MODULE TWO - FIELD CRAFT

MATERIALS

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Patrol Orders - SMEAC

In the ACC, you will be required to give orders to members of your platoon in many situations, (eg: before the start of a navex). You need to be able to give your orders in a clear, concise and confident manner using a blueprint that ensures that nothing gets left out. Your orders are a short and accurate summary of the task to be completed.

To help you, the method used to give orders groups in the Australian Army Cadet Corps is called the SMEAC method. Each letter of SMEAC stands for a different heading in the orders group. The headings are as follows:

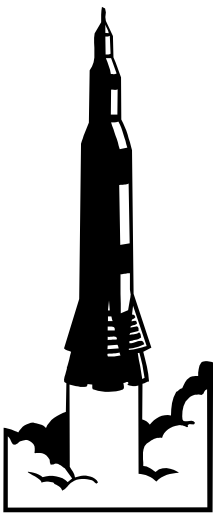
SITUATION	short statement of the conditions under which the patrol, task etc will be completed, (eg: terrain).
Mission	a one or two sentence statement of what you want to achieve. The mission statement is repeated so that everyone is clear about what has to be done.
Execution	sets out how the patrol, task etc will be conducted, individual tasks, co-ordination details.
Administration & Logistics	rations, dress/equipment, medical details, equipment needed.
Command & Signals	radio frequencies, net diagram, testing of radios, alternative communications, patrol seniority list, synchronize watches.

Orders are given before any activity and always follow a set sequence so that nothing import is left out and so that members understand all the details quickly and easily. In the ACC we use the SMEAC sequence.

TOPO/GROUND BRIEF

Use a map or mud map. Orientate the map/mud map to North. Brief your section on topography (hills, rivers, creeks etc), key landmarks (towers, buildings, roads), vegetation, scale, contours, hazards, distances. Use a pointer.

Say: “Does everyone understand the mud map (or map)?
Say: “These are my orders. I will take questions at the end”.



SITUATION

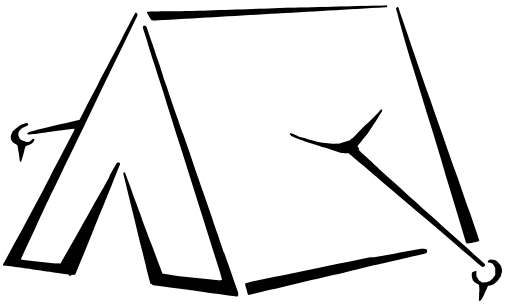
(What is going on in the area you are operating in?)
Other people or groups in the area
ARA/ARES/OOC/IOC/Cadets attached/detached
Weather
Sun/moon rise and/or set

Patrol Orders - SMEAC

MISSION
(State mission twice)
A clear and concise statement of what is to be achieved.

EXECUTION
(Nuts and bolts of how the job is going to be done)
Concept of Operations
Commander's intention
Scheme of manoeuvre
Phases
Groupings & tasks
Co-ordinating instructions for each phase
Contingency plan
Action on - Lost, Equipment/ vehicle breakdown, Lost comms, Injury.
Boundaries
Rehearsals/Debriefings

ADMINISTRATION AND LOGISTICS
Rations
Cooking arrangements
Water
Dress
Equipment
- including first aid kits and radios
Transport
Inspections



COMMAND AND SIGNALS
Location of Command HQ
Seniority/chain of command
Radio communications
- Operating time of Net
- Net Call Sign
- Code words
- Call signs
- Primary/Alternate Frequency
- Other signals (whistle/light/hand)

Say: "Those are my orders. I will take questions in 2 minutes.

Take questions/Ask questions
Synchronise watches

Demonstrate selection & preparation of a Sleeping Area

A. First Things First

When you become a CUO one of your jobs will be (or at least should be!) to select and site campsites for your platoon. The first thing you have to do is to select your campsite. Keep three points in mind:

- ❖ Don't rush the selection process – a better site may suggest itself if you take time
- ❖ Selecting a site is important – you may have to occupy the site for several days
- ❖ Consider health and welfare aspects carefully.

B. Factors to Consider

1.	Terrain	security considerations Platoon assembly areas Latrines Safe cooking
2.	Vegetation	Environmental (minimal destruction) Irritants (thorny vegetation) Ticks (avoid blackboys/zania palms)
3.	Slope	Gentle slope/higher elevation better Determines location of facilities
4.	Prevailing Winds	Shelter/weather
5.	Shade	Important in summer – eg: Bindoon in January!
6.	Drainage	Soil (loam preferred to gravel or sand) Minimum 3 metres above water table
7.	Size of site	Communication/control/security Siting facilities (eg: latrines not too close etc.)
8.	Access	Can you get into the area easily Not too close to busy transport routes Avoid dusty/boggy tracks
9.	Control	Site must be large enough to allow expansion Enough room for Platoon HQ
10.	Local Resources	Medical/Medivac facilities Appropriate training areas

Demonstrate selection and preparation of a Sleeping Area

C. Campsite layout

Having selected a site it is now your job to "lay out" the various facilities and your people within the area you have selected. A commonly used method of laying out your platoon area is called the "clockray method". Imagine that the platoon area is a giant clock. Site your platoon HQ at the centre of the clock and then divide up the clock face to site each of your sections. Each section occupies a third of the clock face which is broken down into 3 sectors as follows: 12 o'clock to 4 o'clock, 4o'clock to 8 o'clock and 8 o'clock to 12 o'clock. You should consider:

1.	HQ Area	located at centre of the clock face for ease of communication
2.	Section Living Area	location of section commander shelters sited according to wind section members in pairs clockray method
3.	Latrines	down wind for obvious reasons! down slope, away from living/stores/cooking areas down stream, away from water course
4.	Cooking Area	decide if central or sections areas to be used within camp site perimeter up wind/slope from latrines/ablution area
5.	Ablutions	outside living area down wind/slope, up wind of latrines well drained/avoid old foul ground
6.	Water store	within living area on opposite side to latrines if bulk (water bladder) close to transport/access
7.	Fire wood	outside but close to perimeter upwind of camp fire
8.	Garbage	outside perimeter down wind/clear of access paths bash, burn, carry or bash, burn and bury
9.	Platoon	adjacent/close to campsite assembly area upwind of fire hazards, shade would be an advantage
10.	Store	within camp site clear of fire/flood hazard within control of platoon HQ/good access
11.	Transport	access/safety/noise/dust

Demonstrate Silent Field Signals

Come to me
Hand placed on top of head

Increase Speed
Clenched fist moved up and down

Slow down
Arm extended moved slowly up and down

Problem
Thumb pointed down

All OK
Thumb upwards from a clenched fist

Harbour
Fist moved in circle, forefinger extended, at shoulder height

Spread out
Hand between waist and shoulder motion outwards

Single file
Body turned half to rear, arm level with shoulder, motion imaginary line

Staggered file
Half incline body, extend forearm level with shoulder, motion 2 imaginary lines

