Chapter V1.
Management of Horses in the Open.

Condition and Exercise

"Condition," as applied to animals, means thorough bodily, muscular fitness for the work required. When using the term "condition," the picture of a racehorse, each muscle outlined, and strung up to crowd the greatest possible exertion into the shortest possible time, is apt to cross the mind; but although this type exemplifies "condition" in its highest degree, it may not truly represent the bodily state required for the particular work in hand. The condition of the racehorse is a maximum; it represents a maximum of food, a maximum of work, and a concentrated nervous energy which cannot be maintained at concert pitch indefinitely; the acme having been reached reaction is inevitable, and unless a judicious easy is allowed, loss of form and condition follow. Such a high strung, nervous state is not required in workaday horses, such as the soldier's, and although thorough fitness is absolutely essential, the standard to be aimed at is not that of the five furlong sprinter. A well-regulated stable of hunters during the first part of the season exhibits the quality of condition which should be looked for at the commencement of a campaign; the body well covered with flesh, and that hardened on; no sign of running up light towards the flank; full of spirits, capable of long-continued exertion without fatigue, and with a good digestion waiting on a healthy appetite. Such a state of bodily health can be almost indefinitely continued when once attained, and allows some reserve of flesh and animal spirits to draw on when the pinch of hardship comes. This class of condition is the criterion of a horse's value on service; blood, power and good looks are of little value without it; its value in war is not be estimated in money and cannot be purchased for it, whilst unless the animals of an army possess it they are valueless as weapons and may even be a danger to their owners. Condition of this description must not be confounded with fatness. The nice, fresh, young horse from the dealer's yard is fat, not fit; his muscles are soft and flabby, unable to stand severe exertion and rapidly fatigued. Not only his muscles, but every other structure in him is in the same state; his blood-vessels soon lose their elasticity; his heart fails in driving power; his lungs cannot sustain rapid breathing, nor his joints constant bending; and although he is jumping out of his skin at the beginning of the day, a very moderate amount of work makes you wonder if he is the same horse that started so gaily. To quote a sporting writer, " You cannot believe that the heavy-headed, labouring horsemastership brute between your legs is the same animal that devoured the ground like a tiger and jumped the first fence like an indiarubber ball."

There is only one way to get animals into condition, whether they be required for light cavalry or heavy transport -sufficient good food and sufficient healthy exercise, judiciously combined, and continued over a long period, is the sole recipe. The transformation of fat, flabby flesh into hard, tough muscles is a gradual process, it cannot be forced; a regular course of graduated exercise is the only way to accomplish it. This work should never be so severe as to fatigue the animal; the soft muscles will suffer from the reaction of over-exertion to such an extent that an actual loss of flesh ill result. Working tired animals when unfit is a most fruitful cause of accident and disease, and the worst possible horsemastership; this is the time when they sustain bad falls and severe

sprains; the muscles do not act in absolute unison, and extra weight is thrown on the tendons, which naturally suffer. But, once good, hard, muscular development has been attained, any work within reason will not only be performed without great effort, but will continue to ad to the quality of the condition already acquired. It is important to recognise this "cumulative" power of condition; it means that you can not only demand a good amount of work from a seasoned horse, but that it actually does him good, and while performing it he will at the same time run less and less risk of accident and disease; but throw him entirely out of work for any considerable period, and you will have to repeat the conditioning process over again, though not perhaps to quite the same extent. This must be particularly borne in mind when animals are again taken into work after a run at grass or a long bout of sickness.

Amount and class of Work. - At first the work should be light, but spread over a considerable time, and indeed the longer the time which can be spent outside the stable the better. This is always a difficulty in an army; there is so much else to do besides exercising horses that it is not always easy to give as much time as we should like to devote to this essential, and the regularity of the work may be occasionally upset; but a minimum of two hours daily should be enforced, Sunday, of course, being an off-day. On all occasions when it is possible, three or four hours should be spent in the open air daily, the simple fact of being in and breathing a pure atmosphere having a good effect on the health and spirits.

The bulk of the work should be done at a slow pace. - The troop horse gets more than enough fast galloping work during the necessary training of the men, and at field days and manoeuvres; his conditioning and exercise should be carried out at the walk and trot, the proportion being about four or three to one respectively. Though impossible to carry out in the service, the exercise of the racehorse may be taken as an ideal. Two or two and a half hours constantly on the move in the morning, with two or three miles' trot and canter thrown in, and one to one and a half hour's walk in the evening, is the class of exercise which is given to get the animal fit to commence the faster part of his preparation, and even when this is in progress the long walking is continued. Plenty of walking, then, and a moderate amount of trotting should constitute the "healthy exercise" for getting into working condition and for maintaining it. Any attempt to try and crowd extra work into less time under the impression that it will have the same effect, should be specially avoided and cannot be too strongly condemned; it does not harden muscle on the animal in the same way, but tends to run the meat off him, make him tucked up in the belly, perhaps irritable in the temper as well as unduly heated on return from work and therefore more liable to chills.

The exercise should not follow the same route every day. - Horses have a wonderful memory in such matters, and as soon as they think they are on the direct road home, will often hurry, fidget and sweat till they get there. This nervous effect may usually be avoided by taking a different direction daily, breaking the work a little by an occasional halt, grazing and leading; in fact, by any variation of dull, monotonous road slogging.

The exercise should move on the broadest possible front; should walk steep hills and should

utilise any soft level roadsides for trotting. The men should be accustomed to lead two horses, one on either side, and the horses trained to lead on either hand. The first mile should be covered slowly, so that the horses can feel their feet, stretch their legs and empty their bowels before they are called upon to trot, and the last mile should also be walked so that they return to stables cool.

