply extracted and antiphlogistic treatment insisted upon. Chisolm is of opinion that "the operation of trephining is always very serious *per se*, and is sufficient of itself to cause cerebral or meningeal inflammation which will nearly always terminate fatally.

The operation is often more serious than the condition for which it is used, and although the patient might recover from either, he succumbs under the combination. Experience and autopsies have shown us many cases of extensive intra cranial hemorrhages, which have been unaccompanied by symptoms denoting such an accident, and the traces of such have been found when the patient recovering from his head injury, had fallen a victim to some totally foreign disease. Had such a condition been suspected, and the surgeon used his instruments, an autopsy at a much earlier day would have revealed the condition."

Stromyer, one of the best authorities on gun shot wouuds of the head, which he has particularly studied, says in a work recently published *"that in military surgery trephining is never needed."* When the case is so serious as to require the trephine in gun shot wounds, the patient will die in spite of it. Lœffler, a distinguished surgeon in the Prussian service, McLeod, who had great experience in the Crimea, Hewett and many other modern surgeons are equally opposed to trephining.

The entire records of the science may be searched in vain, to find a duplicate series of successful cases to that reported by Stromyer. Of forty one cases of fracture with depression from gun shot wounds, in many of which it was probable that the brain and membranes were injured, only seven died. All the rest recovered. In only *one* case was there any operative interference, *although*

signs of secondary compression appeared in several. The anti-phlogistic treatment, carefully carried out, was alone adhered to. (Chisolm). To have a better view of the remarkable success of Stromyer, it must be recollected that of ninety one cases of penetrating and perforating gun shot wounds of the head which were admitted into hospital in the Crimea, all, without exception, proved fatal.

For my part, in the treatment of gun shot wounds of head which came under my observations, I strictly carried out the views of Stromyer and other modern surgeons, and out of 12 cases of compound fracture of skull, the ball remaining in one instance partly embedded in the surface of the brain, I was fortunate enough to save nine patients. I will give hereafter an observation of gun shot wound of the head, with loss of both eyes, and another of compound fracture of os frontalis from gun shot, followed by meningitis and erysipelas ;—both cases recovered.

It has been often questioned whether the conical ball followed the contour of bones without causing any fracture, as does so frequently the round ball. Although I have seen this but seldom, yet cases have occurred to me in which the conical ball described exactly the contour of the skull without causing fracture. I lately saw a man who, at the battle of Gettysburg, had received a Minié ball immediately below the orbit ; the superior maxilary bone was not injured ; the ball followed ihe contour of the face and head, and was extracted posteriorly at the occipital region ; the patient soon recovered.

I shall now say a few words of two of the most frequent and serious complications of gun shot wounds in military hospitals, viz : Erysipelas and hospital gangrene.

I have had the opportunity of observing many cases of both. — As to secondary hemorrhage, another very serious accident after gun shot wounds, I have but seldom observed it. I give here after an account of two of the few cases which came under my observation. Hemorrhage is observed more particularly after incised wounds and this kind of wounds I have but very seldom seen during this war. — In most cases of wounds by conical ball, arteries escape direct injury from them, I have often seen in Italy, as well as during this war, Minié balls traverse the neck *de part en part*, passing through the numerous and important blood vessels of this region, without dividing them. This is probably due to the elasticity, toughness and retractility of the arteries. — But erysipelas and gangrene, the former particularly, have been extremely common. — The pathogeny and treatment of this affection are much better understood to day than they were a few years since. If we consider the circumstances in which it generally occurs and the class of patients it generally affects, we will soon be convinced of the asthenic nature of the disease, we will understand that its apparent symptoms (redness, swelling pains, heat and effusion) which gave rise to the belief, that it was essentially of an inflammatory character, are but the external manifestation of an internal cause — probably a special alteration of the blood. These inflammatory symptoms soon give way to prostration ; extensive suppuration soon reduces the strongest man, and sloughing,

diarrhœa, delirium follow. Erysipelas affects more partiularly soldiers that have been the most debilitated by privations, hardships and fatigue; it manifests itself in crowded and badly ventilated wards, after severe battles, when the rules of cleanliness are generally neglected. Although frequently idiopathic, it most generally follows wounds and assumes the character of phlegmonous erysipelas; the wound seems to act as an exciting cause, for frequently the simplest incision is followed by erysipelas, when most severe shell and shot wounds do not give rise to it. It is a contagious and infectious disease. A single case of erysipelas introduced in a ward will contaminate the atmosphere, and the disease will very rapidly spread to a large number. — In some cases, cantagion has taken place by means of sponges, bandages and other articles used for dressing wounds. — In consequence, every hygienic precaution should be strictly enforced in a hospital, as soon as a case of erysipelas is declared.

