CHAPTER III.

MEDICAL AND SURGICAL HINTS.

Peculiar and local diseases prevail in nearly every section of country; and wounds from gun-shot and weapons, bruised and broken bones, are casualties that may befall men in the field at any time. It is, therefore, important for those in command to have, in all cases of emergency, a sufficient knowledge of medicine and practical surgery to enable them to relieve the sick and wounded (both men and horses) until professional aid can be secured.

Before taking the field, for a long or indefinite period, if the transportation will permit, see that you have compactly stored, in good shape for packing, the following articles: a case of pocket surgical instruments, consisting of, at least, a lancet, scalpel, small knife, forceps and scissors; a few rolls of sticking and adhesive plaster; some silk, needles and waxed thread; an assortment of bandages, splints, sponges and some red flannel; some lint, oil-silk and tow; a flask of wine or brandy; a hypodermic injection syringe; a tourniquet and small cup; blue mass, quinine, opium and cathartic, put up in usual doses; a little chloroform, laudanum, hartshorn, camphor, solution of morphia, iodine, tincture of chloride of iron, chloride of lime, tincture of myrrh and aloes, tincture of arnica (excellent for strains and contusions), spirits of nitre, ammonia and turpentine; sulphates of iron, zinc and copper; pulverized indigo, carron oil, saltpetre, tartar emetic, nitrate of potash, prepared chalk, tincture of opium and catechu, cantharides (in powder), sugar of lead, acetic acid and powdered mustard; emetics and aperients (mild and powerful); nitrate of silver
in a holder; cold cream or glycerine (cooling for irritated surfaces); a cordial for diarrhoea, a sudorific (Dover's powders excellent), and some simple cerate or a mixture of wax and lard; some alum, Jamaica ginger, castor oil, linseed oil and meal, flaxseed, and an assortment of 'cathartic, diuretic, sedative, febrifuge and alterative 'balls'; also some astringent ointment (one part acetate of lead and three parts of lard), hoof ointment (equal parts of tar and lard) and strong liniment.

I would urge that each soldier, on going into the field, carry on his person, in a waterproof pocket or envelope, a bandage and piece of lint—such a precaution will often avoid much suffering.

If easily procured, any of the following excellent dressings and disinfectants against decomposition of wound discharge will be found very useful;—carbolic acid (in weak solution), permanganate of potash (applied with glass syringe), chloride of zinc (in weak solution), chloride of lime (as a lotion), and charcoal (powdered and sprinkled on the poultice).

The fracture or dislocation of a limb is the most frequent of all accidents attending a mountain journey. A mis-step of the traveler or a fall of the horse often results in this mishap.

For the benefit of those who are not informed as to the shapes and locations of the most exposed bones of the body, I will produce on the opposite page an accurate illustration of those in the upper and lower extremities.

Referring to the arm is seen H, the shoulder blade; N, the clavicle; O, the humerus; Q, the ulna; P, the radius; R, the carpus; S, the meta-carpus; T, the phalanges.

Referring to the leg is seen C, the femur; E, the fibula; D, the tibia; F, the heel-bone; G, the tarsus; H, the meta-tarsus; I, the phalanges.

By carefully observing the shapes and positions of these
bones, any one might reset the parts, place the splints and greatly alleviate the suffering in the absence of the surgeon.

When fractures occur and there are no splints at hand, they must be improvised from such materials as may be found. If the thigh be fractured, a rifle may be used for a splint, placing its butt in the axilla, and allowing it to pass along the outside of the limb, being secured by bandages around the trunk and ankle.

A fractured leg may be secured with a splint of any description placed along its outside and the whole then wrapped in a coat or blanket and made fast by straps.

It is a splendid plan to tie the fractured leg at the ankles, and convenient points, to the uninjured leg, and rest it on a knapsack or piece of board. Coats, blankets or some soft material should be placed underneath the leg. In this manner the two legs will move as one and the broken bone will not injure the flesh.

A fractured leg may be 'put up' with a gun stock or sword scabbard—even a roll of straw or grass makes a good temporary splint.
A fracture of the arm may be 'put up' with a bayonet scabbard or with thin bundles of straw or grass. Light pieces of board, bark or even the soles of shoes or boots are often useful for splints. The fore-arm should be carefully supported in a sling. Often a severe shock or collapse from pain or nervous fear follows the fracture, in which case a stimulant (whisky and water) should be administered.