The amount of weight which an animal is to carry or draw on service should be frequently loaded, especially in the case of saddle horses and pack animals, for unless the skin and muscles of the back are accustomed to the pressure of the load for hours at a stretch, sore backs will result, however good the general condition.

Effect of feeding on condition. - To produce the best results, the policy of full feeding and fair work must be adopted. No other combination will get the best out of an animal. A small ration and little work will keep him round in appearance, but whether a camel or a charger, plenty of food and sufficient work judiciously combined, is the only routine which will really fit him for use in war. This adjustment of ration to work is a practical point which a book cannot teach; it is one of the hall marks of a good horsemaster and must be gained by observation and experience. When the work is light, *e.g*., at the beginning of a young horse's training, half a full corn ration is generally accepted as a standard on which to begin feeding, but a rule of thumb method should be avoided and each horse's needs considered; in no case should the ration be so small, or the work so hard, that the colt's "bloom," *i.e*., his round and glossy sleekness, disappears.

Thirst and sweating are very prominent features of the early stages of training, and are to some extent dependent on each other. Apart from the sweating which may naturally be expected as a result of work, some young horses are liable to sweat very profusely from purely nervous causes, and more especially when the work is conducted in a confined atmosphere.

It is not always possible to prevent every young horse sweating from the excitement of new lessons, particularly in the case of highly bred or excitable colts; but such outbreaks take more out of a horse than a far greater amount of quiet work, and should be avoided in every way.

Working in the open air in preference to a roofed school, absolute quietness of methods, the avoidance of long monotonous lessons, and the example of older, well-behaved animals, doing the same things quietly, are all valuable in keeping horses cool in body and temper; but there are instances, as stated above, where sweating cannot be prevented, and thirst is a natural result. *Thirsty horses* are to be allowed to drink their fill; it is best that they should not be sweating, but the fact of their being hot need not be a bar to their drinking, if care is taken to keep them on the move till cool, and so prevent risk of chills. As their condition improves the keenness of their thirst will diminish.

The quantity and quality of the sweat is very generally taken as an index of condition, and rightly so. When the body is soft and flabby, slight exertion produces a copious sweating, of a soapy, lathery nature, which dries slowly, and frequently breaks out again. As the condition improves, the amount of work required to make the skin damp increases, and the sweat itself is less greasy and more watery in consistence; while it dries with rapidity, and does not recur. There are, however, some free-sweating horses which lather freely even when in good fettle. Weather has a

great influence on the amount animals perspire, for whereas on a cold, clear day it takes a lot of exertion to turn a hair, a damp, muggy morning will make them sweat freely.

ON THE MARCH

It is taken for granted that the horses are in "condition", without which it is impossible for them to undergo the fatigue and exertion incident to any prolonged effort. This has already been dealt with under the heading of "Condition," but the importance of the point must be again insisted upon. Looked at solely from the animals' point of view, the length of the number of hours that the load has to be carried and this latter consideration is frequently the more important of the two. The advance of a column on service is occasionally at the rate of one mile in four or five hours, and under such circumstances, a five mile March on paper may call for the exhibition of extreme endurance in reality. If under the pressure of circumstances the marching of unconditioned animals is necessary, unless the military necessities of the case are such as to override all thought of loss, the distances to be covered and the time occupied must be comparatively short, or exhaustion and sore back will shortly account for the majority.

Previously to starting, a special inspection of the saddlery and shoeing should be undertaken, to make sure that all is in order, but alterations to saddlery should only be made if they are absolutely unavoidable: eleventh hour alterations are not always judicious, and unless actual injury is apparent, saddlery is better let alone at this moment. Shoes should only be as far as possible be new. Wear varies considerably in different horses: on a macadamized road, especially if the weather is wet, hard wearers will get through good hind shoes in between 100 and 150 miles and the average for road work will vary from 200 to 300 miles according to the pattern and weight of the shoes.

Hour of Starting. - It is seldom advisable, unless for purely military reasons, to start before daylight, even with the object of avoiding heat. In the dark, feeding arrangements are not satisfactory, saddlery and harness may not be accurately adjusted and articles may be unseen and forgotten. Night marches are slower and more fatiguing than in the day, and unless the road is well known may possibly be lengthened by errors of direction.

Choice of Ground.- Attention should always be paid to the condition of the ground travelled over, the pace being increased when the going is good; and bad, heavy, or newly metaled pieces walked over. Riding horses should be kept off the road if the going at the sides is soft and suitable. Vehicles should always keep to the hardest and smoothest routes.

Steep hills are particularly suitable places to relieve the horses of weight and let the men walk.

Pace.-Always remembering the fatigue which the weight carried produces, irrespective of the distance travelled, the maintenance of a good average pace throughout the entire journey is to be desired, and, provided it is not unduly hurried at any point, the quicker a journey is mileage per hour will naturally vary with the unit concerned: taking the walk at four miles per hour, the trot

at eight to ten, cavalry and mounted infantry, unaccompanied by other arms, should maintain a rate of five to six miles an hour including halts, over any ordinary distance, and this rate is capable of being kept up for very long journeys where the animals are accustomed to travel at the canter. Horse artillery can travel at the same pace as cavalry, field artillery at four miles, and transport at three miles an hour under favourable conditions.