Those affected with this disease should be immediately removed to a distant ward, and preference should always be given to the tents, the great advantages of which I have already mentioned. Plenty of air should be given to the patient in all seasons of the year, and while every prophylactic measure is taken, the proper treatment should be immediately begun. This treatment is another strong argument in favor of the opinion I have expressed concerning the asthœnic nature of the disease.—*Naturam morborum curationes ostendunt.*—If anti phlogistics and abstenious diet are used, the mortality will be very great, experience of late years, but too plainly shows this fact. On the contrary if good nourishment and stimulants are freely

given, small will be the number of deaths. We have now a specific for erysipelas in the tincture of chloride of iron recommended for the first time, a few years ago, by Dr. Bell of Edinburg; it has since been used on a very large scale, and experience has placed its extraordinary efficacity beyond all doubt. I have used it in over 200 cases, with immense benefit; I have often seen it cut short an attack of traumatic erysipelas in 48, 56 hours, and that, without any fear of metastasis on some important organ.

In many cases the tincture of muriate of iron (U. S. Dispensatory) was the only remedy used. It was given in the dose of 10 drops every 2 hours, and in the most serious cases, of 20 in a wine glass of water. The tincture seems to act in improving the condition of the blood, in promotig biliary secretion through its mineral acid, and causing the contraction of the capillaries, thereby relieving congestion and preventing effusion. (Chisolm.)

In erysipelas of the head, accompanied with meningitis or ecrebritis, complication which is often observed, we generally prescribed in addition cupping, blisters, etc.—But in many cases of erysipelas extending to a whole limb, and sometimes to the trunk, the Tincture of Iron was the only internal remedy used; in every case, most reliance was placed upon the general treatment. The Tinct. Iron was generally preceded by an active purgative, sometimes by an emetic, when there was much gastric disturbance; in the early inflammatory stage, before suppuration was established; the limb was generally painted with tincture of iodine, or charpie soaked in the solution of sulphate of iron

was applied to it. As soon as suppuration is formed, exit must be given to it, by free incisions, and diluted tincture of iodine, Labarraque's solution, or solution of nitrate of silver used to diminish the purulent secretion, and hasten the elimination of sloughs.—The pus, which has such tendency to dissect the tissues, and undermine the skin, should be prevented from burrowing by properly applied bandages which will in the same time cause the skin to adheres to the deeper parts.

I could give here a very large number of cases, in which the treatment of erysipelas by the tincture of iron has been most successful. But for brevity sake, I will only mention two cases; the first is that of

Mr. WALCH, employed in the office of Quarter Master Fisher, who had a most serious attack of erysipelas combined with severe diphtheria; it was during the progress of this disease that erysipelas declared itself, in the face extending very rapidly to the whole face, ears, scalp and neck, and adding considerably to the dangers of the first already too severe disease. I never saw a more awful case; the aspect of the patient was really frightful; extensive suppuration took place, and for several days the patient was in a most critical situation,—Repeated cauterisation of the diphtheria pseudo-membranns with muriatic acid and tincture of chloride of iron, given internally; [20 drops every two hours,] with essence of beef, egg-nog and brandy were the principal remedies used. The patient afrer having been in extreme danger, recovered completely.

The other case is that of

G. SMITH of Capt. Randolph's Company, employed as courier of Gen. Stonewall Jackson.—This man was wounded at Chancellorsville, on the 3d May 1863, by a Minié ball, causing compound fracture of the os frontalis. The ball was immediately extracted and the patient was sent to Camp Winder Hospital, at Richmond. One night he ran away

from that Hospital, in a state of delirium, and arrived half naked at the Louisiana Hospital. [not far from Camp Winder], where he was received.—At the morning visit, I found him in a serious condition.—The whole head was affected with erysipelas which extended to the neck and anterior part of chest, fever was very high; delirium most violent; the patient could with difficulty be kept in bed; great agitation, pupils very much contracted etc. I immediately prescribed 6 scarified cups at the nape of the neck, followed by sulphat.magnesia cold drinks and a bladder of ice to the head.— In the evening, when the bowels had been thoroughly evacuated, the tinct of muriate of iron was prescribed and continued several days (20 drops every two hours, with purgative enemata, this constituted the treatment, delirium and other acute cerebral symptoms gradually subsided.—On their disappearance nourishment and stimulants given sparingly were administered; the tinct. iron continued at smaller doses.—In the course of 3 days, erysipelas had disappeared, and the patient speedily recovered, his wound healing gradually,

Among the observations at the end will be found an interesting case of erysipelas, invading very nearly the whole body, successfully terminated.