Stop and listen
Cupped hand placed to ear as if listening

O Group
Fingers & thumb moved together to indicate person talking

Extended line
Arms parallel to ground to from a straight line through body

Reconnaissance
Hand held to eye as if looking through a telescope

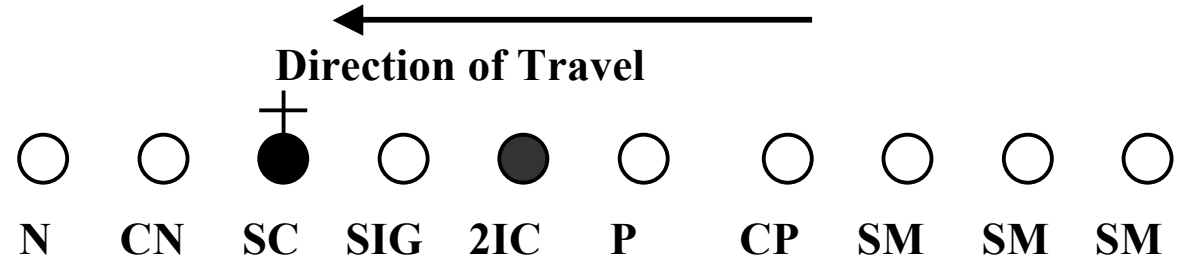
Sec Comd
Two fingers on upper arm to show CPL stripes

Plt Comd
Two fingers on shoulder to show officers stars

Obstacle
Arms crossed in front of body

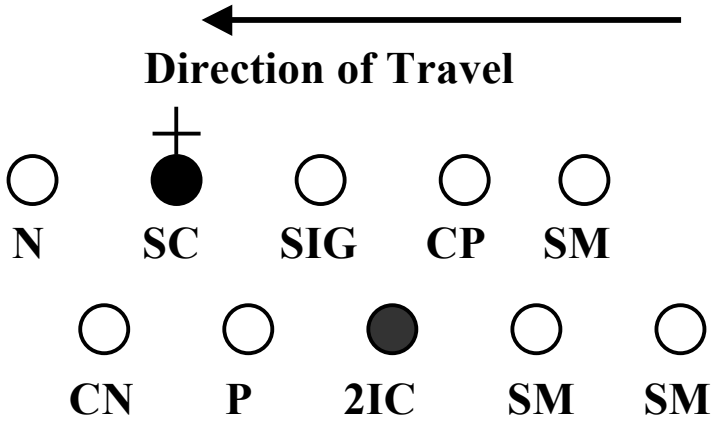
Section Formations

SINGLE FILE



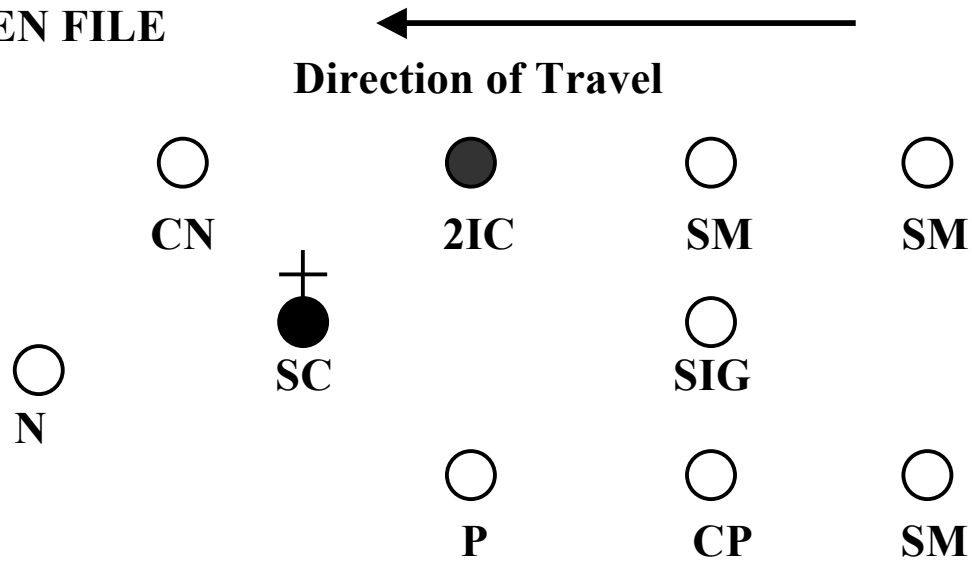
Used when following narrow features, on tracks, in thick bush and at night. Easy to control.

STAGGERED FILE



Mainly used on tracks or in fairly open country. Each cadet follows directly behind the path of the cadet in front of them.

OPEN FILE



Compact and easy to control. Can also be used at night or in thick bush.

N = Navigator
P = Pace counter
SC = Section Commander
CN = Check Navigator
CP = Check Pace Counter
2IC = Second-in-Command

SM = Section Member

Demonstrate Knots and Lashings

A good knot, bend, hitch or lashing must hold without slipping. It must be easy to tie and more importantly, to untie! The choice of knot or lashing depends on the job you want it to do. Always remember though, that even a good knot can reduce the strength of cordage by as much as 50%.

Set out below are some of the more common (and therefore useful) knots and lashings. The parts of a rope are shown in **[Figure 1].**

1. Thumb knot: [Figure 2] used as a temporary finish to the end of a piece of rope to stop it unravelling or slipping through a block or ring. Note that it can be hard to untie.

2. Figure of eight knot: [Figure 3] uses as for thumb knot, but easier to untie.

3. Reef knot: [Figures 4 & 5] used to tie 2 dry ropes of equal diameter. When tied, note how the standing and running ends of each rope lie together over the loop in the other rope. Be careful that you don't tie a granny knot – it will slip under strain.

4. Single sheet bend: [Figure 6] used to join two ropes of different diameters, or for securing a rope to an eyelet.

5. Carrick bend: [Figure 7] used to join larger diameter rope. This knot will not draw tight under a load if the running ends of each rope are tied off (seized) to their respective standing ends.

6. Round turn, two half hitches: [Figure 8] used to secure a rope to a spar, hook or ring. Also used in abseiling to secure the dispatch line. Note that the half hitches formed with the running end of the rope must form a clove hitch. If they don't, the second hitch has been tied incorrectly. The running end of the roe should always be tied off (seized) to the standing part.

7. Clove hitch: [Figure 9] used to fix cordage to a spar before starting a lashing.

8. Bowline : [Figure 10] forms a single loop in cordage that will not tighten or slip and which is easy to undo.

9. Sheep shank: [Figure 11] used to shorten a rope, or to take the strain off the weak part of the rope.

10. Lashings: [Figure 12] used to join to objects (usually poles or spars). The two main types of lashings are the diagonal lashing and the square lashing. If the lashing slips, add more turns. As a rule of thumb, you will need 2 metres of rope for every 25mm of pole diameter. For example, if the pole diameter is 100 mm, you will need at least 8 metres of rope.

