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Sickness and when Wounded  
Charles Alexander Gordon  
Excerpt  
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## THE SOLDIER'S MANUAL OF SANITATION

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**ACCIDENT.**—A soldier has fallen, say from a height or down a stair. He is found at the foot, severely injured and insensible. At first it is impossible to say what is the nature or extent of his injuries, but his limbs are doubled up underneath him, and he is bleeding from the head or other part. In such a case, the first care of the man who first finds him should be to deal gently with him, for the chances are that a limb, or a rib, or perhaps more than one, are broken. He should therefore be carefully and, without roughness, turned over and placed in a natural position, his limbs stretched out, his collar and tunic undone. He is better placed upon his back than in any other position, as on it he can breathe most easily, and water can best be thrown upon his face. If his limbs are bent in other parts than at the joints they are *broken*; and in that case require the greatest care in being brought back into position. If they cannot be naturally moved at the joints, they are *dislocated*. If a second man be present, he should be sent for a stretcher, and the injured one conveyed to hospital.—*See* STRETCHERS.

**ACCOMMODATION.**—The nature of the accommodation afforded to troops exercises an important influence upon their health. Under ordinary circumstances soldiers

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occupy only such buildings and places as have been selected with great care for them ; on active service, however, and occasionally also under other conditions, neither the soldiers nor their officers are in a position to select their accommodation, it may therefore be of some importance to them to have a few general instructions on this point. It is a principle of army hygiene that the *accommodation* of the soldier has an importance equal to that possessed by his clothing and food, and it is known that certain diseases, more especially those of the chest, as well as some kinds of fever, are produced or averted according to the way in which men are housed. Whatever be the kind of accommodation, there are three requirements that must be considered, namely—space, ventilation, and cleanliness. These are necessary to health, and it were better that men should sleep in the open air, with no other covering than their great coats and blankets, than be *accommodated* in buildings where these requirements are non-attainable. On active service, the use of buildings usually occupied by crowded assemblies—as churches, theatres, ball-rooms, &c.—should be avoided. When private houses are used temporarily, it is customary to consider that in rooms 15 feet wide, or less, one man for every yard in length may be accommodated ; in those over 15 feet wide, but under 25 feet, two men per yard of length ; for rooms of more than 25 feet broad, three men for every yard in length.—*See* SPACE.

AGUE.—In countries or stations where this affection prevails, *quinine* is now issued to soldiers as a preventive. Experience has quite proved the usefulness of this remedy for the purpose, and therefore soldiers should seek to receive it sufficiently early ; for once that they have actually become attacked with ague, it is, of course, too late for them to take preventive measures—they must then apply to their medical officers. In districts where ague prevails, soldiers should guard themselves as much as possible from exposure at night. When weakened by

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debauch they are more liable to be attacked by this, and, indeed, all other diseases, than they are while their bodily strength is unimpaired by excesses. Good and plenty of food, sobriety, and suitable clothing are the best means of guarding against ague.—*See* MALARIA.

AIR.—Without pure air around us and to breathe we should speedily become poisoned, as completely so as if we were to imbibe any of the substances known to be destructive of life. Each full-grown healthy man takes into his chest about thirty inches of air at each inspiration, discharging nearly the same quantity, but considerably altered at each expiration. Not only does the air around him become thus *tainted* with the ordinary gaseous products of breathing, but also with the numerous—although invisible—shreds from the lungs, throat, and mouth that are continually being thrown off, and from the perspiration which constantly is going on from the surface of the body, although in too small quantities and too gradually for one to be conscious of it, the total amount being 25 to 40 ounces per day. When men themselves, or their comrades, are not careful of cleanliness, or when they are suffering from disease, the nature of the materials thrown off from them into the air becomes most offensive and injurious to health, and may readily be seen by means of a microscope; thus, then, the necessity of constant change of air in occupied rooms is self-evident. It is calculated that each man in barracks should have a space equal to 600 cubic feet of air in temperate climates, and that of this quantity about 220 should be changed at least every two hours. Men know that in certain states of the air their sensations are different from what they are at others. Damp warm air depresses, while dry air exhilarates. The fear of exposing themselves to the air in barracks is groundless, and it is only those persons who neglect to do so habitually who suffer from “cold,” when accidentally exposed to draughts. It is more injurious for men to sleep in foul air than to breathe it during the day or when