Dislocated and broken ribs are often the results of falls and other accidents. The following illustration shows the normal position of the ribs and adjacent bones—\(a\) is the breast-bone; \(c\). \(c\). \(c\). the ribs, which are fastened at one end to the spine \(b\). \(b\), and at the other end are attached to the breast-bone by means of strips of cartilage, \(d\). \(d\). \(d\); \(e\) is the collar bone. There are twelve (12) ribs on each side, all of different lengths—the shortest are at the top and have the smallest curves; descending they increase in length to the seventh, which is the longest, then decrease. The last two
have no cartilages, are very short, and are attached to the spine only.

The following drawing shows the formation of the pelvis, and the sacrum, which supports the spine.

It is frequently injured by gun-shots, and it might be well to bear in mind its form and position.

To know how to arrest bleeding is all-important, as life may often be saved by promptly adopting simple means.

Bleeding may be from veins or from arteries. In the first case the blood is of a dark color, and flows slowly in a stream towards the heart; in the second case it is of a bright red color, forcibly issues in jets, and is in a direction from the heart.

In ordinary venous hemorrhage, such as the bursting of a varicose vein, the bleeding may be stopped by pressure or elevation of the limb. Should there be any difficulty in checking it, ligatures should be applied.

When the bleeding is arterial the limb should be firmly grasped by both hands above the wound, so as to cut off the current from the heart by firmly compressing the wounded vessel against the bone, until a tourniquet may be applied.

A temporary tourniquet may be adjusted by placing a flat or roundish stone over the course of the artery and above the wound, between it and the center of circulation, holding
it *in situ* by means of a band, handkerchief, string or thong, the ends of which are securely tied. A stick or bayonet is then passed through the band or thong and twisted round and round several times, until the band is so tightened as to press the stone forcibly on the artery, which, being compressed against the main bone of the limb, will cut off the passage of blood through the vessel. If the bleeding be from the hand, fore-arm or arm, apply the tourniquet or bandage near the shoulder. If from the foot, leg or thigh, apply it between the knee and hip.

As a rule the main arteries are so placed that they are not likely to be reached and injured; they are deep in the flesh, and follow the courses of the inner seams of the coat sleeves and pants. Thus the main artery of the arm runs from the axilla down the inner side of the arm, at the lower edge of the biceps muscle, to the end of the elbow; that of the thigh runs from midway the groin, down the inner side of the thigh, under the deeper muscles to the back of the thigh near the ham.

Ice, if convenient, may be applied to wounds of small vessels, with good results, causing a rapid congelation of the blood. Hot water will accomplish the same, and is far preferable if the patient be feeble. When the patient becomes faint and insensible from loss of blood, he should be placed flat on his back, with his head low. Cautery may be resorted to when the tourniquet fails to do its work.

The accompanying drawing will serve to show the attachment of the muscles *a b* to the bone, the functions of ligaments and the manner in which the arteries are covered and protected by the muscles.
In resetting a strong and muscular limb it is often necessary to keep up a great strain on the muscles in order to weary them and cause them to relax, when the bone may be set with less difficulty.

Besides the wounds caused by gun-shots, a person in the field is liable to a great variety of others, which might be classified according to the nature of the article or weapon with which they are inflicted, as incised, punctured, lacerated and contused.

**Incised** wounds, such as are made by a sword or knife, should be carefully cleansed, all extraneous substances removed, the edges brought together, adhesive plaster applied, and the muscles near by relaxed.

**Punctured** wounds, such as are made by bayonets, pointed rocks, etc., very often excite inflammation in their vicinity, cause formation of matter under the fascia and frequently result in hemorrhage. The wounded part should be kept at rest, all sub-cutaneous oozing of the blood prevented, and an exit made for the discharge. If suppuration sets in, an incision should be made at once in order to let out the pus. Probing in search of extraneous matter is very hurtful.

**Lacerated** wounds, such as are inflicted by blunt and obtuse bodies, are invariably attended with severe pain, are slow in healing, and are very liable to gangrene. They should be thoroughly cleansed, all foreign bodies removed and the flaps of torn skin replaced as far as possible. A good poultice and disinfectant should be applied to the wound.

**Contused** wounds, such as are produced by any blows without breaking the skin, should be attended to without delay, the parts restored to the normal state by a few days of rest, and some stimulating liniment applied.