Demonstrate Knots and Lashings
Figures 1 - 5

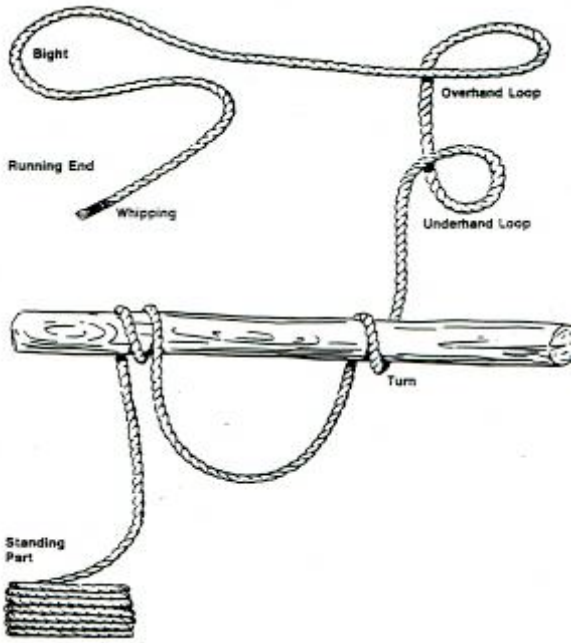


Figure 1 – Parts of a Rope

Figure 2 – Thumb knot

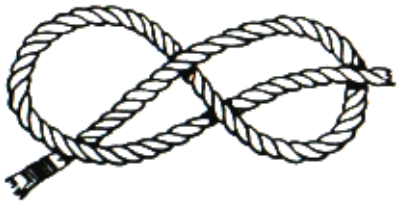


Figure 3 – Figure Eight knot

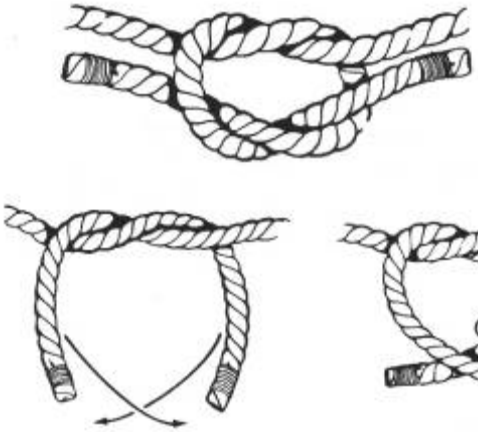


Figure 4 – Tying a Reef Knot

Figure 5 – Reef knot

Demonstrate Knots and Lashings
Figures 6 - 9

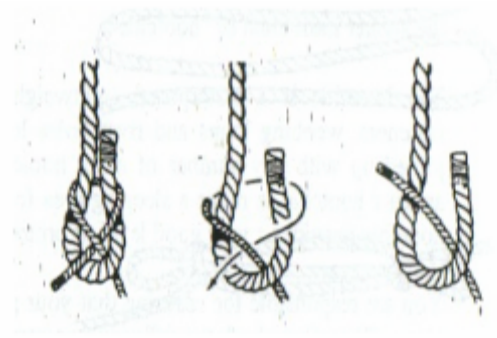


Figure 6 - Single Sheet Bend

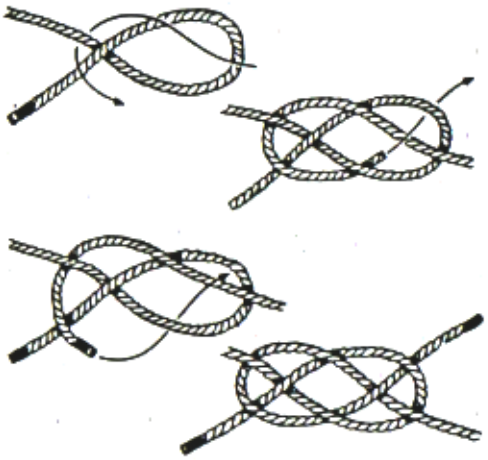


Figure 7 – Carrick Bend

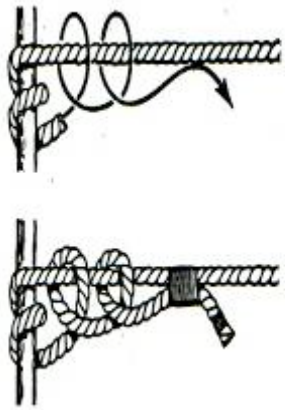


Figure 8 – Round turn, two half hitches

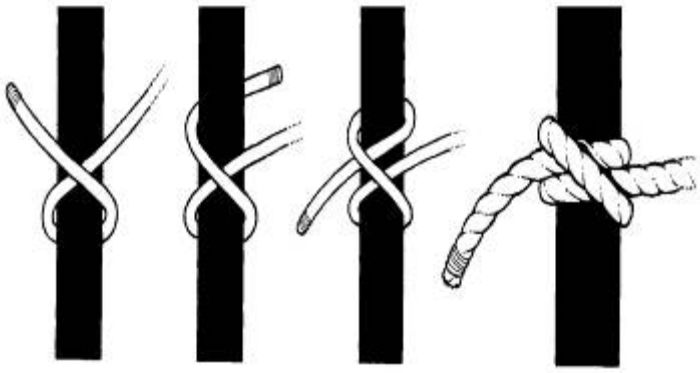


Figure 9 - Clove Hitches

Demonstrate Knots and Lashings
Figures 10 - 12

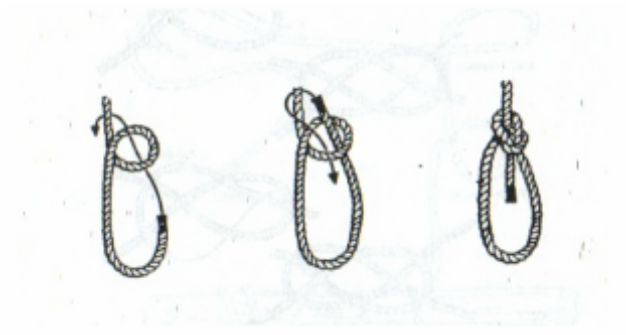


Figure 10 - Bowline

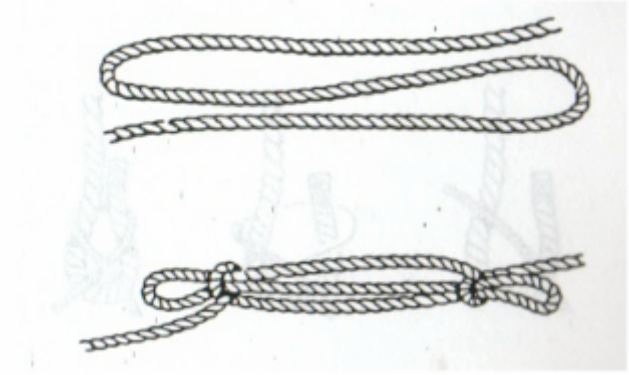


Figure 11 - Sheepshank

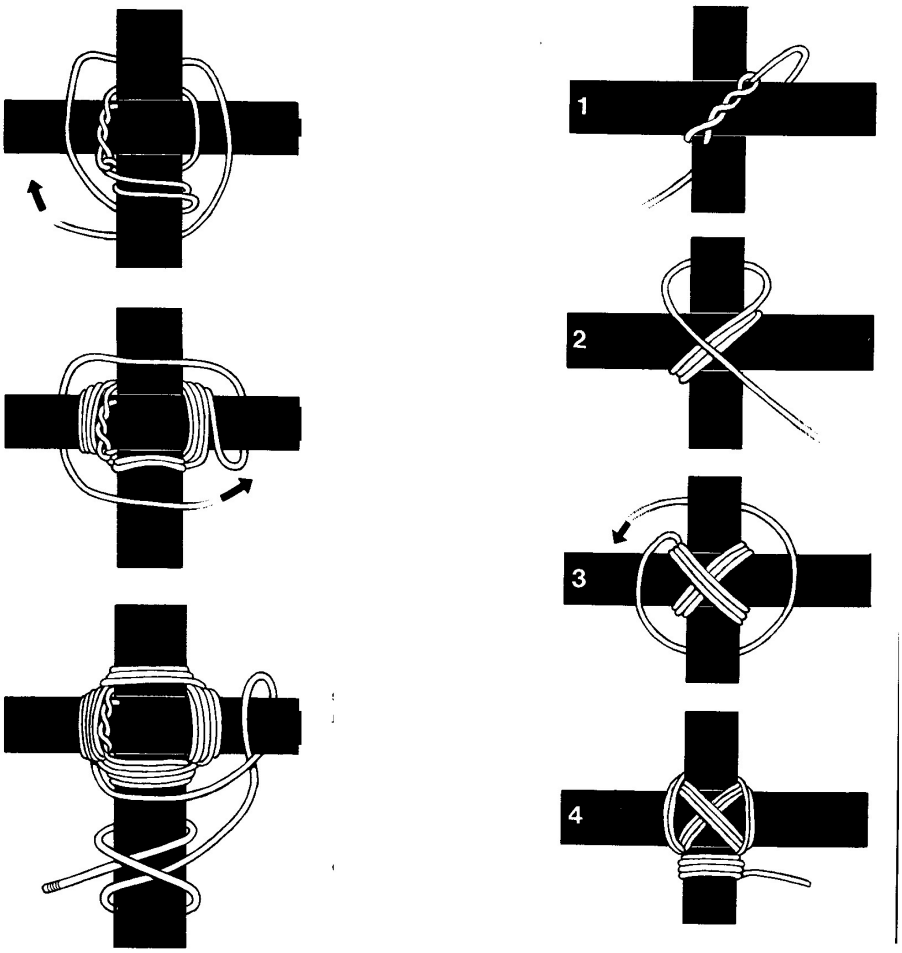


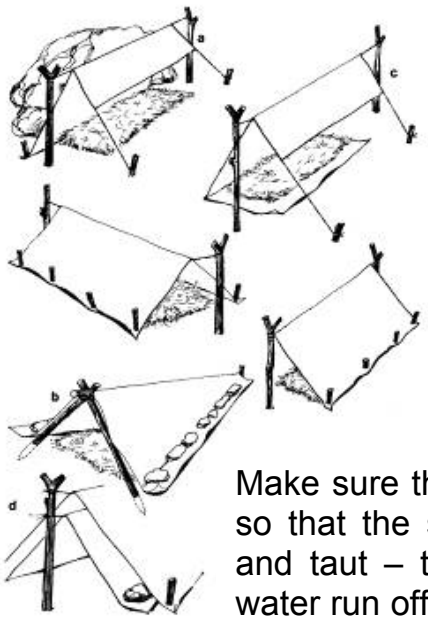
Figure 12 – Square & Diagonal Lashings

Demonstrate Erection of Shelters - (IO 2I42)

The standard field shelter that you and your platoon will use in the ACC is of course the shelter individual or "hootchie". The hootchie is a waterproof, lightweight, oblong shaped shelter. It has stud fasteners, webbing loops and rivet holes located around it's outer edge and can be joined up with any number of other hootchies. Most commonly it is joined with another hootchie to make a sleeping area for two people. When erected properly the hootchie provides a very good level of protection from the elements. You are responsible for ensuring that your people have a comfortable and dry night's sleep. Therefore check the following points:

- Wind direction and prevailing winds (check which way around joined hootchies are set up).
- Hootchies have been joined correctly. Many recruits will do it wrong and get wet!
- Avoid ants nests, rocky ground, zamia palms and blackboys (ticks)
- Dig hip and shoulder holes to make sleeping on the ground more comfortable.
- Look up for dead fall. Dead overhead twigs or branches which may fall in high winds. Even a small piece of wood falling from a height can do real damage.
- Check that drainage has been considered.
- Are drainage ditches (shallow trenches) needed around the hootchie?
- Ensure sides of the hootchie are taut to ensure good water run-off.
- Use quick release knots (ie: slip knots).
- **DO NOT USE OCCY STRAPS!*** Occy straps are banned in the ACC and must not be used. Occy straps are very dangerous and have been know to cause eye injuries and even death.

*Apart from being very dangerous, occy straps are bulky and hard to carry. Also, they only have one use whereas a length of comms cord or string has a hundred and one uses (eg: spare bootlace, webbing repairer, etc.).



Make sure that your hootchie is set up so that the sides are set at an angle and taut – this will help ensure good water run off. A trench dug along each edge of the hootchie will help stop water pooling near the hootchie.

Explain the Purpose and Requirements of Fieldcraft

The Purpose of Field craft