Single horsemen with a thorough knowledge of the work and with mounts in the pink of condition may be able to travel forty to fifty miles at the rate of twelve or fourteen miles an hour; but such a pace cannot be expected from any body of horsemen; and the larger the force the slower will be the progress as a rule (see also "Cavalry Training," sec.143). Forty or fifty miles a day, if continued for several days, will test the condition of both horse and man very thoroughly, and even this result cannot be attained without severe loss unless the men are practisedpracticed in the work and both they and the horses are as hard as nails.

The pace should be varied as much as possible, walk, trot and canter being all utilized, and the last of these is found by all long-distance riders to be the easiest pace for both horse and man on a journey. No pace should be maintained so long, without a break, as to weary either horse or man, but after ten or fifteen minutes' trot and canter a short walk should follow. To a very large extent the men should walk whenever the horses do, in order to relieve them of the weight; and this procedure has the further advantage of lessening the strain on the men themselves by bringing into play muscles besides those exerted in riding.

Halts.- A First halt should be made after going one or two miles, to allow the horses to stale; make sure that the saddlery and harness is all correct and tighten the girths. It need not be more than a few minutes, but it is a very necessary precaution, more especially if the start is made at dawn when the light is poor and some detail in saddling may have escaped attention.

Subsequently, a short halt of five to ten minutes should be made hourly and every two or three hours a sufficiently long one, to off-saddle and feed. If it is not possible to off-saddle, girths should be loosened and the saddle just raised off the back, to relieve pressure and allow the circulation of the skin to be restored. When the saddles are removed the horse should be allowed to roll and the back dried. At every halt stirrups should be put up to prevent accidents from catching the hind foot in the iron, and each man should look round his horse and at each shoe.

Formation.- The broadest front is the best for horses, and should be adopted whenever possible. It enables every animal to see the ground over which he is traveling and ensures a supply of fresh air, free from dust - an important consideration on a long, hot day. Where a road has to be followed, the force should, so far as the military situation permits, travel in small bodies, with a sufficient interval between them to allow dust to settle or blow away. On hot, still days, the horses in the centre and rear of a long narrow column breathe an atmosphere thicker than a London fog throughout the journey, and this must help materially to produce fatigue sooner than would otherwise be the case. It is most important, especially when the column is a long one, to prevent the whole force being affected by momentary checks which may occur in front. To avoid this a short interval should be maintained between squadrons whenever tactical conditions allow it. Any animal or vehicle meeting with accident should be immediately drawn to the side of the road and not be allowed to obstruct the passage of the remainder.

Watering. - Horses may be watered whenever opportunity occurs, especially on hot days, and there is little risk attached to their being allowed to drink frequently. The usual method of watering before feeding will, of course, be adhered to, but if a stream is crossed an hour after feeding they may again be allowed to drink if circumstances permit of the delay. Bits are to be removed when it is intended to give a full watering.

When water is scarce its issue must be carefully regulated to avoid any waste. Horses can drink from a very shallow vessel if their bridles are removed, and taking advantage of this fact, small quantities may be poured into a shallow dish, from which they drink, the supply being regulated by the animal's rate of swallowing. It is a plan adopted by some regiments of Indian Cavalry, and may be conveniently employed where water is carried in skins or small tanks. A very small quantity will revive overtaxed horses and it should be given in repeated little rations rather than in one long draught. When the amount is very scanty, say a pint or less, it is best to offer the exact to each in turn rather than to risk a large bucketful, as the first-comers are sure to get an undue proportion and may upset it in their eagerness. On one occasion during the campaign for the relief of Khartoum the Syrian horses of the 19th Hussars received no water for fifty-five hours and twenty of them for seventy hours. On another occasion when much exhausted and thirty-five miles from water, less than one print per horse was available. This was mixed with meal into a number of soft balls, which revived them, and they accomplished the remainder of the journey the next morning. In regard to this particular point it must be noted that thirst is better endured in hot climates by animals which are native to them, a fact which should be remembered when selecting for arduous duties. When marching at home, public watering troughs should be avoided owing to the risk of contagious disease being introduced.

Feeding on the march in peace and war are very different matters. In peace, whether at home or abroad, there is the certainty of receiving a sufficient ration at stated intervals, and practically no thought is required from officer or man in connection with its provision; but in war the conditions are entirely changed and demand special attention, for while a mounted soldier's chief weapon is his horse, it is also the most difficult to keep in working order on service. For a man accustomed through out his life to the care of horses, more particularly in a new or uncivilized country, it is a matter of simple routine to provide for his horse's wants at every possible opportunity; it becomes automatic with him to think for his horse; but the average soldier has not had such training and experience, and unless it is thoroughly drilled into him that he must think of and for his horse on all occasions, the latter is apt to suffer.

It is in the matter of fodder that the difficulty of providing sufficient horse rations is likely to be felt oftenest; corn may be supplied with regularity, but hay or other fodder is very bulky, and its punctual issue cannot be relied upon. Every mounted man should be made fully aware of his duty to his horse in this respect. Standing crops of all descriptions provide excellent fodder, and should not be passed without the horse being catered for; while, if circumstances permit, a sufficient quantity should be carried, to provide for the next halt. Opportunities for grazing may occur; when halted the horse will not fail to avail himself of them if the man allows him. Especially do the scout, the orderly, and the small party on detached duty, meet with such opportunities; but unless the men are so trained that it has become second nature to take

advantage of them, many will be missed from want of thought or observation, when the mind is occupied by more exciting details. Visits to farmhouses may offer the chance to replenish empty nosebags, and these should be kept full, no matter what the contents, so long as they are eatable. Of course, on service, the niceties of method which we rightly adopt during peace, cannot always be adhered to, and some risks must be taken. Unless time and food are equally plentiful - and this is not very often the case - the latter should be eaten whenever opportunity occurs, even with the prospect of immediate severe work; it is better, under the circumstances, that some cases of colic, and perhaps a death from ruptured stomach be risked, than the chance of a feed be missed, a chance which perhaps may not recur for many hours.