For a contusion of the head, apply cold water, administer cathartics, make the diet light, take no stimulants and remain quiet.
For scalp wounds, cleanse the exposed surfaces and replace the torn scalp—the parts will generally heal; if abscesses form they should be evacuated by timely incisions.

In the treatment of wounds the diet should be carefully attended to. In cases like a wounded lung it is necessary to reduce the patient to nearly a state of starvation.

The most excruciating pains from shots are readily relieved by the hypodermic injection of a solution of morphia. Ice, if procurable, will subdue inflammatory symptoms. No description of spirits should be poured upon a bleeding wound, as it only serves to irritate and influence it.

A wounded man is always thirsty; give him cold water, but never spirits.

The following remedies may often be used to great advantage:

- **Scurvy** may be prevented by using the following anti-scorbutics:
  1. Fresh vegetables, wild onions, fresh fruit, and even unripe fruit, with a risk of diarrhoea.
  2. Dried or canned vegetables, especially potatoes and cauliflower.
  3. Vinegar, citric acid or lemon juice.
  4. Citrates, malates, tartrates and lactates of potash, used in food or drink.
  5. Pure air, exercise and cleanliness.
  6. Tincture of chloride of iron, taken daily, or infusion of hemlock leaves.
  7. Raw potatoes and fresh raw meat.

*Malaria* should be promptly checked. Quinine in sufficient doses is the remedy. A halt to the leeward of a marsh or swamp should be avoided. A camp on low ground is often less affected by malaria than the low hills that overlook it. Violent exertion, resulting in exhaustion and perspiration often averts an attack, and any simple aperient is likewise good.
Diarrhea may be treated with an ounce of castor oil and fifteen drops of laudanum suspended in water. The patient should eat neither bread nor meat, but confine his diet to a little rice broth, thickened milk and the like. If it is accompanied by severe cramps, apply hot rocks or pans to the feet and hot fomentations to the stomach.

Poisoned persons must be treated with the greatest caution, inasmuch as it is necessary to deal with dangerous remedies. Some poisons are best ejected by vomiting, and an emetic should be promptly given; in others, the action on the stomach may be diminished by oily and mucilaginous drinks, such as magnesia, milk and oil, barley water, flour and water and raw eggs.

For poisonous acids, such as nitric, oxalic, muriatic or sulphuric acid, avoid emetics. For nitrate of silver, give plenty of salt water, followed by barley water or gruel.

For strychnine, narcotic poisons, opium, mushrooms, belladonna, etc., give strong emetics at once, pour cold water on the head, neck and shoulders, place mustard poultices on the feet and keep the person moving about, giving strong coffee as a stimulant.

Water should always accompany the emetic, to make the vomiting easy, and great effort made to prevent the patient from becoming drowsy and stupid. A charge of gunpowder swallowed in water, mustard in hot water, or warm soap-suds are prompt emetics.

In the absence of all these a careful tickling of the throat often does the work.

The following are good poultices: Mustard poultice—two ounces powdered mustard, two ounces linseed meal, eight ounces boiling water; Charcoal poultice—one-third ounce charcoal, two ounces bread, one ounce linseed meal, eight ounces boiling water.

For suffocation by gases, etc., remove the patient to pure air, apply cold water to the face and chest, rub the body
lively, give hot coffee or spirits, and endeavor to induce artificial respiration.

To revive an apparently drowned man, proceed as set forth in the Appendix.

For sore and blistered feet, strong whisky and melted tallow rubbed on the foot, which is afterwards covered with a sock, act well. Great relief is found in tepid bathing, a small quantity of alum or salt being dissolved in the water. The feet should be washed daily, while on the march, and both the feet and inside of the stockings should be well soaped. In severe cases of soreness, a raw egg broken in the boot before putting it on is a splendid antidote. Blisters of the feet should not be opened, but a thread should be drawn through them and the liquid allowed to run off. If the foot soreness is simply owing to bad boots or socks, relief may be often found by changing the boots and socks from one foot to the other, and turning the stockings inside out.

Chafing is remedied by keeping the parts clean and powdering with fuller's earth. Sprains are relieved by hot fomentations and by rags kept saturated with cold water and bound round the parts.

Burns and scalds are treated by keeping them from exposure to the air and applying carron oil (a mixture of equal parts of oil and lime water), flour, or scraped potatoes.