102. Field craft is the use of natural and artificial cover to provide a measure of protection for the cadet. Field craft and target detection training enables the cadet, by day and night to:

- use his senses to find the target without being seen himself;
- always make best use of the ground;
- move silently, with or without stores and equipment;
- judge distances accurately;
- recognise and indicate targets;
- be alert, confident and cunning whatever the situation may arise.

The Requirements of Field craft
103. Training in field craft will develop the qualities of self-reliance and mental toughness required in a cadet and will impart the confidence to exploit fully the terrain to survive and win. It will also educate the cadet to use nature to his advantage.

104. There will always remain the need for individual cadets to be trained in the skills of field craft.

Terminology
106. To avoid misunderstanding it is important that the meaning of the terms commonly used in field craft is understood. Common terms are as follows:

a. ***Concealment:*** concealment is protection from observation and surveillance. It may also be achieved naturally or artificially. Natural concealment may be provided by the surrounding vegetation such as trees, bushes and grass. Artificial concealment consists of camouflage nets, camouflage cream and other materials. Whether natural or artificial, concealment hides or disguises a cadet, a position, a vehicle or a route. Concealment is aided by avoiding light, noise, movement and strange smells. Concealment from ground observation may not prevent observation from the air.

b. ***Detection:*** detection is discovering the existence of an object and its location. It may be the result of a deliberate search or come from the appearance of dust, flash, noise or movement.

c. ***Observation:*** observation involves a careful study of the terrain and vegetation. Good observation will allow a composite picture to be built up. It may occur over a long time or may require the employment of a number of techniques before the full situation is revealed.

Explain why things are seen

202. Valuable information will continue to be gained by the individual cadets who uses the skills of field craft in conjunction with his sense of sight, hearing, smell and touch. Every cadet must therefore be trained to use his natural senses.

Why Things are Seen
203. The use of sight is the primary means by which man gathers and assimilates information. An understanding of why things are seen will help the cadet to conceal himself and his equipment. It will also assist the cadet in searching for and detecting others. It is therefore important that the cadet be taught how best to use his sight to his advantage.

204. The following factors will make an object easier to see:

a. ***Shape:*** military equipment and the human body are familiar outlines to all cadets. They can be recognised instantly particularly when they are in contrast with their surroundings. Distinctive Shapes (figure 1) which are easily detected unless concealed are: head dress, basic webbing equipment, and boots.