On the march the principle of feeding little and often should be adopted; at every halt of sufficient duration the nosebag should be put on. The London cab-horse is probably called upon to perform the most severe continuous daily work of any light horse in England; at any moment he may be called on to trot at a fast pace, drawing a considerable load, for half an hour or an hour at a stretch; and frequently during the day gets fast work for shorter periods. His nosebag is kept on constantly when at rest, and the plan answers admirably. At no time is the stomach overloaded , at no time is it quite empty. It is a method which, as far as possible, should be imitated on the march.

When marching long distances the portability of food becomes a serious question, and compressed rations of various descriptions are likely to be issued. Of whatever materials these consist they should be well broken up and, if possible, mixed with any procurable fodder which will give them bulk, *e.g.*, chaff, chopped straw or grass; and just previous to feeding they should be well damped, as they are very dusty. Cocoa, biscuit, meal of any description, and even meat may be made use of; and the addition of a few ounces of sugar to a limited ration is a great help in sustaining horses engaged on a prolonged effort. The Turcomans were in the habit of giving their horses balls of meat, wheat meal and sugar in small quantities previous to and when engaged on raids, and the natives of India make use of wheat flour in the same manner during long marches.

While, however, such articles may help in emergency, horses cannot maintain condition without sufficient *bulk* of food, and constant effort must be made to provide fodder of any description, in addition to grain rations.

During peace in all marches of five hours it is advisable to feed once *en route*, if possible immediately after the horses have had a good drink. The bit being removed, the nosebag is to be buckled well up, to allow and spilling the grain. Half-way through the feed it may require readjusting for the same reason. Horses that toss their head persistently should have the top of the bag tightened round the face by a rubber, cord, or strap, to prevent waste. When the horse ceases to feed he should be allowed to graze and the nosebag is to be turned inside out to dry.

Great care is to be taken to secure the mouths of all nosebags so that the contents may not be split on the way.

Swimming horses.- The horse is a powerful natural swimmer, and is capable of bearing a fully equipped man for a considerable distance. When afloat, the head is the only part visible, the body being just below the surface, and the tail awash behind.

If the rider remains mounted, his weight sinks the horse's body lower, and he is himself

immersed half way up the body at least. Swimming mounted, requires a capable horseman, who should be a good swimmer himself. Before riding in, it is well to remove the portmouth bit if one is worn, and in guiding the horse when under way it is better to splash the side of his face and so head him up or down, rather than pul on the reins.

Generally both men and horses are stripped and the kit ferried over dry. In this case the reins should be knotted, so that they will not till the horses are out of their depth and then slip off on the down stream side, holding to the mane or tail, and are towed over. The free hand is used to splash the horses' heads and make them keep their direction. According to the strength of the current, they should be headed more or less up stream, and the landing should be wide, or a second suitable place should be available a little lower down.

If the horses are to be towed after boats, a rope is passed round the upper part of the neck and tied, with a knot which does not slip, just tight enough to prevent it coming over the head. The animal is then driven into the water, and once afloat, will follow the boat. If unwilling to enter, splash water on the back. Particular care is to be taken to exert no traction on the neck rope once the horse is swimming, or the nostrils will be pulled under water and the animal may be drowned. For this reason the rope should be long, and the boat should be rowed slowly. Three or four horses can be taken across at once, if they are not troublesome.

Where the crossing is not wide and free from dangers, the horses can be driven in and swim across by themselves. The head ropes or snaffles should be knotted round the neck, so that the men wading in can secure them as they land, and a picket boat should be placed down stream to keep them from losing direction. Some horses should be kept well in sight at the landing places, as an objective for those swimming, for it must be remembered that the animals' range of vision is very limited when the head is on a level with the water, and if they cannot see something familiar to make a point at, they are apt to go down stream.

IN CAMP

Selection of Site.- Where the site of the camp has not been already decided, choice should be made of ground flat enough to give a level standing to the horses, but with sufficient natural fall to carry away storm water; sheltered by higher ground from keen winds, and while within easy reach of the water supply, not draining into it, but below it. Marsh ground should be avoided always, but there are occasions when military conditions may preclude the avoidance of bade sites. The site chosen should be cleared of stones and other material which interferes with horses lying comfortably.

Water Supply.- When a stream is the source, the watering place will be below the men's drinking water, but above the washing place. It should be as near the camp as possible but above it; have a sound bank and bottom; wide approaches and exits; be capable of watering as many horses as possible, and not liable to be fouled by upstream drainage or manufactories. If the bank is too steep, a ramp must be made, extending as far as practicable the entire length. If the bank and bottom are muddy, stones and gravel should be liberally used to make a firm, clean standing. Watering should always commence at the lowest part of the allotted length of water, so that each succeeding batch may procure a clean supply by entering a pace or two higher up. In watering,

horses should be walked in single file across the river till its whole width is occupied, their heads turned up stream to give them a clean drink, and when satisfied, they should turn about and leave at the lowest part for the reason given above.

Where the stream is too narrow or shallow, it can be widened or deepened as may be required by the construction of a dam, or by digging out the bottom.

Two horses only should be taken to water by each man, and bridoons or pelhams are to be used. The practice of sending four or five horses tied together under one man is objectionable; it results in some of them not getting sufficient water, from being either hurried or disturbed in their drinking by the others to which they are tied.