Snow blindness is an affection to be met with in all mountainous localities where there are glaring sheets of snow. Some persons are simply blind, others experience great pain, the lips chapping and the face and exposed parts severely blistering.

A person having once experienced snow blindness, is subject to frequent attacks.

Green or blue glasses and a green lined broad brimmed hat give the eye protection. In the absence of glasses, wet powder and grease, or charcoal, smeared on the nose and about the eyes, will afford much relief
A few drops of opium, in tincture, placed within the eyelids will also afford relief.

Water and weak brandy is an excellent eye-wash.

For sunstroke, remove the collar and stock, loosen the shirt and coat, and continue to throw cold water on the head and spine until consciousness returns.

For wasp and scorpion stings, etc., extract the sting, if it remains in the wound, and rub acetic acid, the nicotine from a pipe or chewed tobacco, upon the wound.

Rattlesnakes and venomous reptiles are met with on nearly every mountain trail. Rattlesnakes seldom bite (except in August, when they are blind and snap at anything), yet it is well to know the antidotes.

The Western mountaineers place great dependence on strong whisky. The action of the poison seems to counteract the effects of the whisky, and a very large quantity may be taken without causing intoxication. No time should be lost in administering the spirits.

Hartshorn applied externally and taken internally, in small doses, is a good remedy.

Plantain leaves finely chewed and applied to the wound, after sucking out the poison, are also good.

Pulverized indigo made into a soft poultice will draw out the poison when applied to the wound. The poison turns the indigo white. When the indigo ceases to change color it is a sign that the poison has been withdrawn.

In the absence of antidotes, tie a ligature as firmly as possible above the wounded part, suck the wound, if the mouth and lips be free from sores, and caustic it. If no caustic be at hand, explode gunpowder into the wound, or burn it out with the end of a bayonet or ramrod heated to a white heat, avoiding the arteries.

Use every effort to prevent the patient from falling into the lethargy and drowsiness that always follow.

The following cruel course is taken by the Indians of the
Northwest in treating a poisonous bite:—a bird or animal with a quick circulation of the blood is secured, an incision is made into the flesh of the creature and placed in contact with the wound. The bird or animal soon dies. This is repeated several times until the contact produces no effect, when the victim is considered out of all danger. A bandage is generally placed between the wound and the heart to prevent the return of venous blood.

A few years since an Indian scout was riding with me, several miles in advance of the command. While crossing a timbered ridge we came upon a number of ‘fool-hens.’ Not wishing to fire shots, we secured long poles and began to knock them off the logs and trees. As the unfortunate Indian stooped to pick up his first bird, not dead, but merely stunned, an immense rattlesnake struck him on the back of the left hand. Without hesitation he made an incision in the breast of the fool-hen and applied it to the wound. At his request I secured four other birds, which he used in like manner. Three died from the poison; the fourth one was not affected by it, but was subsequently killed and eaten. The Indian continued in good health, and never experienced any suffering or inconvenience from the bite. Indians have been known to sacrifice their dogs and even horses in this manner, when no bird or other animal could be secured.

On taking the field, provision should always be made for transport for the sick and wounded, in case there be any. If wagons are to accompany the command, one or more should be so fitted up as to be easily converted into ambulances in cases of emergency.

The drawing represents such a contrivance. The two stretchers shown are detachable, and may be placed inside the wagon when moving over level roads, or may be removed and transported by men when moving over rough and rocky country, or when it becomes necessary to take the wagons
apart in order to get them up or down very steep places.

The stretchers are so constructed with hinges and hooks as to be folded into a very small space when not needed, and to permit the supports to be used as handles.

Being frequently detached from all transportation, an officer in command might be called upon, in case of accident, to resort to numerous expedients to relieve the sick and succor the wounded. He should know how to make stretchers and how to transport them.

Avoid carrying the stretcher on the shoulders. The front and rear bearers of the stretcher should be ‘out of step,’ and men of equal height, strength and length of step, so far as is practicable, should be selected. The sick or wounded man should be carried with his face toward the direction in which he is moving. In crossing ditches, dikes, hollows, fences, etc., the stretcher should be kept horizontal.