Explain why things are seen [continued]

b. ***Shadow:*** there are different types of shadows. Shadows are seen as follows:

i. Cast Shadow: in sunlight/moonlight an object casts a shadow which may give away its presence. An object which is concealed in other shadows (figure 2) is harder to detect and does not cast a shadow of it's own. As the sun/moon moves so do the shadows. Objects which were concealed by shadows may be revealed as the shadow moves. They may also be revealed by their own distinctive shadow which reappears.

ii. Contained Shadow: shadow that is contained within a space, for example, in a room, a cave mouth or under an individual shelter. It is normally darker than other shadows, therefore, attracts attention.

c. ***Silhouette:*** any object silhouetted (figure 1) against a contrasting background is conspicuous. Smooth, flat backgrounds such as water, a field, or worst of all, the sky should be avoided. An object may also be silhouetted if it is against the background of another colour. An uneven background such as a hedge, bush, trees or broken ground will provide the best concealment.

d. ***Surface:*** if the colour and texture of the surface of an object contrasts with it's surroundings it will be conspicuous. Shiny helmets and white skin contrast violently with most backgrounds (figure 1) and need to be disguised to assist concealment.

e. ***Spacing:*** natural objects are rarely, if ever, regularly spaced. Regular spacing draws attention to the fact that something other than a natural object is present. It is conspicuous and should be avoided.

f. ***Movement:*** sudden movement attracts the eye. Slow and careful movement is much less likely to disclose the location of a well concealed position than quick and short movement.

Demonstrate camouflage and concealment of self and equipment

General

303. Personal camouflage techniques are designed to deceive. A cadet must learn how to guard against observation.

304. Effective camouflage of the individual depends mainly on the choice of background and its correct use. The term "background" is used to describe the area surrounding an object when seen from the ground or the air. It is the controlling element in personal camouflage. The clothes that are worn must blend in with the predominant colour of the background. Skin and light coloured equipment are toned down for the same purpose. The individual cadet must practice blending with the background by hiding in shadows and avoiding contrast between their silhouette and the background. To enable them to do this they must be practised in the skills of camouflaging themselves and their equipment.

Skin

305. Exposed skin reflects light and contrasts with the surrounding background. Face, neck, hands and lower arms, (which may be exposed below the shirt), should be toned down by painting them in a disruptive pattern, by toning them down in an even colour or by wearing additional accessories, such as scarves and gloves. When using disruptive painting the patterns should be cut across nose lines, cheek bones, eye sockets and chin lines (figure 3). A darker treatment of the skin will be necessary for night work. Camouflage cream, burnt charcoal and dirt can all help to tone down skin colours.

306. Individual camouflage requires planning, thought and imaginative use of materials at hand. This applies to camouflage of clothing also. In the absence of issued camouflage uniforms the cadet can make his own camouflage suit, adapting its colour and pattern to the terrain in which it is to be worn. Remember that the use of camouflage clothing and equipment is only the basis for good concealment.

Demonstrate camouflage and concealment of self and equipment [cont']

Boots
307. Shiny boots look good on the parade ground but are out of place on a soldier in the field. Polish or dubbing should be applied to preserve the waterproofing of boots but they should not be shined.

Bush hat
308. The floppy cloth bush hat has a distinctive shaped crown which can be broken up by the use of garnishing or a small amount of vegetation.

Webbing Equipment
311. The solid green colour of the webbing equipment can be modified by irregular painting using colours such as brown, black, ochre, grey and light green. The shape of webbing equipment such as packs, pouches and water bottles can be broken up by using hessian garnishing & foliage (figure 4).

Shiny Objects
313. All shiny objects must be concealed. This includes such items as watches, belt buckles and messing items.

Explain methods of observation and detection by day (IO 2I45)

Scanning and Searching
702. To find an objects hidden by those skilled in camouflage and concealment, you must learn how to observe by scanning and searching. You must also know how to apply the factors which determine why objects are seen, as this knowledge will assist in finding the object.

703. Scanning is a general and systematic examination of an area to detect any unusual or significant object or movement. Searching, on the other hand, involves a detailed look at an area where the object is suspected to be. Both require complete concentration combined with a knowledge of why things are seen and the principles of camouflage and concealment.

Scanning
704. To scan an area the following actions must be undertaken (figure 5):
- Divide the area into foreground, middle distance and distance;
- Scan each area horizontally starting with the foreground. To obtain maximum efficiency, move the eyes in short overlapping movements. Moving the head will minimise eye fatigue. The speed at which scanning is carried out will depend on the type of country and the amount of cover it affords to possible targets;
- When horizontal scanning is completed, scan along the line of any features which are angled away from the observation position.

Searching
705. Searching may take place at any stage during scanning. That is, if your attention is dominated by a piece of ground, you should search that area thoroughly before continuing with scanning. Furthermore, any significant movement or object, suspected camouflage, etc spotted during scanning would require an immediate search of that area. Binoculars are a useful aid when searching ground in detail.

706. In turn search for each of the factors that make an object visible. The weather may assist when searching an area. For example, frost will reveal tracks made during the night or a hot sun will alter the tone and colour of cut foliage used for camouflage by ageing the leaves more quickly.

Explain methods of Judging Distance

General
1001. When an object is detected it is important to be able to estimate the range correctly.

1002. There are two main methods of judging distance without aids. They are:
- by the unit of measure, and
- the appearance method.

The Unit of Measure Method
1003. To use the unit of measure method, visualise a known distance on the ground and calculate how many of the units would fit between the observer and the object. An easy figure to use is a unit of 100m.

1004. This method gives acceptable results when:
- the observer can see all the intervening ground, and
- the distance to be estimated is not greater than 400m.

The Appearance Method
1005. The appearance method of judging distance is based on what an object looks like compared to it's surroundings. To become proficient in judging distance by this method a great deal of practice is required, under varying conditions of ground and observation.

1006. The amount of visible detail of a cadet at various ranges gives a good indication of the distance they are away. An observer with good vision should be able to distinguish the following detail:
- At 100m; clear in all detail.
- At 200m; clear in all detail, colour of skin and equipment identifiable.
- At 300m; clear body outline, face colour good, remaining detail blurred.
- At 400m; body outline clear, remaining detail blurred.
- At 500m; body begins to taper, head becomes indistinct.
- At 600m; body now wedge shaped, no head apparent.

1007. Conditions effect the appearance of objects as follows:

a. Objects seems closer than they are, when:
- the light is bright, or the sun is shining from behind the observer;
- they are larger in comparison with the surroundings;
- there is dead ground between the object and the observer; or
- the are higher up than the observer.

b. Objects seem farther than they are, when:
- the light is bad or the sun is shining in the observers eyes;
- they are small in comparison with the surroundings;
- looking across a valley or down a road or tack, or
- the observer is lying down.

Aids to Judging Distance
1008. Accurate judging of distance is a skill that you must develop in order to be able to estimate a distance to an object effectively. It is important that you knows all the recognised methods of judging distance and any aids which can be used to help you.

Bracketing
1009. Bracketing is the method most likely to prove the best under all conditions. You should decide on the furthermost possible distance and the nearest possible distance to the object. The average of these is taken as the range. For example, if the furthest estimated distance is 1000m and the nearest distance is 600m then the range is therefore 800m.

Explain methods of Judging Distance [continued]

Halving
1010. The halving method is useful for judging distance up to 1000m. The observer estimates the distance to a point half way and in a direct line to the object he then doubles it. The main disadvantage of this method is that any error made in judging the distance to the halfway point is doubled for the full distance.

Key Ranges
1011. When the range to any point within the arc of observation is known, the distance to another object can be estimated from it. This method is successful provided that the object is reasonably near to the key range object.

Unit Average
1012. Provided that there is sufficient time available, the observer should get several cadets to estimate the distance to the object. He should then take the average of their answers. If all the cadets are practiced in the skills of judging distance this method can be particularly accurate.

Binoculars
1013. Binoculars can be used to estimate distance, particularly at long range. Using the subtension rule that one mil subtends 1m at 1000m the graticules of the lens of the binoculars can be used provided the height of an object is known. If an object is known to be 4m high and it is exactly covered by the smallest graticule it will be about 1000m away. If the object is 8m high then it will be 2000m away if it is exactly covered by the small graticule.