If troughs are to be used a space of not less than one yard is necessary for each animal, and unless they are very broad it is not advisable to water from both sides at once, as though this economises time, the horses play with and bit at each other, instead of drinking. It is better to allow the whole of the horses at the trough to quench their thirst before any fresh ones are permitted to approach, as the constant movement interferes with the more timid drinkers, and they do not fill themselves. Walking is the only pace to be permitted on the way to and from the troughs, and all noise and confusion should be avoided, as it excites horses, and they do not drink so freely as when quiet and undisturbed. When ready-made troughs are not available, they may be constructed of sods, and lined with tarpaulin.

Watering from ponds or other stagnant pools may be necessary, but is to be avoided if another source is obtainable, for it is not possible to prevent such a supply being greatly fouled. Horses should not be easily, and if the place has to be used for any time, the edge should be regularly cleared of refuse. Vegetable scum and weed growing on the surface of such pools should not be cleared; they help to keep the water pure, though their appearance may not be very inviting.

If the available accommodation makes it necessary for units to follow each other at the same watering place, a time table should be issued to prevent confusion.

Picketing.-By whatever method a horse is secured, it should be carried out in such a manner that he is not likely to injure himself or his neighbour. The comfort of the animal should be studied as far as possible, but the prevention of injury is of the first importance. It is at the commencement of operations, and during peach manoeuvres, that this matter calls for most attention, as horses may be unused to the method, or so fresh that they attempt to bit or kick at each other. The first of these reasons should not exist; standing quietly under any form of restraint which is likely to be imposed on a troop horse, being an essential part of a remounts training, and before his first experience of camp life, he should be accustomed to head and heel ropes, foot-shackles, knee-haltering, linking, and standing alone. It is quite a simple matter of training, but if not taught before arrival in camp, a crop of perfectly avoidable accidents is the assured result. On peace manoeuvres, where horses are all well-fed and not overworked, there will always be a certain number of attempts to kick or bite, either in play or from vice; both are equally serious in results, and the horse must be so secured as to prevent damage. On service, horses are usually too overworked and underfed to give much trouble in this respect, and are also more accustomed to the mode of life. The great majority of injuries occur from the head and heel ropes being too long and slack, and in practice this apparently simple matter requires constant attention and

supervision.

Picket lines may consist of a single long rope, or the "built-up" rope, a portion of which is carried by each man, and in either case they must be kept quite taut. They may be stretched along the ground, or at a height of three to four feet from it. When heel ropes are not used, the latter is the better plan, as it prevents horses stepping over the line, and twisting their head ropes. The ends should be tied firmly to trees or wagon wheels, and kept as taut as possible. In standing camps a double set of lines, or a double set of heel-pegs on either side of the picket line should be arranged for. This permits a change of standing when the ground is soiled or worn, and will be found a great convenience.

Head and heel ropes.-the head rope. First method of attaching the head collar: Pass the point of the rope through the lower ring of the back strap of the head-collar, then through the ring at the end of the head-rope, and draw taut. Second method: Tie the head-rope on to the picket line securely, and the correct length. Taking the ringed end, pass a loop of the rope through the lower ring of the back strap of the head-collar; slip the ring of the head-rope through this loop, and draw the rope tight. This method does not slip, and can be released quickly, leaving the rope secure to the picket line; it also ensures the head-rope being the correct length.

Any knot by which the head-rope is fastened to the picket line must be perfectly secure, and capable of being rapidly cast loose. The know figured below has been employed with success. Tie the free end of the head-rope round the picket line in a half-bow (fig. 21), then pass the loop round the picket line, and under itself (fig. 22). To free the know, pull the loose end.

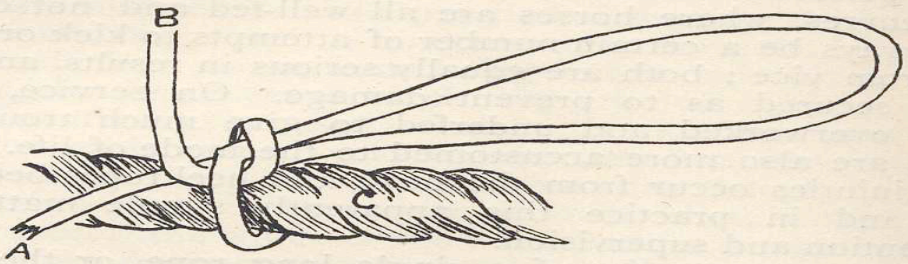

FIG. 21.

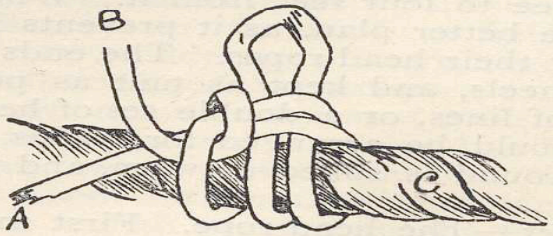

FIG. 22.

A. Free end of head rope.
B. Head rope leading to head collar.
C. Picket line.

The proper length for a head-rope, however secured, is from the lower ring of the back strap to the ground, when the horse is "standing up," with its head directly over the picket line or head-peg, and no longer.