The following stretchers may be readily extemporized:

1. A blanket is held by four men, one at each corner, and is then doubled so that the two loops shall be brought together at each end; one pole (or two rifles lashed together) passes through the four loops, while another passes within the double of the blanket on the other side.
2. Roll a small stone into each corner of the blanket, and thus form projections which will prevent the slipping of the strings or thongs with which it is made fast to a frame of poles (or rifles lashed together), as shown in the drawing.

Strips of the blanket may be used for strings.
This stretcher may be still further simplified and less material required when two corners of the blanket are fastened to a short cross-piece at the head, while the other end is gathered up and tied altogether to the main pole.
The pressure of the pole on the shoulder (most readily borne on the shoulder) when bearing the stretcher, may be diminished by a short pole or gun held lever-wise over the other shoulder, so as to take a portion of its weight.
3. Four rifles and two coats, in a great emergency, may be made into a stretcher. The sleeves of one coat are turned into the inside. The rifles are then passed through the sleeves (muzzle to muzzle) and firmly lashed together, when each coat is buttoned throughout the front.
For a man who can sit up, one rifle through the sleeves of a coat, and the coat tail lashed to another rifle, will form a
good stretcher. The sick man may bear against one of the bearers and let his legs hang down.

4. A stretcher may be made by suspending an ox, mule or horse hide between two poles, or by interlacing the belts and gun-straaps. Even the knapsack may be fastened between the poles or rifles so as to form a good transport.

5. If it is possible to transport a wagon, a stretcher made of belts, ropes, etc., may be hung from its sides within, or the bottom of the body of the wagon may be filled with blankets, small branches covered with straw, hay, ferns, rushes or any soft material.

A man who is unable to walk, but who can sit and practically support himself, may be transported by two men, who either support him on a short pole held between them, with his arms upon their shoulders, or join their hands and arms so as to make a comfortable seat for him.

6. Three cross pieces are lashed to two elastic poles, eight or ten feet long. This frame-work is then supported over the wounded man as he lies on his blanket or canvas and the latter is securely fastened to the frame. One cross-piece is in front of the feet, another behind the head, and the third one being over the man, will steady him in the trans-
port. Small twigs may form a framework, which, covered with a blanket or coat, will protect the sick man from the sun, wind or rain.

After a fight the Indians carry their wounded wonderful distances, palanquin fashion.

If horses can be spared they may transport the litter instead of men. In this event the poles should be very elastic, about eighteen feet long, united by cross-pieces three-and-a-half feet long, the ends being firmly secured to the sides of the animals by strong fastenings. The Indians often use one horse with this litter, allowing one end to trail on the ground. When only one animal can be spared, great caution must be exercised in passing over broken and rocky ground.

In case of a great emergency, after knotting together the ends of a blanket, two men could be laid in the bights and transported, one on each side of the horse, the central part of the blanket being laid across the horse’s back and secured. The Indians frequently transport their children in this manner.

The foregoing are some of the numerous contrivances for transport, depending upon the nature of the material available and the officer’s ingenuity.

‘Bed sores,’ a form of gangrene from pressure, appear on the sacrum, elbows, shoulders, back of head and trochanters, when the patient is constrained to lie for a long time in one position. For treatment, remove pressure as far as possible, wash and remove sloughs if they exist, and apply a soft poultice. Myrrh, resin, iodine and other warm astringent applications are good.

If possible, visit a dentist and see that your teeth are in good order before going into the field.

This chapter would hardly be complete without a few hints and directions as to the treatment of the stock, in the absence of a qualified veterinary surgeon.
Sore mouth is caused by the cutting and tearing of the bit at the corners of the mouth. To cure it wash the mouth clean and sprinkle common salt on the sores or apply tincture of myrrh.

Cut tongue is caused by severe jerks of the bit, and is often very serious. Salt water, alum water, saltpetre and tincture of myrrh are good remedies.

Sore back should never occur in a well-regulated expedition. The slightest tendency to gall should be promptly looked after; and, if necessary, the rider should walk until the back is perfectly sound. Hot water and poultices make the best early treatment. Leather, burned to a crisp and finely powdered, when spread over the wound, causes it to heal very promptly. There is no excuse for the frightful wounds on the backs of mules and horses due to improper saddling.

Diarrhoea, often caused by exposure, over-exertion and an excess of spring water, is best treated by giving a mixture of tincture catechu, prepared chalk and tincture of opium (in the proportion of one, two and four parts) followed by gruel and hay.