The tincture of iron was almost as useful in hospital gangrene as in erysipelas. The remarks I made concerning the circumstances in which the latter disease originates, are applicable as well to gangrene. The numerous cases I observed occurred in soldiers that had suffered the most, in those of a depraved and infeebled constitution, in whom there was evidently an alteration of the blood. Like erysipelas it is contagious and infectious.—and requires the same hygienic precautions, and above all, the removal of the patients to a pure atmosphere. The treatment in tents was most successful. Burgman reports that hospital gangrene prevailed in one of the low wards at Leyden, whilst the ward or garret above it was free.

The surgeon made an opening in the ceiling between the two, iu order to ventilate the lower or affected ward, and in thirty hours three patients in the upper room, who laid next the opening were attacked by the disease which soon spread through the whole ward. (Chisolm.) In great many cases, the increase or diminution of hospital gangrene was found to correspond with the more or less crowded condition of the wards and the degree of ventilation.—Sponges and other articles when used both for gangrenous and healthy wounds are sure to transmit the disease.

Its principal symptoms are the following: the wound becomes dry, glassy and painful, of a dark gray or ash colour, there is sometimes but a small livid spot in the wound near its circumference. This grayish or darkish slough soon extends to the whole wound, forming a pultaceous and adherent covering, the surrounding surface becomes œdematous, swollen and assumes a livid colour. The discharge is at first diminished in quantity and sanious, but soon becomes profuse, dirty, thick, brownish and highly offensive. It has an odor *sui generis*, which once smelt cannot be forgotten. This discharge is the poison which when applied to a healthy wound, reproduces the terrible disease. The destruction of the tissues is very rapid; in the course of 24 hours, large portions of skin, cellular tissue and muscles are sometimes mortified.

If the phagædenic process is not quickly checked, general symptoms of a serious character soon follow; the pulse loses its strength, becomes feeble and quick; the

tongue is dry and brown; diarrhæa, delirium and coma with all the other typhoid symptoms supervene.

Although the local symptoms generally precede the constitutional, these sometimes make their appearance first;—head ache, nausea, perhaps bilious vomiting, hot skin, quick pulse, to which succeed the *local* and other general symptoms. It appears that hospital gangrene may either be a local disease caused by the influence of poisonous matter *sui generis* on the surface of a wound, or a constitutional one caused by the absoption of the poison in the blood.

The most powerful caustics have been used to check the rapid disorganization caused by this disease. Actual cautery is preferred by many French and German surgeons. Guthrie recommends the liberal use of the concentrated mineral acids. My individual experience gives the preference to the pure nitro-muriatic acid. The patient must be placed under the influence of chloroform, and every part of the sore deeply cauterized. I generally used a ball of charpie well impregnated with the acid and caused it to penetrate through all the sinuosities of the wound, and under the neighbouring skin which is generally deeply uudermined. Immediataly after the cauterization, a large carrot poultice (made by scraping raw carrots) is applied to the part. This applicatlon is extremely soothing, absorbs the ichorous discharge, and removes quicker than any thing else the pultaceous sloughs.—I have some times seen the aspect of the wounds change entirely, after a single and well made cauterization followed by the application of the carrot poultice; in some cases, the latter *alone* seems to have been very useful.—

Generally the cauterization must be repeated two or three times.—As I have said before, the patient must be immediately removed to a pure atmosphere, to a tent where he will be alone, in preference. The bowels should be kept free, and the tinct. of iron administered (20 minims every two hours) in conjunction with bark and carbonat-ammonia; brandy and wine, beef-tea, should be given freely.—Opium in repeated doses is of great service to alley the pain, irritability and sleeplessness.—The pain is generally very severe, of a stinging and lancinating character. In many cases it has been alleyed in a very few minutes by the sub cutaneous injection, by the means of Wood's syringe, of a small dose of morphine (1[4 grain in a few drops of water.)