The heel ropes may be single or double. The object of a double heel rope is to prevent a kicker striking the next horse, and can only be effective if the V at the end of the rope is short enough to limit the play of the legs as much as possible. If the V is long the animal is as dangerous as ever. Lying down, getting up, and straddling to stale, are the only necessary movements, and a V with a maximum spread of about two feet is all that is required: if it is greater, the ropes should be tied together to make it this pattern. *The proper length of a heel rope* is from the heel to the heel peg in a straight line, when the horse is "standing up", with his head directly over the picket line or head peg, and no longer. The distance between the picket line and the heel pegs may vary from three to five yards according to the size of the horse, twelve to thirteen feet being sufficient for all ordinary size troop horses. A gangway of at least five yards width between the horses heads should be left. The interval between horses depends upon the space available, the minimum being five feet.

Picketed according to the above directions, a horse can perform all movements necessary to his well-being, and cannot, as a rule, injure himself or his neighbours. Giving him further latitude is inviting disaster.

Shackles are of several patterns:- (1) A simple loop of leather which is passed over the foot, slipped round the pastern or above the fetlock, and secured there by a thong. This is an excellent pattern, may be adjusted tight or slack as required, and is not liable to cause injury itself.
(2) Straps and buckles, sometimes lined with numnah to prevent chafing, are of several different varieties. They all have one common fault, vix., the tongue of the buckle is likely to tear through the strap holes, unless the leather is very strong and heavy. Where there is a guard under the buckle, to prevent it galling the skin, care must be taken not to double it under when adjusting. Numnah linings are not very satisfactory, they soak up wet, and retain gritty mud, which dries hard and rough.
(3) Hook and eye pattern.- These fastenings are of metal, and attached to the leather work by rivets. No riveted fastenings are satisfactory; they are liable to work loose, and as the leather shrinks away from them, project on the inner side, and gall the skin. Metal hooks and eyes are so frequently strained or closed, that they either fall undone or become impossible to fasten.
(4) Button and eye pattern.- A loop of leather or webbing, one end of which is doubled into an eye, and the other gathered into a toggle or button. So long as the button and loop fit well, this is a good pattern, but they are apt to stretch, get loose, and come undone too easily. A variety of this pattern, made of many strands of soft string (sootlee), is a favourite shackle in India, particularly for young horses likely to be restive; it is light and soft, so does not hurt them, even if they struggle, but it does not wear very long.

A good shackle of whatever pattern should present a smooth surface to the skin, have a secure fastening, and not be so heavy that its weight us likely to gall the skin of the heels when it rests upon them. They must always be kept quite soft and pliable. Shackles may be worn either

round the pastern or above the fetlock, and as they are more likely to cause galls if worn constantly in the same position, they should be frequently changed from one position to the other, and if a single one is worn, from leg to leg. When worn above the fetlocks they are not to be tied so tight as to cause the legs to swell.

Picket pegs may be used for the heel ropes only, or for fastening the head ropes also, and where single horsemen are liable to be detached, two pegs, or some method which renders them independent of others is requisite. Many patterns of pegs have been tried, but none can be considered perfect under all circumstances.

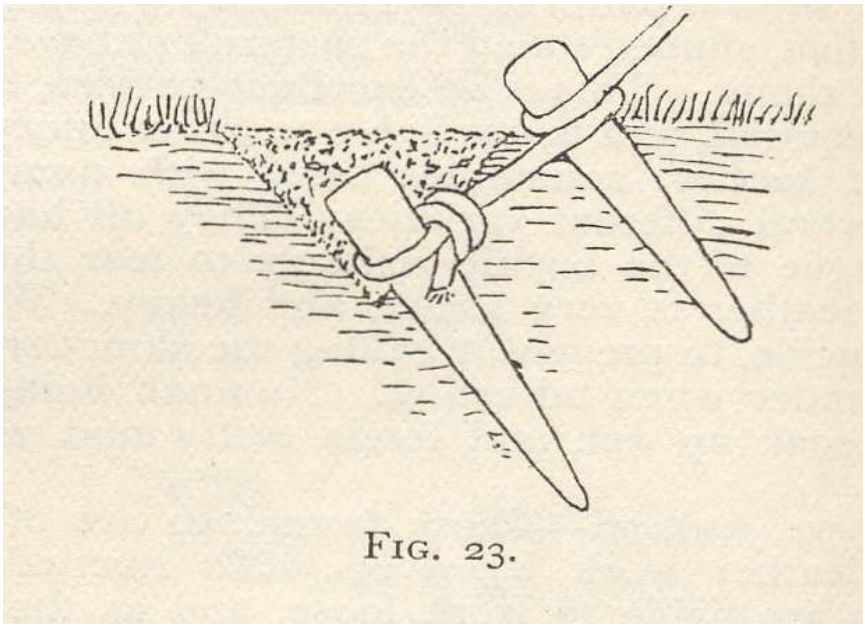

FIG. 23.

(1) Wooden pegs are usually shod and bound with iron, and provided with a rope or leathern loop, which facilitates the withdrawal of the peg, from the ground. When not iron shod, wooden pegs must be periodically resharpened, as the points become frayed and blunt from driving.
(2) Iron pegs last longer than wooden ones, are easier to drive into the ground, but do not give such a secure hold when driven, and should they be accidentally pulled up, are more likely to inflict serious injury on the animal. On this account some iron pegs are made with a road, heavy head beneath which the rope is tied; if the peg is drawn, the weight of the head turns to point uppermost, and it slips out of the rope easily. Other patterns have a ring, or cross piece, for the attachment of the rope; but for the reason just given, they are not such good designs.
(3) A spoon-shaped metal peg has also been tried. This has a broad curved end, with an opening in the centre; a hole is dug with the blade; a small bundle of twigs is placed through the opening; the peg is buried, and the earth well-stamped in. It is said to give a very firm hold.