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awake. The risks from foul air increase according with the numbers of men occupying the same place, and the longer time they are continuously together; hence the necessity of leaving occupied rooms absolutely vacant for a certain time daily. Air is also more liable to become foul where vegetation is absent than where it exists in moderate quantity. Dirt, low moral state, ignorance, and prejudice, especially among soldiers' families, result in foulness of air and discomfort in their quarters.

AMUSEMENTS.—Unless the spare time of a soldier can be occupied by amusements in barracks, he will seek for them elsewhere, hence it is that so much has of late years been done to supply him with these. As a rule, however, those most enjoyed are such as are of a muscular nature; rackets, cricket, ball, or quoits, taking the place of the reading-room. This is very natural, and probably it might be well to recognise the fact. Muscular amusements benefit the soldier's health in two important respects: by indulging in them he is kept away from low localities and persons, and his powers are kept in practice for the active duties which form the reasons of his existence as a soldier.

ANATOMY OF A MAN'S BODY.—In general terms a man's body may be described as consisting of a framework formed by bones, covered by flesh or muscles, and enclosed in the skin. The arteries and veins form vessels by which the blood is carried to, and distributed in, the head, trunk, and limbs, and by which after having nourished these various parts it is returned to the heart, whence it again begins its circuit. The *head* comprises the cranium, in which the brains are contained, and the face. The *neck* connects the head with the trunk, and is usually for the sake of convenience considered as belonging more to the former than the latter. The front of the neck is usually spoken of as the throat; the back part, as the nape, forming as it does the upper portion of the back bone, spine or

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*Anatomy of Man's Body.*

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vertebral column. The *trunk* comprises the thorax or chest, abdomen or belly, and the pelvis or lower belly. The chest is formed on either side by the ribs, bent like so many bows. To them the sternum or breast bone is attached in front, and between them behind is the spinal column or back-bone to which they are firmly attached by means of joints admitting of slight motion. At the upper part and in rear of the chest are the shoulder blades, one on either side of the spine, and forming the shoulder. Within the chest are contained the lungs, one on either side by which respiration is performed, and the heart, which beats during life and propels the blood through the various vessels in which it circulates. The precise position of the heart is indicated by the left nipple, and from that point to the pit of the stomach its beat can generally be felt or seen. The abdomen or belly is that part of the trunk situated between the chest and the upper portion of the circle of bone forming the hips and arch of the groin. At the upper and front part is the pit of the stomach or epigastrium, containing the stomach and intestines or bowels; to the right, under the short or false ribs is situated the liver, to the left in the corresponding position, the spleen, behind and on either side of the back bone in the *reins*, are the kidneys, from which the French name of the *region* or division of the body is taken. The *loins* include the space at the back between the short ribs and upper edge of the hip bones, being but another term for the reins. This part is also called the *lumbar* region. The lower belly or pelvis is formed by a solid circle of bone, the sides of which are called the hip bones, the back part the *sacrum* or *sacred* bone, and the front, the pelvis. Within this circle are contained the bladder and part of the great intestine or rectum. This circle gives support at the sides to the thighs by means of the hip joints. In front the *genital* organs are attached; behind and towards the sides are the *buttocks*, and between them, below and in the centre the *anus* or lower opening of the bowels. The limbs comprise the *superior extremities* or arms, and the *inferior* or legs. The superior are united