I have found this mode of administering opiates extremely advantageous in a great variety of cases of intense suffering, and generally preferred it to giving morphine by the mouth. In a case of obstinate hiccup, (Lt. Michel of the 14th La), after amputation of leg, which ice and all the anti-spasmodics of the Pharmacopœa had failed to relieve, the repeated injection of small quantities of morphine at the neck, along the course of the pneumo-gastric nerve, succeeded admirably. I have often seen it relieve immediately most obstinate neuralgia. In cases of local paralysis, the sub cutaneous injection of a very small dose of strychnine (1 1[2 grain) along the nerves, was followed, in many instances, by excellent results.

It is by following the treatment just mentioned, that I have succeeded in a large number of cases to check this frightful disease.

I have already mentioned the case of Michael Quinn, saved from imminent death by removal to an unoccupied and well ventilated room. I could here speak lengthly of several most serious cases in which the treatment was as equally successful. I will only mention the case of Lieut. Errero, of the 10th La, with extensive gangrene of leg (from gun shot wound), penetrating through and through the interoseous space, the patient had suffered besides amputation of the right arm at its superior third; that of private Phelps, of the Washington Artillery, with gun shot wound (Minié) of left arm, followed by Hospital gangrene, which in a few hours extended very rapidly;—this case was very serious, several surgeons had already spoken of amputation. By repeated cauterizations with pure nitro-muriatic acid and the general treatment I have indicated, I succeeded in saving both limb and life; finally the case of sergeant A. Barry of the 9th La. Regt., who had extensive gangrene of the arm, extending to the whole region of the elbow and superior half of fore-arm, the same treatment was followed by excellent results; that of sergt. Dupuis, of the 15th La. Regiment. with gangrene of both legs following shell wounds; that of J. E. Souby, of the 5th La. Regiment, with gangrene in superior third of thigh, etc., etc.

Pyœmia, or purulent infection, a disease which is so often met with in Europe;—in the hospitals of Paris it is the chief cause of death after operations,—occurred very rarely in the Louisiana Hospital, and was as rarely observed, I think, in the other hospitals of Richmond.

OBSERVATIONS.

INTERESTING CASE OF RESECTION AT THE ELBOW JOINT.—RECOVERY WITH PERFECT USE OF LIMB.

Lieut. H. B. Myatt, 26 years old, of the 14th La. Regiment, is wounded on the 27th June 1862, at Gaines Mill, near Richmond, by a Minié ball in the right inguinal region. While being removed on a litter, to the field hospital, he is struck by a random shell, which crushes his left elbow. At the field hospital several surgeons declare that amputation is absolutely necessary. Myatt refuses the operation, and requests to be sent immediately to the Louisiana Hospital of Richmond.

He is admitted on the 28th at 2 o'clock P. M. and we find the following lesions:

1°. Gun shot wound in the right groin.—The ball (Minié) has entered in the internal part, has followed the contour of the femur, internally, and has come out in the posterio-superior part of thigh, without injuring the blood vessels or nerves.—This wound of which there shall be no more question, gave no further trouble.

2°. Considerable ecchymosis at the external and posterior region of left elbow-joint, great swelling, no solution of continuity; comminutive fracture of the two condyles aud olecranon; numerous spiculæ, some of which very sharp, protruding under the skin; the soft tissues of the anterior part of the joint are not much injured.—The patient had previously enjoyed excellent health; he gave us all the particnlars of the accident and said he had opposed amputation on account of his being able to move his fingers; he thought an operation might save his limb.

I immediately proposed the excision of the joint, which was performed that same day in the evening.—The patient being fully under the influence of chloroform, we began the operation.—An incision 5 inches long in the external and posterior region of the elbow, with a small posterior incision falling transversally on the middle of the first, permitted me to operate easily.—All the spiculæ resulting from the crushing of the condyles and olecranon were extracted with the forceps; the flaps were well dissected; the cubital nerve carefully avoided, dissected and pushed aside; the joint was largely opened; the olecranon was sawed off at its base and the humerus resected at two inches above the condyles.—Very little hemorrhage; but one ligature necessary. — The flaps were accurately united by suture, except in the centre, where an exit was left to suppuration. The arm slightly bent was placed a little elevated on a pillow; cold water dressing,—Tincture of arnica and opium mixture.—

June 29th— Moderate reaction.—The patient complains of pains and cramps in the fingers; a little swelling of the hand. A belladona and chloroform liniment is prescribed, and cold irrigation which is continued until the patient leaves his bed. About the fourth day after the operation, suppuration of a healthy character is established and flows freely through the central opening. No accident of any kind; general health continues good; healthy granulations soon begin to form and fill up gradually the enormous cavity. Good nourishment, and brandy twice a day are given to the patient; he takes comp. tinct. of cinchona three times daily.

