

Morphia is the only narcotic which can be depended on, and its hypodermic use is superior to any other; gr. $\frac{1}{4}$ is the usual dose to begin with. When its sleep-compelling power is too prominent, we may combine it with atropia.

156. R. Morphiae sulphatis, gr. $\frac{1}{2}$.
Atropiae sulphatis, gr. $\frac{1}{30}$.
For one injection.

In this combination the anæsthetic force of the morphia remains unaltered, but the tendency to sleep is greatly diminished.

Electricity and *massage* may both be employed, with some prospects of success, to give relief to the neuralgia.

The form of pain known as *causalgia*, or "burning pain," is best relieved by water dressings constantly applied. It will get well in time.

In extreme cases of traumatic neuralgia, the general result of experience is favorable to resection of the nerve. It should be done rather early than late in the case, and the resection should include a portion of the healthy nerve, but should, of course, be done at the lowest point possible. Measures should be taken to prevent or delay the union of the nerve as much as possible. With these precautions, the operation will often prove successful.

FREDERICK JAMES GANT, F. R. C. S., LONDON.*

This surgeon directs attention to the fact that in some instances an hysterical constitutional condition not unfrequently causes neuralgic and spasmodic twitchings of the stump, especially, but by no means exclusively, in females. In such cases, no operative interference will be of the slightest use. The constitutional treatment is alone of promise. This is often advantageously prefaced by a change of residence. Depressing circumstances must be removed. The quinine treatment continued for a long time, with moderate doses, sometimes proves curative. If a malarial poison is suspected to be present, preparations of iron, the sulphates, in particular, are more effectual. The urine should be tested for albumen, which, if present, will counteract the restorative effects of the iron. When traumatic neuralgia occurs in females, the menstrual functions should be inquired into, and measures be taken to promote their regularity, if they are disordered.

* *Science and Practice of Surgery*, 1878.

V. SPECIAL FORMS OF WOUNDS.

GUN-SHOT, PUNCTURED AND CONTUSED WOUNDS.—*The Extraction of Balls—Wounds of the Head—Wounds of the Chest—Wounds of the Abdomen—Contusions or Bruises.*

POISONED WOUNDS.—*Charbon (Malignant Pustule)—Dissecting Wounds—Glanders (Farcy)—Hydrophobia—Insect Stings—Poison Oak (Rhus Toxicodendron Radicans)—Snake Bites.*

THE EXTRACTION OF BALLS.

DR. FRIEDERICH ESMARCH, OF KIEL.

In the immediate treatment of gun-shot wounds of all kinds, this distinguished surgeon earnestly discountenances any and all probing or searching for the ball or fragments of bone, clothing, etc. He claims that it is wholly needless, and positively dangerous to examine the wound with the fingers in any manner, as this procedure is certain to introduce septic germs. He urges that, at any rate, the extraction of fragments and balls may certainly be postponed until the patient arrives at the hospital; and even there he would postpone the digital examination until symptoms begin to appear which demand surgical interference, as suppuration, traumatic fever, etc. When these do appear, he would put the patient under the influence of an anæsthetic, and after thoroughly examining the wound, observing all the precautions of the antiseptic method, would endeavor to place the wound under the most favorable condition. If no such symptoms appear, he would assume that no excitants of decomposition had entered the wound, and should be very careful not to disturb it, simply placing an antiseptic covering over the original dressing.

The point of greatest importance in surgical practice for the immediate treatment is the attempt to render all injured bones and joints immovable; and to fix the indications for this method of treatment, it is not necessary to introduce the finger into the wound. All that remains is the application of the first dressing, and here, from an

antiseptic standpoint, it must be insisted upon that nothing be brought in contact with the fresh wound that can make it worse. Do not examine the wound at all, rather than examine it with unclean fingers. Do not cleanse the wound at all, rather than use unclean water and sponges. Do not dress the wound at all, rather than use unclean material. But everything is unclean, in the strict sense, that is not antiseptic. Every dressing used should be impregnated with carbolic, salicylic or benzoic acid. These should be fastened upon the wound with carbolized adhesive strips.

This first dressing, of course, remains until the patient arrives at the hospital, nor is it to be removed then, unless a bad odor or other symptoms (fever or pain) demand a change of dressing. If these do not appear, we may expect an aseptic healing under the scab, and content ourselves with simply placing an aseptic covering over the outer layer.