Range Cards
1016. Range cards enable estimated or measured ranges of specific features to be used as indicators to the range of an object. Normally they are used in a static position, however, patrols should prepare them when time allows.

Conclusion
1017. Judging distance is a skill that must be learnt through practice and is one that can only be maintained through constant reinforcement.

Explain Target Indication

1103. The methods of target indication are as follows:
- Direct Method
- Reference Points
- Clock Ray
- Hand Angles

Direct Method
1104. The direct method is used to indicate an obvious target. Only the range, where to look and a description of the target are given. Terms used to describe where to look are as follows:
- "Axis" for target on or very near the centre line of the sector.
- "Left" or "Right" for targets 1600 mils from the axis of the sector.
- "Slightly left/right" for targets between the axis and "left" or "right".

1105. An example of the direct method given from an observer where the sector covers 3200 mils is detailed in figure 6.

Reference Points
1106. To indicate less obvious targets, a reference point may be used together with the direct method. To use this method:
- give the range to the target,
- nominate the reference point and use it as the axis,
- give a direction as in the direct method, and
- briefly but accurately describe the target.

1107. An example of the reference point method is given in figure 7.

Explain Target Indication [continued]

Clock Ray

1108. To indicate more difficult targets the reference is combined with a clock ray. During indication it is imagined that there is a clock face standing up on the landscape with its centre on the reference point. To indicate a target:

- give the range to the target;
- nominate the reference point;
- imagine the reference point as the centre of a vertical clock face. Imagine a straight line from the reference point to the target and state the direction either "right" or "left" and "time" (to the nearest hour); and
- describe the target briefly but accurately.

1109. An example of the clock ray method is shown at figure 8.

Hand Angles

1111. Difficult targets at longer ranges may be indicated by using a reference point together with a hand angle. As a guide, with the arm fully outstretched from the shoulder and one eye closed (fig 9):

- the thickness of one finger subtends approximately 20 mils;
- the thickness of two fingers subtends approximately 40 mils;
- the first two knuckles of the closed fist subtends approximately 50 mils; and
- the closed fist (without the thumb) subtends approximately 150 mils.

Viewing Instruments

1112. The graticule (scale) on the lens of the binoculars are spaced at intervals of approximately 10 mils across a field of view of about 80 mils and these may be used when appropriate to assist in indication. The detail of the graticules in the binocular is shown in figure 10.

Failure to Recognize a Target

1113. If an observer fails to recognize a target being indicated he should tell the person indicating the target to repeat his instructions. He does this by calling "NOT SEEN" or "AGAIN NOT HEARD". The originator must the:

- if the observer failed to understand the indication he must indicate the target again by a different method, or
- if the observer simply failed to hear the indication he must indicate the target again by the same method.

Recognition of a Target

1114. An observer should always tell the person indicating the target that it has been recognized by calling "SEEN". If time permits, the observer should check back the target using any of the target indication methods.

Explain methods of observing by night

The Human Eye

503. Light enters the eye through the pupil. The amount of light is controlled by the iris. The light passes through the lens and is focussed on a sensitive area called the retina. From here the optic nerve transmits electrical impulses to the brain. In fact it is the brain which sees rather than the eyes. The retina is composed of two sets of cells, named for their shape. They are rod cells and cone cells. The cone cells are used in daylight, they see colour, sharp contrast and shape. The cone cells are found predominantly behind the pupil in an area called the cone region. There are approximately seven million cone cells in the human eye.

504. The rod cells are the night eyes. These cells are located around the cone region on the outer portion of the retina. There are few rod cells in the cone region but they are of an insufficient number to allow night vision for any period of time. There are 130 million rod cells in the eye. They only see black and white and shades of grey. In order to see effectively at night the rod area of the eye must be used.

Explain methods of observing by night [continued]

Dark Adaptation

505. Dark adaptation is allowing the eyes to become capable of seeing under low illumination conditions. Most people have wondered what happened to their ability to see when they have gone into a matinee movie on a bright sunny day. They probably not only had difficulty trying to find a seat but were completely unsure of themselves. These few minutes of blindness were caused by the following:-

- all of the cone cells are blind in the darkness;
- a chemical compound called visual purple is being manufactured in the eye to sensitise the rod cells enabling them to see; and
- the pupil of the eye must expand to allow light to enter the eye.

506. The amount of time it takes to become dark adapted depends upon the individual's physical make up. Some people become partially night adapted in six to ten minutes; others take much longer. However, to become 98 percent dark adapted, it takes the average individual approximately 30 minutes.

"Off Centre" Vision

508. If at night an observer looks directly at a small or dim object it may not be seen at all as only the cone region of the eye is being used. Off centre vision is used to put the rod region of the eyes into play instead of using the blind cone cell area directly behind the lens.

509. To achieve off centre vision the eye should be "aimed away" from the object about a fist's width to arms length (100 to 130 mils). Only by experiment can the cadet find out which direction is most suitable for his "aim off" ie. above, below or to one side of the object. It is important that the cadet resists the temptation of a direct look "just to make sure".

Scanning

510. Scanning is the short, abrupt movement of the eye over or around an area of observation or an object that is being kept in view. The reason that an observer must apply scanning is that the visual purple which sensitises the rod cells will bleach out after being exposed from 4 to 10 seconds. When the one group of rod cells are no longer sensitive to night light objects, another group of rod cells must be brought into use by shifting the visual axis. Therefore, every four to ten seconds an observer must shift his visual axis. Another reason for scanning is that the rod cells can see something that is moving but are not capable of seeing while they themselves are in motion. Therefore an observer must move his eyes quickly so that a new group of rod cells is stimulated to allow detection of movement. Scanning is used in conjunction with off centre vision to gain the maximum use of the eyes at night.

511. It is important to note that this technique differs from daytime scanning. In daylight the observer searches by moving his eyes from left to right in overlapping parallel bands from near to far. If he uses this method at night he would tend to be using the same set of rod cells constantly and would have his eyes in movement most of the time. Therefore he would achieve nothing.

Staring

512. It is important to realise that when staring at a stationary light or prominent object in an otherwise black scene the object may start moving. This happens because the eye has no bearings on which to check the exact position. This can be prevented by "placing" an object against something else such as a finger at arms length.

Confidence

513. To gain confidence in the ability to see under low light levels you must use your eyes properly. You must believe what your eyes tell you. Because the rod cells don't work in the same way as the cone cells, objects at night tend to be fuzzy and hazy around their edges and not as clear cut. Through practice you will learn to recognize objects at night and know how they differ from their daytime appearance. Night familiarity only comes with constant practice. Once you are familiar with the techniques of seeing at night, confidence for night operations will quickly follow.

Explain the requirements of health and hygiene in the field

General

1. Personal hygiene can be defined as "Those individual measures, primarily within the responsibility of the individual, which promote health and limit the spread of infectious diseases, chiefly those transmitted by direct contact".

2. Personal hygiene measures include:

- wash your hands in soap and water immediately after going to the toilet and always before handling or eating food.
- keep your hands and unclean articles, or articles that have been used for toilet purposes by others, away from your mouth, nose, eyes, ears, genitals & wounds.
- avoid using of unclean eating utensils, drinking cups, towels, handkerchiefs, combs and hairbrushes.
- avoid exposure to other persons to spray from the nose and mouth, as in coughing, sneezing, wheezing, laughing or talking.
- wash hands thoroughly after handling a patient or his belongings, and
- keep your body clean by frequent soap and water baths or showers.