On the 15th August, the arm was placed slightly bent in a "gouttière" of paste-board, and the tumefaction bandage applied to remove œdema, the patient leaves his bed for the first time. Each time the splint or "gouttière" is removed, and the wound dressed, (every 2 or 3 days] passive motions are used to prevent anchylosis.

On the 20th, suppuration has entirely ceased; the wound has closed, and the "gouttière" is dispensed with; the tumefaction bandage is continued on account of persistent œdema of hand.

On the 21st September, Lieut. M. leaves the hospital for the country About the middle of October, he pays us a visit at the hospital, and we perceive with pleasure a continued amelioration. He can bend the fore-

arm on the arm, about one third, hold a fork, a knife or any other small object in that hand; he lifts up a bucket full of water; sensibility and mobility of the fingers are perfect; shortening of the arm is 2 1|2 inches, the left fore-arm and hand are a little atrophied.

On the 30th November Myatt writes: "It seems to me my arm is gaining every day, I can now bend it almost at right angle without the use of the other hand; I can carve my food, tie my cravat, and write a few words with my left hand."

In March 1863, 9 months after the operation, I had the pleasure of seeing again Lieut. Myatt. He then used his left arm with as much facility as the other. Long before the expiration of his leave of absence, he had joined his regiment with which he continued the campaign. At that time there was but little deformity, the excised bones were almost in immediate contact; the size of the pseudo joint was abont normal; in front, its aspect had not changed, and did not indicate that such an operation had been performod. The contractions of the muscles covering the excised bones, were plainly visible; flexion was perfect, and rotation but little impaired; the sensibility of the hand and fingers was intact. I have since that time seen Captain Myatt (he was promoted shortly after his wouud) several times; his health was excellent, and his arm was gaining strength and dexterity every day.

GUN SHOT WOUND OF THE SHOULDER JOINT. RESECTION,—UNSUCCESS.—SECONDARY AMPUTATION.—RECOVERY.

Henry Grael, Company A. 7th La. Regiment, was admitted in the hospital May 9th 1863. He was wounded five days before, at the battle of Frederiksburg by a Minié ball, shattering the superior extremity of the right humerus and causing such lesions as to have necessitated the resection of the upper third of said bone, which was performed on the battle field. The operation was a singular one. There was a triangular flap (letter A) with its apex turned *upwards* and reaching the acromion.

The general health of the patient was good, and the wound had a healthy appearance.

For about six weeks, nothing worth mentioning occurred either in the wound or in the general condition of the patient; nutritious diet and stimulants were given. Two months after the operation, the incision shad almost entirely healed, when apparently without any cause, the wound assumed a bad aspect; the suppuration became offensive and of an unhealthy character, fever declared itself, and in a day or two, the apex of the flap was mortified: the sloughs were removed and the wound well cauterized with chlorydric acid; Tinct. cinchonœ; tinct of iron, (10 drops every two hours) brandy and egg nog were prescribed. The cauterization was repeated a second time two days after. Under the influence of this active treatment, the wound soon assumed a more healthy appearance; but it continued to secrete a thin and offensive sanies which collecting around the resected extremity of the bone and finding a difficult exit, soon formed several abcesses which were opened. These incisions became fistulous, and the suppuration began to gravitate towards the elbow, causing great swelling and pain, until 3 deep incisions had to be made around the elbow joint. A compressive bandage was applied from the hand upwards, the arm elevated; chloride of Labarraque and tinct. iod. dil. were injected in the fistulous openings; stimulants and tonics administered freely. Still there was no change; the discharge was more and more abundant; the strength of the patient was giving way. Only one of the fistulous openings led to the bone which was found denuded and softened. A long incisiou was made on the external side of the arm with the view of examining the head of the bone, and giving exit to the suppuration which, by pressure around the bone, wonld flow ont abundantly. The bone was found more diseased than I expected, and after a first examination, I was of opinion that nothing, but an amputation, or rather section of the soft parts, the bone being already removed, could save the patient's life.