Pegs should always be driven at an angle with the ground, with the point towards the animal, and to their full extent. If the soil is of such a light nature that the pegs draw easily, two pegs, one behind the other, will increase the holding power. The further peg should be quite buried in the ground, as shown in the figure. (Fig. 23.)

When no pegs are available, a bundle of twigs should be tied at the end of the head rope,

and buried crosswise at a depth of one to two feet, according to the nature of the soil, and the earth well stamped in. This will give a very firm hold.

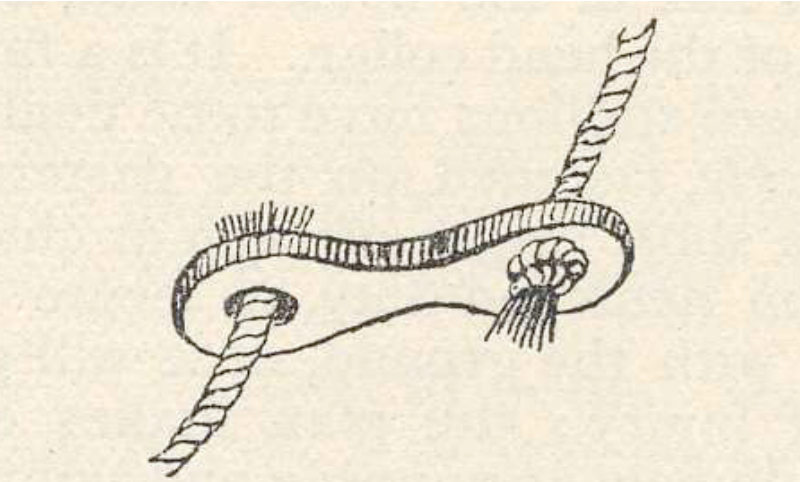

FIG. 24.

If it is necessary to picket horses by a head rope only, this may get much twisted by the animal walking round and round. A makeshift swivel to prevent this may be provided by a tent rope fid. (Fig. 24.)

The most frequent and serious cause of injury to horses picketed by head and heel ropes is from getting their hind feet over the head rope or picket line. Horses that feel any irritation about the head and neck, scratch themselves with their hind feet; if the head and heel ropes are not sufficiently tight, they can bend the head round, and reach up a hind foot to meet it for the purpose.

In doing this the foot not infrequently slips over the head rope or picket line, and finding himself pinioned, the animal struggles in the wildest way,gets cast, and before he can be released, may, and sometimes does, inflict a three or four months' injury upon himself. It is better that he should be securely tied, even if this compels him to undergo some slight discomfort rather than be given the opportunity to put himself out of action at a time when his services are most needed.

Other methods of securing.- A swinging picket is occasionally used by officers for their chargers, and is made by running a head rope with log attached through a swivel or moveable ring on the top of a picket post between three and four feet high. If this plan is adopted, the head rope must be no longer than previously described, and the log quite heavy enough to take back the slack when the horse changes his position.

Another method is to employ a smooth pole six or seven feet high, with a loose ring, of larger diameter than the pole, fixed by a short strap to the cheek piece of the head collar. The ring is placed over the pole, up and down which it slides as the animal's head is raised and lowered. It is a useful way of securing a biter, as it limits the movement of the head, while permitting all

necessary freedom.

A double head rope is often used with the object of gaining extra security or limiting the side movements of the head. A peg is driven two or three feet on each side of the horses' head, and a rope fixed to each from the cheek pieces of the head collar. It is a favourite method in India, and a suitable one where stallions have to be dealt with.

A single foot shackle, fastened on the pastern of one fore foot, and attached to a peg by a short length of rope or chain, is a convenient way for single horsemen, on detached duty, to secure their mounts. The peg must be driven flush with the ground, or it will prevent the horse lying down without risk of injury; the plan makes each man independent, and the necessary equipment is portable and light. It has been said that horses so tied are likely to strain their pasterns, but the assertion cannot be sustained by fact, and once they are accustomed to it animals so secured stand as quietly as with any other mode.

The movements of horses may be restricted in several ways, all of which are occasionally useful in camp, but in order to employ them with safety and success it is necessary that the animals should be used to such methods of restraint, or confusion, and possibly accident will result. Where stallions are to be dealt with, they are not always applicable.

(1) Coupling when saddled.- Place the horses head to tail; tie the reins of each round the back stay of the rear arch of the other's saddle.

(2) Heads in a circle.- This can be carried out

(i) by tying the head rope of each to the head collar of the next until a complete circle is formed;

(ii) by typing each head rope to a metal ring about 18 inches in diameter carried for the purpose. Fodder can be placed in the centre, and as no two horses pull in the same direction they remain stationary.

(3) Knee haltering.- The head rope is carried from the lower ring of the backstay of the head collar to the forearm just above the knee, where it is tied just tight enough to prevent it slipping down the leg. The bet knot for the purpose is a clove hitch, with a half hitch as a keeper, to stop loosely below the knee, or round the pastern. The length of rope required is enough to let the horse get his mouth on the ground and no more. Even with this small amount of liberty, some can travel at a surprising pace when being caught. Knee haltering is the best method at a surprising pace when being caught. Knee haltering is the best method of securing horses at graze, and they are easily accustomed to the restraint it entails, though they may resent it at first.

*(4) Hobble*s may be used to connect a fore and hind, or both fore legs, the amount of movement possible being regulated by the length of the rope connecting the hobbles.

Thin horses should be placed at the end of the line next the forage.

Vicious animals are better apart from others, as they disturb them when feeding and resting. Sacks of sand may be tied to the heel ropes of kickers in lieu of pegs, and this sometimes stops the habit.