A most important inquiry arises, therefore, in the following form: How is a wound to be treated on the field of battle, in order to guard against these pernicious putrefactive influences? This question Prof. ESMARCH has sought to answer by requiring that the wounds shall not be touched by the hands, but closed rapidly by antiseptic plugs, in order to preserve them from the contact of putrefactive agents until they can undergo the LISTER treatment in the hospitals, if necessary. For this purpose, he proposes that every soldier should carry in the lining of his uniform two balls of *salicylated jute*, wrapped up in gauze.

Of all antiseptics, salicylic acid seems best suited for the purpose, not being fluid, retaining its power longest, easy to procure and to stow away; so that, while packing these balls away in the soldier's uniform is a doubtful procedure, yet the bearers and the surgeons should be supplied with an ample stock. Perhaps room might be found for stowing away in the soldier's knapsack these salicylated plugs.

If the balls are not filled too full, and are made with salicylated gauze and wadding or jute, they will be found of great practical use. By reason of the lasting action of salicylic acid, a wound may in this way be protected from septic influences for several days. Often a sort of healing process will have been already set up, so that the adherent plug will sometimes have to be left in, complete healing of superficial wounds taking place in this way when there is no foreign body

present. In other cases, when the periphery of the wound has been carefully cleansed, the plug is removed under the action of the spray; and after foreign bodies have been sought for, and a drainage-tube introduced, the wound is treated by LISTER'S dressing. The course and final results of cases so treated far surpass anything that has yet been met with in military surgery.

It may be added that the search for the ball, needless at all times, is now generally recognized to be especially fraught with danger in wounds of the thoracic or abdominal cavities. The best and most trustworthy doctrine on this subject has been well expressed in these words by Dr. WILLIAM S. FORBES, of Philadelphia: "The practice of probing gunshot wounds of the great cavities of the body for missiles, or, indeed, for any purpose whatsoever, is entirely at variance with the principle of rest, and is as pernicious as possible."

The above observations are especially important, as leading American treatises on surgery still continue to recommend the early extraction of balls, probing of the wound with the finger, etc.

WOUNDS OF THE HEAD.

DR. STROMEYER.

This eminent military surgeon has endeavored to exclude entirely from military surgery the use of the *trepine* in injuries of the skull. He considers a state of coma from depressed skull "no more an indication for applying the trephine than a comatose state in typhus fever is an indication to rouse the patient by any other means but those which are in accordance with his general state." All active local interference of every kind should be excluded. As soon as the fragments of the bone become loosened by suppuration, the comatose condition ceases of itself. Nothing more is needed than to keep the patient quiet, and a general antiphlogistic treatment, by ice, bleeding, purgative medicine and low diet. An open scalp wound over a broken skull does not produce a great change in the danger of the case. But should the arachnoid cavity be opened by attempts to remove the splinters and fragments of bones, the danger of spreading inflammation of the membranes of the brain, and deep-seated suppuration in

it, is very much increased. On the other hand, when the splinters come away by a limited suppuration at a later period, the arachnoid cavity is closed by adhesions of the dura mater to the brain.

Although these doctrines of the eminent German surgeon have not been received in full by other teachers, a very marked modification in the treatment of skull wounds is noticeable in the recent writings of British surgeons.

Mr. JONATHAN HUTCHINSON has stated his belief that "depression of the bone is rarely the cause of symptoms of compression;" and in enumerating the injuries of the skull and their treatment by trephining, Dr. A. H. CORLEY, of Dublin, makes the following distinction. (*Dublin Journal of Medicine*, 1874):

1. *Simple Fissure*.—For this fracture, the operation should never be performed. True, that, accompanying the injury, there *might* be localized extravasation of blood; or, subsequent to and consequent on it, there might be formation of matter, which may require the application of the trephine; but the operation then has no reference to the fracture.

2. *Simple Comminuted Fracture*.—A fracture may be simple externally, but the inner table may be more extensively fractured, and fragments may wound the dura mater or brain. This condition cannot be guessed at until symptoms of intra-cranial mischief arise; for them, and not for the fracture, we may trephine.

3. *Depressed Fracture*.—He makes no distinction between simple, depressed and compound fracture, as to operative treatment. The latter is more liable to be followed by intra-cranial mischief. As long as no symptoms are present, or, *if present, until we have tried all other means of removing them*, we should not operate. If obliged to interfere, we do so with little hope, as the symptoms are most likely to own an origin other than the depressed bone.