To this, he refused and reiterated several times hls refusal, until convinced himself, that he was going to die, he consented to the operation which was performed on the 10th August, in very unfavorable circumstances, the patient being extremely debilitated. An ovalar incision was made as for the desarticulation of the shoulder joint—it included the incisions of the first operation—there was but very little loss of blood.—

After the operation, the patient was placed in a tent, was well fed, and had brandy given to him freely; also tinct. bark and iron.

Under this treatment, healthy granulations were soon formed. The patient, though very weak, could not be induced to keep his bed more than three days. At that time, he began to sit up in an arm chair; his appetite became very good; all the functions were regular; 8 days after, the operation, he was walking in the yard and at this date, 3 weeks after, the wound looks very healthy and is healing rapidly.—The humerus examined after the operation was found to be fractured longitudinally and necrosed two inches below the point of section.

SECONDARY AMPUTATION OF HUMERUS.—HEMORRHAGE.—ERYSIPELAS.—SPEEDY RECOVERY.

THOMAS CAVANNAUGH, 22 years of age, private, in Company B. of 15th La. Regiment, [a boatman], was admitted into the hospital on the 9th of October 1862, with compound fracture of humerus received at the battle of Manassas, Augnst 28th 1862. From the date of injnry to the date of admission into hospital, the patient was under treatment at Stanton, where amputation was not deemed necessary; but subsequent injury to the limb from a fall from his bed during a state of intoxication, made it proper in my opinion, that the limb should be sacrificed to save life, and the following lesions as discovered after amputation justified the operation.—Triple fracture extending perpendicularly tc 2 inches above the elbow joint, loose fragments, great infiltration of pus, and sanies in the soft parts, and a collection of same purulent matter in a kind of cupola, formed by the 3 fragments of bone.—Having been an habitual drunkard, his general health was very bad; he was extremely nervous, and exhibited great intolerance to pain; the operation was performed on the 16th; the limb was then amputated by circular method at the apex of the insertion of the deltoid to the humerus—4 interrupted sutures—cold water application' etc. During the night of the third day, after operation, slight hemorrhage ensued, from small artery,

which had been simply twisted. It was readily arrested by application of per. chloride of iron. Next morning, erysipelas made its appearance, extending to the axilla and anterior part of chest, immediately combatted by local application of tinct iodine, and internal use of tiuct. mur. ferri, [15 drops every two hours], egg nog and highly nutritons diet, which was continued until the disappearance of all the eresypelatory symptoms; after the subsidence of which, under the use of generous diet and tonics there was rapid improvement,— On the 18th day after amputation, he began to leave his bed, and WAS, on the 25th, day, walking about the hospital, in a fair way, to a speedy and perfect recovery.

TRAUMATIC ANEURISM.— LIGATURE OF BRACHIAL ARTERY.—RECOVERY.

M. J. KENNEDY, 24 years old, private of 6th La. Regiment, Comp. H.. a steamboat man, before enlisting, was wounded on the 29th August 1862, in the middle part of the right arm, by a Minié ball, passing through the soft parts, in the course of the brachial artery. — Very little hemorrhage at the time. The wound healed up in a short time, giving no pain or unusual trouble, On the 30th October, a pulsating tumor was discovered presenting the character of a circumscribed traumatic aneurism; at first very small, it increased gradually in size until it reached that of a hen's egg. The health of the patient was very good, suffering no pain, nor realizing any inconvenience from the tumor. On the 27th January 1863, he entered the hospital.

On the 7th April, the patient being fully under the influence of chloroform, the brachial artery was ligated about one inch above the tumor. At the point of ligation, the artery was easily discovered free from large collateral branches. The state of general health was then very good,— For 72 hours, the heat of the limb was kept up bp sacks filled with warm ashes, cotton wadding, etc. Then the recurrent and anastomotic branches had enlarged sufficiently and increased their action, so as to supply the lower part of the limb with a sufficient circulation,

Pulsations very weak were felt in the aneurism for 48 hours after

the operation, but they gradually decreased until the 11th, when they could not be discovered in the sac.

On the 11th, symptoms of erysipelas began to appear around the incision. Local application of solution of sulphate of iron, and tinct. of muriate of iron [10 drops every two hours.]—Opium at night.

April 13th.—Little suppuration of healthy character, erysipelas subsiding; feeble pulsations in the radial artery; good temperature of limb.

April 15th.—Sutures removed; very little suppuration, mostly around the thread; great part of incision has united by first intention. Pulsations of radial artery stronger; none felt in tumor. Cold sensation complained of at end of fingers yesterday, has disappeared to-day.