to the chest by the shoulder joint or articulation, the movements of which are the freest of all joints; the limb comprising the arm, fore-arm and hand. The arm consists of only one bone, the fore-arm of two placed side by side; the joint connecting the two parts being the elbow. The hand consists of many bones. It is united to the fore-arm by means of the wrist joint. It comprises the *hand* properly so called, and the fingers, the thumb being anatomically included as a finger. The hand includes the *carpus* and *metacarpus*. The *inferior extremities* or *legs*, are much stronger than the arms. They are all attached to the trunk of the body by means of the hip joints, and include three divisions; namely, the thigh, leg, and foot. The thigh, like the arm, consists of one bone, the leg of two, the joint between those parts being the knee, on the front of which is the knee-cap, or *patella*; behind the *ham*, or *popliteal space*. The front part of the leg is called the *shin*; the part behind, the *calf*. The foot, like the hand, is composed of several bones, these forming the *foot* proper and the *toes*. The foot comprises the *tarsus* and *metatarsus*. It is united to the leg by means of the *ankle-joint*, immediately behind which is the *tendo-Achilles*. The point of support of the foot is at the hinder part, the *heel*; in front, the *ball* of the toes. The part between these points includes the *sole* or *arch* of the foot; the *instep* being the upper or convex part of that arch.

The body is nourished by the *blood*. The blood contains the natural nourishment removed from the food in the process of digestion, the refuse being discharged in the shape of *faeces*, &c. The blood being sent on from the heart, circulates to all parts by means of *arteries*, returning to it by the *veins*. The arteries beat in correspondence with the beat of the heart, and can readily be felt at different points, the wrist being the most usual; the beat there constituting the pulse. The blood contained in the arteries is of a bright vermilion colour. The *veins* bring back to the heart the blood after it has given its nourishing properties to the different parts of the body, the blood in them being

of a dark colour. They are exempt from pulsation; and those upon the surface can be traced as blue lines of greater or smaller size under the skin. It is desirable that soldiers should have at least a general knowledge of the parts which together constitute their own bodies, and accordingly these particulars are given for their guidance.

ANIMALS in, or near barracks, are prohibited by regulations; cows, pigs, goats, poultry, horses and dogs being specially enumerated as those that are not to be kept or permitted to run loose. In some stations, and especially in India, the practice of keeping pets, is to a certain extent, permitted, and is in many instances deserving of encouragement. Not only does it *humanise* a soldier, developing feelings of kindness in him, but experience shows that no actually vicious man is ever fond of *pets*. The very fact, therefore, of such creatures being kept indicates the existence of some of the better feelings of our human nature. The interest taken by a soldier in a pet, and the time occupied in its care, or playing with it fills up a gap that might otherwise be occupied in ways injurious to health and well-being.

APOPLEXY (*see also* HEAT APOPLEXY).—A man complains of severe pain in his head; there is a sense of fullness; he suddenly falls, or becomes insensible; the breathing is slow and *stertorous*, or, in other words, with heavy snoring; the face is flushed, blue, or of otherwise unnatural colour and aspect; the eyes are open and fixed, or staring; the mouth frothy; the limbs paralysed; involuntary passage of the urine and stools; the pulse slow and weak. Often the patient, while suffering from these symptoms, tosses himself from side to side, and every moment manifests the existing danger of death taking place.

In such a case remove at once all encumbrances, undo the clothes, especially at the collar, take off the necktie or stock, undo the braces, open the waistbelt of the trousers,

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remove the patient to an open place, where the fresh air may freely play upon him, bathe the head and face, sponge the body with cold water, in summer adding to it vinegar or salt to increase its coldness; place a little vinegar, or hartshorn, or smelling salts under the nostrils, rub the legs and soles of the feet, give the patient cold water alone, or with a little spirits, to drink, and take immediate steps to have him carried to hospital.

**BAKING.**—In India the native bakers have always been adepts at arranging bakeries on the line of march, and preparing bread for the troops. They have iron frame-pieces of ovens provided by the commissariat; these they cover over with wet clay, and soon thus fit up an oven. On home service steam or field ovens are provided, these being drawn by horses. Each such oven is capable of baking 109 loaves of 3 lbs. each in a batch, and admits of four batches being turned out in ten hours. The field ovens, Aldershot pattern, are of sheet iron, and can turn out 150 lbs. of bread at a time. These were used on the Red River Expedition. Arrangements are officially made for supplying troops with baked bread wherever practicable.