4. *Depressed Fracture, Comminuted*, including that which is known as "punctured" fracture, such as may be produced by the stab of a pointed weapon, kick of a horse or blow of a sharp stone. In many cases of this description, it may be necessary to operate at once, *whether symptoms be present or not*. If the surgeon has reason to believe that, in a punctured fracture, spiculæ of bone are impinging on the surface of the brain and lacerating it, he is bound to interfere at once.

The treatment of *punctured fractures* here advocated is still more strongly urged by Mr. DAVIES COLLEY, in *Guy's Hospital Reports*,

1877. He lays it down as an imperative rule in such wounds to *trephine at once*, without waiting for symptoms of irritation or compression.

DR. G. H. MACLEOD, OF GLASGOW,

Professor of Clinical Surgery in the University, urges strongly the avoidance of active interference in wounds of the head, especially in children. He teaches that the simpler the treatment of these cases the better. Active interference is most injurious. The softness of the bones, their elastic connection, and the more free expansion allowed the brain in young children, save them from much of the risk run by adults. Even in cases of severe fracture, with depression, non-interference is the best procedure. The absence of the sinuses and of diploe allows of the brain being easily reached by a blow; but still, if time is only given, (supposing always that fragments are not actually driven into the brain,) he unhesitatingly believes that these young patients have a much better chance by being let alone than from any operation. In a patient aged twelve, a considerable part of the left parietal bone was wholly removed by the blow from a cart-tram falling on him. The brain was freely exposed, yet by simple treatment and non-interference—beyond guarding him against sources of irritation, and attention to his general health—he made a perfect and uninterrupted recovery.

DR. DAVID W. YANDELL, OF LOUISVILLE.

This surgeon has called attention to the value of *bromide of potassium* in injuries to the brain. (*Louisville Medical News*, July, 1876.) It should be given in full doses (3j) when symptoms of compression arise, especially when secondary to injuries of the head. He believes that its judicious and regular use will not unfrequently obviate the necessity of resorting to the trephine.

PROF. D. HAYES AGNEW, OF PHILADELPHIA,*

recommends, as general rules in wounds of the head, to employ stimulants cautiously until the danger of collapse has passed; then ice to the head, veratrum viride, perhaps general bleeding, to deter excessive reaction. The diet at first should be restricted. He adds: "The importance of the use of mercury as an antiphlogistic cannot be over-

* *Treatise on Surgery*, Vol. I., 1878.

rated, and it should be given in all cases where, from the severity of the injury, there is reason to fear inflammatory sequences."

WOUNDS OF THE CHEST.

UNITED STATES ARMY.*

Local Treatment.—To secure *rest*, position and the broad chest bandage are the most generally applicable measures in injuries of the thorax. In profuse primary hemorrhages, cold applications to the chest, as ice, ice-water, etc., are useful. If the bleeding point can be discovered, it is better to arrest it by uncovering the artery and ligaturing it. When it is impossible to reach the source of the bleeding, it is better to close the wound, and promote the occlusion of the bleeding vessel by compression and general means. All superficial wounds should be closed with a view of promoting early adhesions. In extensive incisions and lacerations, it will be well to use sutures or *serres-fines*; but in coughing and inadvertent motions of the patients, they often tear out, and usually a simple dressing, with adhesive strips, covered with lint or oakum, and a light bandage, will suffice. In many cases of penetrating wound, surgeons have used with advantage, to support the injured side, broad strips of adhesive plaster made to encompass two-thirds of the chest, and fenestrated at the wound.

General Treatment.—The use of *venesection* in these wounds, though traditional and still recommended by various authorities, must be abandoned. Recent and extensive experience condemns it as always unnecessary and occasionally very harmful. On the other hand, *opium* is a most important pharmaceutical means. Dr. NEUDÖRFER justly remarks: "In cases of injuries of the chest, as well as of the abdomen, opium is to be considered as possessing specific powers, not to be replaced by any narcotic whatever." The practitioner should not forget that its effects upon the system are augmented after profuse loss of blood, and therefore he must be guarded in its administration under such circumstances. A frequent practice was to dust the salts of morphia on the surface of wounds, and it is reported that this method has the additional advantage of allaying promptly the local pains, as

* *Medical and Surgical History of the War of the Rebellion.*

well as the general nervousness and trepidation, which are so marked features of chest wounds.