Colic is one of the most frequent ailments of the horse. The water, grain and grass of many districts cause severe attacks. As remedies, mix a tablespoonful of laudanum and twice as much whisky in a cupful of water, or dissolve some chloride of lime (about a tablespoonful) in a cup of water, and pour down the horse's throat.

If there be much constipation give dissolved aloes (four drachms), apply hot fomentations and bleed, taking about one gallon of blood.

To bleed the horse rub the neck on the near side, near the throat, until the vein rises, tie a bandage around the neck about its middle and strike the fleam into the vein; when it is full, hold the horse's head well up and pry open his jaws until the blood flows sufficiently.
Megrim or vertigo—a sudden rush of blood to the head of the horse, generally when ascending a hill, may be relieved by prompt bleeding, followed by the ‘cathartic ball.’ A horse so affected suddenly stops, shakes his head and often falls unconscious.

Cramps, colds, spasmodic coughs, etc., are often caused by applying cold water to the heated back or by drinking cold water when overheated. To cure, blister the throat, if sore, and give a little nitre or aloes; or, give a mixture of one ounce Jamaica ginger; one cup of rum and two cups of water in moderate doses.

Corrs, or the bruising of the sensitive parts of the foot by the contraction of the hoof, if neglected, will produce severe lameness or even quitter. They are indicated by the horse’s placing one foot in advance of the other and resting upon the toe. For treatment, cut away the hoof so as to relieve the pressure, cut out and cauterize the corn.

Apply flaxseed poultices and hoof ointment, and shoe carefully when the foot will permit it.

The illustration shows a convenient form of boot to be used while the foot is undergoing treatment.

For thrush, a deceased action of the sensible frog, secreting pus instead of horn, wash the feet with soap and water and apply ointment (equal parts of tar and lard melted). If neglected it will run into canker.

Sand-crack, a disposition in the hoof to crack, often occasioned by poor shoeing, may be abated by frequent applications of linseed meal poultices, after washing with soap, water and powdered charcoal. Cautery is necessary in severe cases.

Quarter-crack is caused by pressure and contraction, most
frequently the result of fitting the shoe too tightly on the inner quarter, in order to prevent interfering.

It is treated by making a groove (with a rasp) under and parallel with the cornet, to the extent of about one-half inch on each side of the crack. A few small notches are then cut on each side of the groove, and the edges of the crack cut away. Finally the crack is cauterized and dressed with tar every morning for several weeks. In the course of time the incision works its way down to the bottom of the hoof, followed by a sound foot covering.

For punctured feet, extract the cause of injury and poultice until the pain subsides; then apply tar and tincture of myrrh, keeping the foot in the boot.

For ‘grease,’ remove the hair, apply finely-powdered charcoal and poultices; give ‘cathartic ball’ and feed green food, if possible.

When ticks are abundant, oil or fat smeared around the fetlock or pastern is a protection against them.

For epizootic, influenza, distemper, etc., give an ounce of spirits of nitre in a bucket of water three times daily. Feed little grass or hay, but give oatmeal gruel frequently, and blister the parts if there be much soreness.

Certain flies often deposit their eggs in wounds, and even in the ‘sheaths’ of well animals, which soon develop into a living mass of carnivorous larvae. The remedy is to thoroughly cleanse the parts and blow calomel into the wounds.

Animals are frequently poisoned by drinking alkaline water. For treatment, rake the animal and pour grease or mild acid down his throat, or dose him with flour and water.

Wounds and contusions should, if possible, be cured by the continued application of hot fomentations, poultices and cold water; still, an escharotic is often necessary, and blistering is good in severe cases of sprains.
The drawing will give an idea of the osteology of the horse.

1. The seven bones of the neck.
2. Breast bone.
3. Shoulder blade.
4, 5 and 6. Humerus, radius and ulna.
7, 8. Cartilages and ribs.
9, 10. Carpus and meta-carpal bones.
11, 12, 13, 23, 24, 25. Upper and lower pasterns and coffin bones of the fore and hind feet.
14. The eighteen bones of the spine.
15. The six bones of the loins.
16. The haunch.
17, 18, 19, 20. The femur, knee-cap, tibia and fibula.
21, 22. The hock and meta-tarsal bones.

A knowledge of the functions and location of these bones will often assist greatly in treating fractures and dislocations.