**BARRACKS.**—Whenever troops enter barracks, whether after a severe march or drill, they should partially close the windows, that is, sufficiently to prevent a direct current of cold wind blowing over them. They should dispose of their arms and equipment in a proper manner, and having done so, proceed to undress themselves slowly. If the clothing is wet, it must be changed without delay, dry articles being put on instead. The hands, face, and feet should be bathed in cold or tepid water, or with spirits and water, excoriations being soothed by the use of a little melted suet or lard, for which purpose French soldiers often carry a small supply. The more free ventilation is maintained the more wholesome barrack rooms will be. Fires favour ventilation, but they do harm at night by rendering



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the places too hot. Generally some windows to leeward may be kept slightly open. Men should themselves be careful that dirt is not allowed to accumulate in presses and on shelves, into or on which it may be the officers are not in the habit of looking. The idea of having their reserve bread or portion of meat put away among dust, or exposed to the emanations of a barrack room is itself very nasty.

The longer each day soldiers are out of the barrack rooms in which they sleep at night the better for their own health. In hot countries arrangements are made so that they may have *day rooms* in which to pass their time while the state of season or weather prevents them from being out of doors.—See *Queen's Regulations*.

BATHING.—The free use of cold or tepid water to the whole surface of the body is not only grateful according to season, but is absolutely necessary for the preservation of health, by removing offensive and impure matters from the pores and surface generally, and preserving the skin in a flaccid state. In the case of men who have not previously been in the habit of bathing some degree of caution is necessary in breaking them in to the custom; but in the case of those habituated, not only is the free use of cold water bearable in cold weather, but it is enjoyable, and, moreover, fortifies the person using it against catching cold and against various diseases. Men reduced in health by dissipated habits or tropical diseases are often injuriously affected by taking a cold bath, whether in the house or outside. The cases of all such should be noted by their sergeants, and the surgeon made acquainted with them. Bathing in rivers is only to be recommended in European or other temperate climates, and in mild weather. In tropical and other hot countries it is objectionable, except, perhaps, during the cold season, but then, what between the risks of quicksands, alligators, &c., the safest way is to warn the men against indulging in it. Under ordinary circumstances, and more especially after the men come off the march or from severe fatigue duties, they should avoid

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bathing in rivers or lakes. During the prevalence of strong wind, especially if from the north or east, they ought also to refrain from it. A bath in a river or lake should, if possible, not be taken until three hours after breakfast, or when the stomach is empty. When the men are hot they should undress slowly, then go gradually into the water. They ought not to remain longer than a quarter of an hour in the water, and any time beyond twenty minutes is actually injurious to them. On coming out, a man should dry himself as completely as possible, and having done so, should take moderately active exertion. If bathing in the sea, ten minutes is considered sufficiently long to remain in the water.

The Royal Humane Society has issued the following notice:—Avoid bathing within two hours after a meal, or when exhausted by fatigue or from any other cause, or when the body is cooling after perspiration, or altogether in the open air if, after having been a short time in the water, there is a sense of chilliness, with numbness of the hands and feet; but bathe when the body is warm, provided no time is lost in getting into the water. Avoid chilling the body by sitting or standing undressed on the banks or in boats after having been in the water. Avoid remaining too long in the water; leave the water immediately there is the slightest feeling of chilliness. The vigorous and strong may bathe early in the morning on an empty stomach. The young, and those who are weak, had better bathe two or three hours after a meal; the best time for such is from two to three hours after breakfast. Those who are subject to attacks of giddiness or faintness, and those who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser.

**BATTLE.**—Every soldier (and officer) before going into battle should be provided with a ticket of identification, and with a long strip of bandage, and a piece of linen for use in the event of his being wounded. The continental