The Skin

3. The skin is the largest organ of the body and is necessary to life. Its primary function is to protect the tissue beneath and in spite of its thinness furnishes a surprising amount of protection against:

- blows and friction;
- the chemical action of certain chemicals;
- bacteria, and
- other hazards which may be harmful to life.

4. The skin also:

- regulates body temperature, heating & cooling the skin by altering blood flows;
- possesses sensory functions - warning of touch, pressure, heat, cold and pain;
- is a secretory and excretory organ (eg: sweat, oil);
- is fairly waterproof - few substances can be absorbed through the skin; and
- stores fat and can manufacture Vitamin D when exposed to sunlight.

5. Where possible, therefore, all parts of the body should be washed daily, paying particular attention to the parts where sweat collects (eg. armpits, waist, crotch, feet). The hair should be kept short.

Soap

6. To help maintain the skin it is essential to remove accumulated fatty deposits, dirt and cellular debris. This is done by using soap and water. The soap must:

- wet both the dirt and the surface to lower surface tension;
- reduce the force of attraction which holds the dirt on the surface to allow the dirt to be displaced; and
- keep the dirt particles dispersed so they can be washed away.

Showers/Baths

7. In warm and especially humid climates it is natural to perspire freely and parts of the body subject to this need special attention. Daily washing and careful drying are essential to protect against Tinea and similar fungal infections, as well as the usual bacterial and parasitic problems. Whether a bath or shower is taken is irrelevant but what should be remembered is that a warm or hot bath or shower relaxes and soothes where as a cold one stimulates.

Ears

8. The ears are very sensitive organs and require gentle care. The normal secretions of wax in the ear prevent the skin from cracking and drying out and therefore prevents infection which may occur in the cracks. Ear infections can be very painful and are common in hot and humid climates. Swimming in dirty water and the collection of sweat and dirt in the ears can be a cause. In instances where problems occur medical attention should be sought.

Explain the requirements of health and hygiene in the field [cont'd]

Eyes

9. Healthy eyes need little special care. Using them for reading or watching television will not harm them though overuse may cause general fatigue. There are however several precautions which may help maintain optical health:

- when reading or writing make sure lighting is adequate by using bulbs of 75-100 watts. Sit so that light shines onto your work without causing shadows or glare;
- hold reading material 40 to 45 cm away for normal vision;
- rest the eyes occasionally by looking away into the distance at a dark object; and
- use your own flannel and towel.

Teeth

10. Teeth should be cleaned each night and morning and after meals. At least once a day five minutes should be set aside for care of teeth. The teeth and gums should be brushed, using a circular motion, both inside and out. Dental floss should be used between the teeth to prevent the plaque in places where the tooth brush cannot reach. A soft toothbrush and fluoride toothpaste should be chosen.

Hair

11. Hair should be brushed twice daily and combed as often as required. It should also be washed regularly depending on the weather, the work done by an individual and the make up of the hair (greasy/dry). Usually two separate washings with warm water and shampoo are required to remove oil and dirt from the hair. Thorough rinsing is essential after the second wash.

12. Dandruff (Seborrhogic Dermatitis) is a chronic oiliness and scaling of the scalp which produces a degree of inflammation. The cause is unknown but the condition is not contagious or infectious nor does it cause permanent hair loss. A medicated shampoo, prescribed by a Doctor, will control dandruff.

Hands And Feet

13. When operational circumstances permit always:-

- keep nails short and clean;
- wash hands before eating and after every visit to the latrines or urinal;
- wash feet daily, and
- change socks daily.

14. Failure to comply with the last two items may lead to fungal infections such as Tinea. Tinea is a fungal infection that is very infectious. Tinea can be passed on by direct contact, but is more commonly contracted through infected baths, showers (especially communal), bath mats or even floors. Once it develops it can only be eradicated completely and permanently by prolonged and persistent treatment which, apart from washing of the feet and changing socks daily, involves:

- drying feet thoroughly after washing (especially between the toes);
- if you sweat a lot, bath the feet in a solution of salt and water (2 dessert spoons of salt/1 litre of water) with sufficient Condy's crystals dissolved in it to make it bright pink in colour;
- after bathing and thorough drying sponge with methylated spirits (after shave lotion has this as a base) and dust with talc powder (issued through Q store);
- expose the feet to air as much as possible, wear sandals instead of shoes/boots;
- don't wear thick woollen socks in hot weather;
- disinfect socks, slippers, shoes and boots regularly;
- soak socks before washing in a 20% solution of disinfectant;
- ensure that shoes/boots fit properly and do not chafe anywhere, and
- avoid going barefoot in public bathing areas.

Clothing and Footwear

15. Along with body cleanliness, attention to clothing is a vital part of personal hygiene. This is especially true in Australia, where high temperatures and humidity are found throughout the country. Heavy perspiration may be experienced without exercise or occupational influence and underclothing must be changed regularly as part of the general routine of personal cleanliness.

Explain the requirements of health and hygiene in the field [cont'd]

16. Dirty clothing can contain bacteria which when rubbed against the skin can find a way through minute cracks, abrasions and the pores of the sweat glands and cause boils, carbuncles and other skin infections. Clothing should be changed and washed as often as possible. Modern detergents and washing powders allow clothes to be washed more completely and more easily than before. Care must be taken however to rinse thoroughly, as residues of detergent will irritate sensitive skin.

Choice of Clothing

17. Clothing choice will depend upon:

- *Insulation ability:* air is a poor conductor of heat. Closely woven garments prevent cooler outside air mixing with warmer air trapped close to the body. Conversely, open weave garments allow considerable transfer of heart from the body to the outside air and are best suited to warm climates.
- *Absorbency:* the extent to which clothing absorbs moisture will influence it's suitability under various conditions. Water is a better conductor of heat than is air. Garments which become wet quickly, will cling to the skin and conduct heat away from the body.
- *Colour:* dark coloured clothing absorbs heat, light colours reflect heat away;
- *Movement:* clothing which restricts body movement is to be avoided.

18. Boots should be properly fitting and kept pliable and in good repair. They should not be shared. Foot wear such as rubber boots should, if possible, only be worn for short periods and thoroughly dried inside afterwards because they do not allow perspiration to evaporate and escape and therefore must be treated carefully.

Exercise

18. Exercise is part of healthy living. It stimulates the various body functions and provides mental and physical charge, as well as relaxation for people employed is desk type jobs. The importance of regular exercise is today unquestioned in regard to prevention of heart disease and digestive problems. Forced exercise is always unpalatable and may be dangerous if consideration is not given to the suitability, physically and mentally, of the subject.