Calomel, which has often been employed for its supposed control over the inflammatory process, especially in traumatic pleuritis and pneumonia, has steadily declined in favor of late years in these injuries, and probably should be discarded altogether. At most, the mercurial preparations may be called for to combat the tendency to exudations in carditis, and to promote the absorption of serous effusions in the pleural cavity. It is of importance to maintain the blood in such a condition as to favor its coagulability, on which the natural reparative process depends. As depressants of the circulation, and to control traumatic pneumonia, use has been made of *antimonials*, *veratrum viride*, *aconite* and *digitalis*; but the general result credits none of these drugs with special importance in the treatment of these injuries. The cautious use of ammonia and brandy are requisite in cases attended with great prostration from the outset. In the latter stages, alcoholic stimulants and carbonate of ammonia, in conjunction with concentrated nutriment, are important adjuncts to the restorative treatment. In cases of traumatic pneumonia, large *blisters* are often employed, even in the early stages. It must not be forgotten, however, that they often produce much suffering, interfere with auscultation and percussion, and sometimes are followed by gangrene.

All these means are subsidiary to opium, the operative treatment, the rigid enforcement of rest, the regulation of the air and of the *diet*. The latter should be severely restricted at first, and though later nutritious food should be allowed, it should long be of liquid form and easy of assimilation. The error is often made of allowing solid animal food at too early a period.

DR. DAVID W. CHEEVER, BOSTON.*

This surgeon writes that in penetrating gun-shot wounds of the chest, three methods of treatment are open to us:

First. To seal up the wound, a mode recommended in 1863 by Dr. BENJAMIN HOWARD, U. S. A. It consists in paring the edges of the wound, if uneven, then drying it, and placing upon it a few shreds of charpie arranged crosswise; a few drops of collodion are poured on these, so as to saturate them and form a sort of collodion cloth,

* *Medical and Surgical Reports of the Boston City Hospital, 1877.*

when dried, additional coats of collodion are painted on, until the wound is hermetically sealed. This mode, according to Dr. CHEEVER, "has now scarcely a single advocate."*

Second. To pursue a strictly expectant course, and not tap or open more freely the pleura, until pneumo-thorax hemorrhage or effusion calls for interference.

Third. To lay open the tract of the wound, and make at once a free and permanent pleural opening. Dr. CHEEVER gives a case where a rib was broken by the entrance of a piece of iron, and the pleural cavity was penetrated. The wound was freely slit up, the pleural cavity more widely opened, and a small fragment of splintered rib extracted. The wound was left open. A large effusion of serum began to be discharged from the wound. A moderate pneumonia set in, and the discharge became puriform. The wound of the chest wall was kept sedulously open with tents, and the pleural cavity syringed out daily with disinfectants, through a long, elastic catheter. Adhesions of the lung to the thorax took place, the cavity lessened, and finally the wound closed and the patient convalesced. Pleurisy, pneumonia, empyema and adhesion went through their stages with an open wound, instead of in a closed cavity.

One year later this patient again presented himself at the hospital. Respiration was nearly perfect on the injured side. He was strong and active, and, what was most interesting, the side of the thorax had not collapsed and shrunk as it does in chronic pleurisy, after the effusion is absorbed. During the course of the diseased processes, atmospheric pressure had been equal both inside and outside the thorax.

The lung did not collapse when the pleural cavity was freely opened. This opening was about opposite the lower third of the axilla. Dr. A. H. SMITH's experiments prove that collapse of the lung does not take place if an opening is made in the side of the thorax opposite the middle of a lobe, but only when the opening is near the free edge of the lobe. In the living animal the lung never collapsed entirely when only *one side* was opened. It will be noted that in this case the lung tissue was not implicated.

* It will be found very fully discussed in the *Medical and Surgical History of the War of the Rebellion*, Surgical Vol. I., p. 497, *et seq.* The verdict is against it.

WOUNDS OF THE ABDOMEN.

UNITED STATES ARMY.*

To restrain inflammation within salutary limits in abdominal wounds, absolute *rest* is the most important indication, the patient being suffered neither to be moved nor to move himself; therefore he should be permanently treated as near as possible to the spot where he has received the injury. "Every rod such patients are transported adds to the formidable peril they have already to encounter." Food and drink, save a little ice or cold water, are to be absolutely interdicted at first, and then the blandest nutriment, such as milk, may be sparingly allowed. The early employment of purgatives must also be absolutely forbidden. The *position* of the patient is of importance. If there is a single wound, the patient should lie in that posture that will place the orifice downward, and favor the approximation and adhesion of the viscera to its edges. If the abdomen is perforated, it will usually be best to make the orifice of exit dependent. When there is evidence that a viscus is wounded, the parietal wound must always be left open, except in cases in which enteroraphy is practiced. Local depletion and fomentations, often employed, are of no value; but there is reason to believe that extended and protracted applications of ice over the entire abdomen occasionally exert a decided influence in moderating the inflammation. The majority of surgeons esteem moderate compression by a circular bandage useful. If the stomach and small intestines are divided, there is no reasonable presumption that fecal extravasation, and consequent hyper-acute generalized peritonitis, can be averted, unless by operative interference. Under these circumstances, therefore, the surgeon should enlarge the wound, carefully cleanse the cavity, and unite the solutions in continuity in the wounded viscus by sutures.