April 17th.—Very little suppuration; pulsations at wrist not any stronger.—Tumor reduced to half its size.

April 20th.—Pulsations at radial artery increasing; slight tractions on thread.

April 21st.—Thread comes out to-day.

April 22d.—Intermittent and shifting pains on right side of chest, near the median line and numbness of fingers.— Belladona and opium liniment.—Pulsations very good.

April 24th.—Pain and numbness disappeared.—Suppuration entirely ceased.—Full diet.

May 1st.—Use of arm perfect. Tumor appreciable to the touch only.

ERYSIPELAS EXTENDING THE TRUNK, NECK, ARMS AND THIGHS, SUCCESSFULLY TREATED BY THE MURIATIC TINCTURE OF IRON, ETC.

Private G. Walker, Comp. A. 9th La. Regt., admitted July 18th 1863; wounded at the battle of Gettysburg, by a Minié ball, fracturing left cresta iliaca; the ball remained embedded in the bone, and was extracted.

On admission, the wound had a healthy appearance and the general condition of the patient was good. On the 22d and 25th July, several loose spiculæ were extracted. On the 28th, erysipelas appeared around the wound and gradually spreaded upwards and downwards until the whole abdomen, back and chest were invaded. It there seemed to limit itself. At the first manifestation of the disease, an active purgative was administered, and immediately after Tinct. of Iron was given [20 drops every 2 hours]. An ointment of Sulphate of Iron (1 dragm to 1 ounce of lard] was used morning and night on the whole surface affected with erysipelas. In spite of this treatment, the disease which seemed to have stopped spreading, extended to the neck, arms, and thighs. The fever increased considerably and was accompanied with delirium and great restlesness, soon followed by coma and prostration; there was also some diarrhœa; 2 blisters were applied to inner part of thighs; Carb. of Ammenia, camphor and bark, with astringent enemata prescribed in addition to the Tinct. Iron. In order to check the progress of the erysipelas which threatened to invade every part of the body, a bracelet 1-1|2 inch wide was made by cauterizing with Nitrate of Silver around the fore arms and upper part of legs. —

This treatment seemed to check the disease.

August 25th—The erysipelas did not spread beyond the line of cauterization, and did not invade the head. Consciousness returned; the bowels became more regular, and the patient after having been in a very critical condition, and although now very weak, (August 25th) is gradually but steadily recovering — the wound has a healthy appearance, and discharges but moderately.

GUN SHOT WOUND OF BLADDER — VESSICAL HEMORRHAGE; DEATH.

W. W. Rayne, aged 19, sergeant 5th La. Co. A. admitted May 9th 1863; wounded on the 30th April at Chancellorsville. The ball went through abdominal parietes a little above Poupart's ligament

on the right side aud remains inside. Finger introduced in the wound shows the ball has takcn a slanting direction towards the horizontal ramus of the pubis ; two tracks are there felt, one going downwards towards the inside of the thigh, the other towards the bladder. Horizontal ramus of thc pubis is fractured and introduction of the finger shows a circular opening through this bone surrounded by sharp spiculœ.

Since reception of injury urine has been constantiy flowing tbrough the wound, patient being unable to void any througb the urethra.

Catheter introduced through urethra in the bladder and there retained; patient laying on his left side, no urine comes out of wound. As soon as opening of catheter gets blocked up by mucous secretions of the bladder interrupting the flow of urine through it, urine comes ont again through the wound.

Very little fever, — Opium in small doses (gr. 1[4) every 2 hours. Patient sleeps well at night, good appetite. Suppuration from wound on 4th day.

May 13th. small piece of lead found in the opening of catheter, when the instrument is taken out at night.

May 14th, several small spiculœ of bone found in opening of catheter every time it is taken out, urine flowing several times through wound to day on account of those spiculœ blocking up the instrument.

May 15th, extraction of several spiculœ through the wound, 2 of them quite large and angular. Very little loss of blood caused by this extraction.

For several days urine flows well through catheter, all symptoms being good.— May 21st, on extraction of several other spiculœ throngh the wound loss of blood was more abundant than at 1st extraction.

May 24th, irritative fever and hœmorrhage from wound, the blood at first coming out through instrument ; hæmorrhage stopped by application of ice, opium, acetate of lead, etc.,

June 1st, fever and delirium; hæmorrhage again stopped by ice. Acet. of lead and opium continued.