19. Programmed exercise is used following illness or injury to promote recovery.

Illustrations – Fieldcraft & Target Detection

Figure 1 - Distinctive Shapes

Figure 2 - Shadow

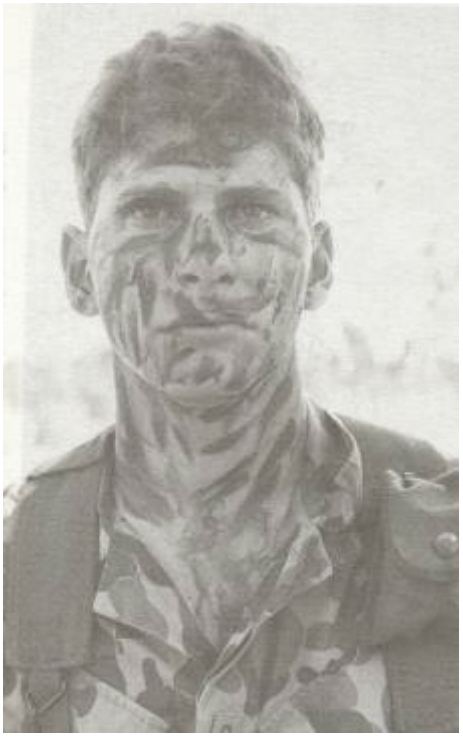


Figure 3 - The skin

Figure 4 - Equipment

Illustrations – Fieldcraft & Target Detection

Figure 5 - Scanning Method

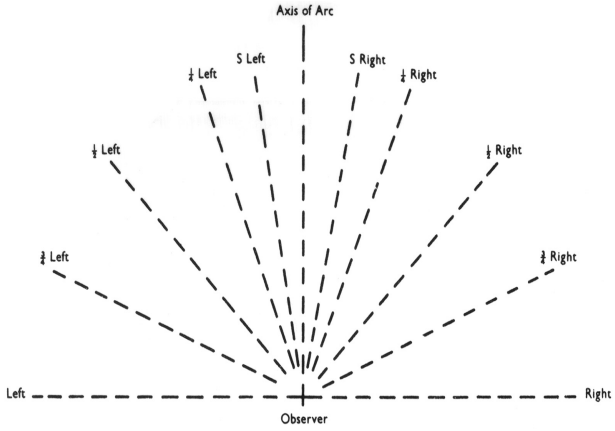
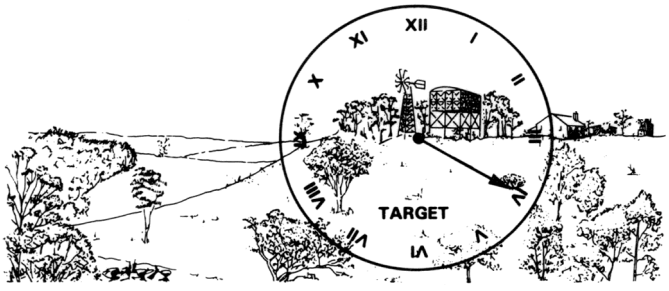


Figure 6 – Direct

Plate 23. The Reference Point
'350 – SMALL DAM (The Reference Point) – LEFT – LONE TREE (The Target

Figure 7 - Reference Point

The Clock Ray Method



Example:

'TWO HUNDRED (range to target) – WIND PUMP – RIGHT FOUR O'CLOCK – ROCKETS (Target)'.

Figure 8 - Clock-ray

Illustrations – Fieldcraft & Target Detection

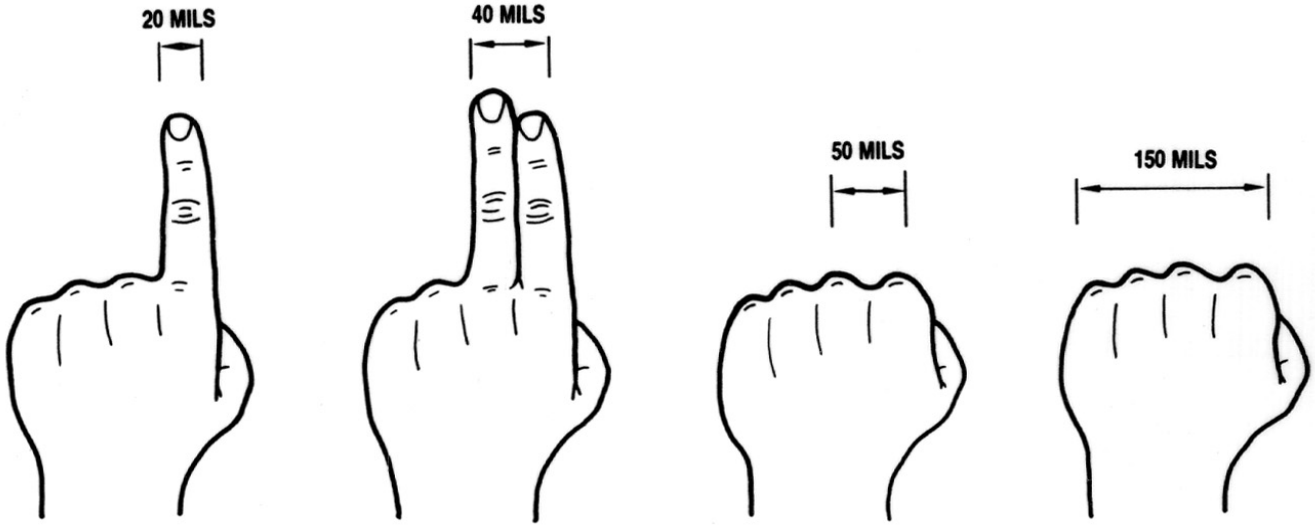


Figure 9 - Hand Angles

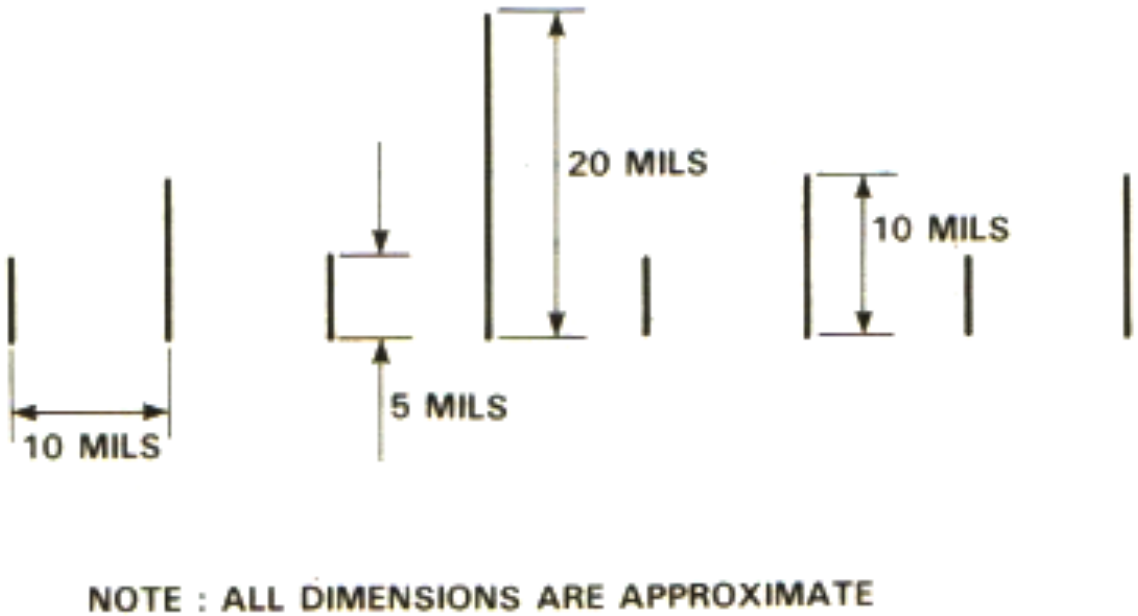


Figure 10 – Graticules on a binocular