Of all drugs, *opium* is the only one which need be mentioned. It is the main resource to secure the indispensable rest of the bowels and nervous system. Its alkaloids may be administered hypodermically, or, as an excellent means in this class of injuries, by suppositories. The *diet* must be liquid in character, concentrated and very sparing. The use of mercury in any form is needless and dangerous. Blood-letting is wholly unnecessary.

* *Medical and Surgical History of the War of the Rebellion.*

œdema has invaded a large surface, action must be taken even when the general symptoms are very serious, and life itself seems in danger. Observation shows that in these cases the excision of the slough, combined with vigorous cauterization with sulphuric acid, may be of great service and save the patient. Antiseptics, such as carbolic and salicylic acid, and tonics, should be administered internally.

DISSECTING WOUNDS.

Those who are called upon to perform *post-mortem* examinations in cases of acute internal inflammations should have their hands well greased or oiled, as the poison may pass through the unbroken skin unless protected; and any scratches or abrasions should be covered with adhesive plaster. If they are unlucky enough to prick or cut the hand, the first thing is to tie a ligature tightly around above the wound, and then squeeze it so as to encourage a copious flow of blood. Next it should be well washed and sucked for a long time.

Should unpleasant symptoms supervene, rest, country air, purgation and generous living are essential. Stimulants are demanded early and constantly. Abscesses must be encouraged by fomentations and opened by early incisions.

In regard to *cauterizing* dissection wounds, surgeons differ. Mr. T. HOLMES and Prof. GROSS are of opinion that undoubtedly this measure gives more security against absorption of the virus. Mr. ERICHSEN thinks it is better not to apply caustics. If any be employed, he prefers a drop of pure nitric or carbolic acid. The nitrate of silver can never do much good.

It should be remembered that fluids effused into the peritoneal and pleural sacs are decidedly the most virulent.

PROF. THEODOR BILLROTH.

For the first treatment of the part poisoned with cadaveric matter, this author advises that cold water be let run on the wound for a long time, and not to check the bleeding, if there is any. From a considerable experience on himself and his students, he considers cauterization *immediately after contact* not advisable. But if later the parts around the wound redden, the part may be cauterized with nitrate of silver or

fuming nitric acid. This is very painful, but it acts well. Not unfrequently pus forms again under the slough; in this case, the slough must be removed and the spot again cauterized; and this is to be repeated until no more pus forms under the slough.

Should lymphangitis begin, the arm should first of all be placed on a splint, to keep it quiet, and the appropriate treatment for lymphangitis be instituted.

If indurated lymphatic glands remain after infection with cadaveric poison, daily *warm baths* are the best means for promoting the excretion of the poison.

DR. THOMAS H. TANNER.

After the first attention to the wound, according to usual surgical principles in such cases, the physician must attend to the inflammation of the tissues and absorbents, and the asthenic symptoms which follow. To support the strength, *quinine* in large doses is demanded. When there is great exhaustion, with low, muttering delirium and restlessness, it may be advantageously combined with ammonia.

160. R.	Tincturæ quiniæ,	f. ℥j.	
	Glycerinæ,	f. ℥vj.	
	Spiritus ammoniæ aromatici,		
	Spiritus ætheris,	āā	f. ℥iij.
	Extracti opii liquidii,		℥xxx.
	Infusum cinchonæ flavæ,	ad f. ℥viij.	M.

One-sixth part every six hours.

In order to neutralize the poison absorbed into the system, various writers recommend the *sulphites*.

161. R.	Sodii sulphitis,	℥ij-iij.	
	Infusi cinchonæ,	f. ℥j.	M.

This amount three or four times a day

The sulphite of magnesia may be employed in doses of ℥j-iij, dissolved in one or two ounces of water, every three or four hours. It is richer in sulphurous acid than the sulphite of soda, is more stable, and has a much more agreeable taste.

The *chlorate of potash* has also been recommended in this form of blood-poisoning.