Cribbers should be secured by a foot shackle only, so that they have nothing to bite upon.

Feeding.- The general principles of feeding should be adhered to as far as circumstances

allow, and the special notes on feeding on the march are also applicable to life in camp (see p. 138); it is only necessary here to add details not previously given.

Hay.- The use of hay nets should be universal; without them, hay, always wasteful, becomes doubly so in wet and windy weather. The mesh should be such a size that a small quantity only can be pulled out at once, and they should be secured to the picket line by each end. If nets are not to be had, hay should be fed in small quantity, and frequently renewed, each fresh supply being tucked under the picket line. This is very necessary in prolonged wet weather, and if the rain is not continuous, it is better to withhold hay altogether till the shower is over.

To avoid waste, trusses of hay should only be broken as they are actually required, and should be carried to the horses before this is done. The tilt of a waggon may be used for mixing feeds and for covering the forage when not in use.

Chaff should be used as much as possible when it can be get. The place where it is chopped must be well protected from wind, by sod banks, hurdles, or tarpaulin stretched round posts. If the hay supply is large the trusses can be arranged round the chaff machine for this purpose.

Nosebags require frequent cleaning; they should be removed as soon as the horse has done feeding, and turned inside out to dry. Patterns which have a wide bottom are to be preferred to narrow ones, as the feed gets caked in the ends of the latter. Special large bags are used where chaff or hay cake is fed, and a very useful substitute may be made from a sack.

Grazing should be afforded at every opportunity, and for this purpose knee-hobbling is the best plan to adopt. The horses should not be herded in a ring, but allowed to gradually advance over the grazing ground. The horse guard should take their own horses saddled, so that they can rapidly round up the mob when required.

Grooming. - Except for the removal of mud and dirt, horses in camp do not required so much brushing as when stabled, since, owing to exposure, the skin is not so active, changes in it are not so great, and scurf does not accumulate so fast, whilst the slight extra greasiness which will be present is a natural protection against cold. On the other hand, a good wisping stimulates the general circulation, increases the output of the oil glands, and produces a comfortable warmth in the skin which cannot but be appreciated by the animal and always improves the appearance.

Clothing.- When rugs are used they should be secured round both breast and quarters; the latter is especially necessary, or the sheets blow over the horses' heads and may stampede them, in addition to depriving them of the desired warmth. Surcingles shrink rapidly when wet, and must not be strapped tightly at night or when raining; a dewy night will shrink them as much as a shower. Neglect of this precaution will cause sores from the increased pressure of the pad on the back. When the weather is wet but warm, the horses are better without clothing; but if the wind is bitter and the rain cold, blankets may be left on. Rain does not hurt horses, the grease of the skin renders it waterproof, but if the wind is cold as well, it tells on their condition, unless they get extra food.

Protection from weather.- In cold, wet and windy weather, horses like to stand with their tails to it, and will try and screw themselves round if not so placed; but in mild or hot weather they should be head to the breeze.

Wind screens may be easily made of turf walls or tall, wattled hurdles, placed to windward of the lines, but roofed shelters of a temporary nature should not be erected for this purpose unless they can be so solidly constructed as to be quite safe in any storm, or grave loss may result.

Protection from the sun is desirable in very hot countries, and in this case any light structure may be employed as shelter during the day, while the horses can be constantly watched and quickly removed. At night they should be picketed in the open. The shade of trees can be utilized if flies are not too troublesome, and the numnah or blanket ay be placed over the loins.

Horses stand dry heat better than damp, and the amount of exertion they are capable of undergoing in hot countries is much affected by the quantity of moisture in the atmosphere. If it is great, there is profuse sweating, even when standing under cover, and over-exertion is liable to seating, even when standing under cover, and over-exertion is liable to bring on heat stroke. Great judgment should therefore be shown when working horses under such conditions, and every opportunity given them to assuage their thirst.

Eye fringes *are very useful, both as a protection from sun and flies. They may be made of leath*er or string, and buttoned or stitched on to the browband. Detachable fringes of string are the most convenient; they do not get hard and curly from exposure to sun, like the leather ones, and they can be removed for cleaning.

Stampedes.- horses are liable to panic, and may stampede for what appear to be very trivial causes. Sudden storms and noises of any nature, thunder, lightning, hail, rifle shots; the presence of loose horses, especially stallions; wild animals passing through the camp, swarms of bees or flies, and grass fires in the vicinity are all known causes, but on other occasions the reason has not been apparent. If a large body of horses suddenly dash in one direction, probably nothing will hold them; but a strict supervision over the picketing, and the presence of the men at the horses' heads, when the occasion can be foreseen, are the best means of averting the disaster. The loosing of horses on the way to and from the watering place is to be prohibited, and stray animals of every sort should be prevented from entering the camp.

The sanitation of the lines demands constant attention. The natural lie of the ground should be taken advantage of to get rid o storm drainage, and small clean cut drains made in suitable directions to assist in its rapid removal. All rubbish should be cleared from the lines, and the standings kept quite level, in order that the horses may take a proper amount of rest, which they will not do if the ground is very uneven. For this purpose the free use of sand will be found of advantage; it fills in the hollows which are inevitable when the camp is occupied for any time, soaks up urine and keeps the lines dry. Dung and other refuse is to be removed regularly, and to a considerable distance from the lines, as it attracts flies, and is one of their favorite breeding places. The refuse pits or heaps should be down stream from the camp, to avoid any chance of contaminating the water supply, and for similar reasons, the disposal of dead animals is to be carried out in the same direction.