June 2d, pulse quick, small and feeble, delirium, etc. Hæmorrhage, begin in the morning, last all day in spite of iced applications, injection of iced water in the bladder, etc., blood does not coagulate in the blad-

der, but comes out liquid through instrument. Death during the night of June 4th. Owing to opposition of some of his relations present, no post mortem examination could unfortunately be made.

GUN SHOT WOUND OF FORE ARM;—COMPOUND FRACTURE;—LESION OF RADIAL ARTERY;—REPEATED HEMORRHAGE—AMPUTATION—RECOVERY.

B. D, HERRING, age 22, private, Madison artillery, farmer by occupation, is received at the Louisiana Hospital of Richmond, June 4th 1863. The patient relates that since he has been wounded, May 4th 1863, hemorrhage has been occurring from his wound every 4 or 5 days; it was stopped each time either by the application of a "tourniquet" around the arm or by styptics. He is admitted with a "tourniquet" around the arm. A Minié ball entered his left fore arm on the inside at the junction of the lower and middle third, and came out on the outside a little above the wound of entrance, denuding the cubitus and causing comminutive fracture of radius and severing the radial artery

The "tourniquet" being removed, blood comes out abundantly, but not in jet, from the wound; the latter being cleared from coagula and spiculœ, blood is seen oozing from the distal side of the radial artery; the patient was exausted by repeated loss of blood and very pale.

June 5th, the patient being under the influence of chloroform, the circular amputation of fore arm was performed at the union of the middle and upper third; but very little loss of blood. — Tincture of iron and bark with brandy. were given freely — reunion took place by granulations without a single bad symptom.

On the 30th June, the patient was furloughed, the wound being entirely united, except in a small point in the centre.

GUN SHOT WOUND OF THE HEAD; LOSS OF BOTH EYES—RECOVERY.

C. DAVENPORT, 21 years old, Compary H., 2d La Regiment, admitted in the hospital May the 9th 1863. Wounded May 3d at Chancellorsville by a Minié ball entering external canthus of right eye, and coming out horizontally about one inch back of left temporal ridge, passing through the ethmoid. The eye lids on both sides are closed, red and swollen; on examination both eyes are found completely destroyed, the orbital cavities are filled with sloughs, no signs of the tissues of the eye. Patient very much depressed and feeble; Cough incessant caused by blood running into the throat; this blood mixed with mucous secretions is coughed out with a very large quantity of small spiculæ.

Spiculæ come out also through opening of exit; with very few exceptions, they are all exceedingly small, almost like dust. No appetite, no fever, no pains in the head. Prescription: Tinct. Cinchon. composit, and mustard foot bath at night. Some diarrhæ about the 5th day; restlessness. Chalk mixture; small doses of sulphate of morphine at night

May 20th; no more cough; [blood and spiculæ] cease to run into the throat. Wound of exit becomes fistulous. General health good. The patient gets out of bed; steady improvement. The two orbital cavities are hidden by the eye lids, of which the left is prominent as if the eye ball was still remaining; the linings of the cavities are also of a red natural healthy colour; the mucous membrane of the superior eyelid is irritated by the eye lashes of the inferior. The principal interest of the case consists in this, that no symptoms of disorder of the brain have ever manifested themselves,

A furlough was granted the patient on the 11th June; he left the hospital in care of a friend, in very good health.

GUN SHOT WOUND ON BOTH THIGHS.—PROFUSE HEMORRHAGE.—RECOVERY.

E. N. BUTLER, (private), aged 21, Co. A., 30th N. C. Reg., admitted

May 9th 1863.—Wounded May 3rd by a Minié ball, passing through both thighs, at upper part of lower third, without injury to the bone. The wounds were progressing favorably and healing until the 21st May. During that night, a profuse hemorrhage from the right thigh took place Before the assistant surgeon on duty could arrive, the mattress was soaked through half its thickness, pulse hardly perceptible, no conciousness and involuntary passage from the bowels. Pressure on femoral artery for a few minutes, stopped the hemorrhage. Injection of per chloride of iron and charpie, impregnated with same introduced in the wound. Opium pills of 1|2 grain given every three hours, and Tinct, Muriat of Iron 10 drops every hour.

The day after, conciousness hardly recovered. By degrees, with small doses of opium and continuation of Tinct Iron and stimulants given sparingly, the patient recovered. Suppuration loosens the charpie 6 days after the hemorrhage, which was not renewed.

The patient was furlouged on the 12th June still weak but in good health, the wounds were closed.

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