READING THE SIGNS: *

Being able to read and make a map is only the beginning of being able to find your way about. You **MUST learn** to interpret the signs found on the ground itself & in the air.

If you do not have a compass, there are numbers of ways of creating your own.

The sun and stars can provide firm orientation -- a variety of methods are available for finding direction in both Northern and Southern hemispheres.

An ability to anticipate weather can also be a valuable asset in the wild & simple guide lines for prediction & the interpretations of cloud patterns equip the survivor with more skills.

Before embarking on any expedition you will have to lean all you can about the terrain, equipped yourself with maps, if available, and worked out routes.

Memorise the lie of the land, the direction in which rivers flow, the high ground, the prominent features, the prevailing winds, the weather patterns to expect and any know hazards.

Check the phase of the moon and times of first and last light-all of which will be invaluable knowledge if you find yourself in difficulties.

I case of accident you may find yourself in a totally unknown territory and have to find out everything about your location from the land itself.

In choosing a camp site, tracing water and finding the other necessities for survival you will need to interpret the surrounding countryside.

The other side of a hill may offer quite different conditions-and if you decide not to stay put you will have to interpret both the general geography and the particular landscape as you proceed.

MAPS:

Choose carefully, MAKING SURE that they are to a scale that will be useful to you and show helpful information.

A very large scale map that shows every footpath and building will be no use at all if you are driving a thousand miles along a motorway.

Everything will be shown in great detail but only a tiny fraction of the journey will appear on one sheet and you would have to pile the car with maps and change from one to another every few miles.

On the other hand few motoring maps give much information about the nature of the terrain or show features that would help a walker choose their route.

Sailors MUST be equipped with accurate charts so that they can keep to safe waters.

The surface below the sea can be as varied as that above. Flyers will need to know what altitude obstructions are and what turbulence occurs near mountains that makes it safer to fly higher.

From the air pattern of the land plainly but its contours are flattened out; without interpretation, a map looks rather like that to many people.

MAPS AND TERRAIN:

HEIGHT: #ACCIDENTED# TERRAIN:

The height of the terrain is indicated by closed line that passes by all points of equal height. The height variation differs since it depends of the map scale and of the land that this one represents.

A pix would show a **STEEP SLOPE** and is represented by # courbes de niveau rapprocher (close level curves)# and a **GENTLE SLOPE** is shown as widely spread apart from one another.

Height can not be reproduced on flat sheets of paper so altitudes are recorded at regular intervals-usually every 50 foot or every 10m according to the measures' used-and every point at this height is joined up by a line-the contour line.

In most cases these lines join up to form a complete shape, some sort of irregular oval with bulges here and there. If they suddenly stop against another line that means that there is an abrupt change of height-in fact, **a cliff or a very steep fall**.

The **only** contour line that you can see in nature is that of sea level along the coast (& even that is not quite True because of tidal variation) but you can imagine the contour lines as the edges of flat disks and that these are range equidistantly above each other.

If you threw a cloth to rest over them it would link together in a shape that would be approximately like a hill or other features.

However you do not have a record of exactly what happens between those contour lines and there will not necessarily be an even slope connecting them. There could be outcrops of rock, hollows, any manner of variations within that 10m or 50 ft.

From the relative positions of one height to another you could make a pretty good guess as to what the ground surface was like, but you could not be sure.

There may therefore be features that, because they fall between the contour lines, make no appearance on your map.

The contour lines on the map represent a series of points at the same distance above sea level and do not record what happens in between

When the contours are closely grouped in height is more rapid (A*). Conversely, greater spaces between the contour lines indicate gentler slopes (*B).

INTERPRETING MAPS:

Remember that the intervals between the contour lines are the distances between the horizontal points at the same theoretical height-not that actual distance on the slope of the ground.

They are measured in units that show relative positions and are not to a scale as is the horizontal plotting.

It is a common error to think of a group of contour lines indicating a rise in the ground comparable to the scale of the distance shown between them.

But the scale of a typical walker's map is 1 = 50,000 & 10m on that would be **only:** 02 mm.

Contours spaced 5 mm. apart on the surface of the map would be a horizontal distance of 250m & the gradient only 1 in 25.

GRADIENTS:

A concave slope (*A) where you can see the top from the bottom has the higher contours close together.

A convex slope (*B) where you cannot see the top from the bottom has the lower contours close together.

MEASURING DISTANCES: **

As the crow flies distances can be measured by using any straight edge and matching it up against the scale bar or multiplying by the ratio of the map's scale.

Meandering routes can be followed with a piece of thread that can then be straightened out.

Gradients can make an appreciable difference to distances and **MUST** be allowed for a gradient of 45 degrees, for instances, will add another 8.2 to a horizontal map distance of 200m. (500 ft becomes = 525 ft)

SCALE:

Before you can begin to use a map you **MUST** understand its scale. This may be shown a scale bar marked with miles or kilometres to the size that they are shown on the map or it may be given as a ratio--1**:**50, 000 means that every measure on the map represents a distance 50, 000 times greater on the ground.

KEY:

There will usually also be a key to the symbols used within the map to represent natural and man-made features rivers, roads, buildings, types of woodland or swamps, types of beach. What is shown, and how, will vary greatly.

If there is no key on the individual map or on its wrapping **MAKE SURE** that you find out what symbols mean in that map series.

Some will fairly evident; if the map is in colour rivers will almost certainly be in blue, marshes will usually be indicated by stylised tufts of reed.

Not all features can be shown to an exact scale. Roads and paths will probably be given standard widths to match the kind of track they are rather than their exact measurements, and streams and rivers will be similarly standardised.

The British Ordnance Survey (OS) maps, for instance, show waterways as a single blue line, gradually increasing in width until it represents a width of 8m (27 feet) across a stream.

Whereupon a double line is used, giving you an immediate indication that you have a river at least that wide across

There is similar standardisation on all maps. Once you have mastered the way that information is shown maps will tell you a great deal.

GRIDS:

Maps almost carry a gird of lines that divides them up. This is either based on degrees of latitude and longitude or a special grid developed by the mapping authority.

The advantage of the special grids in that they are usually planned to form squares based on ground measurement that can help you rapidly assess distances.

On the British OS maps, for instance, the grid lines are 1 km. apart and the diagonal across them is 1 1/2 km.

If you want to find or report a position it can be described by a co-ordinate made from the line references from two adjoining sides of the map.

To anyone using a map with the same grid this will immediately locate the "box" in which it appears.

Dividing the square by eye into further tenths pinpoints the location.

This provides an easy way of telling rescuers of your location or of fixing a rendezvous point with them.

The point marked with a dot can be described as 15.5 X 62.8 using the co-ordinates from the sides of this grid.

This system requires that squares are mentally divided into tenths in each direction.

The "map reference" is normally expressed as 6 digits**:** 155, 628. Any letter area codes on the map should be included.

NORTH ON MAPS:

Unless they are lines of longitude, the grid lines on a map are not an indication of North and South, though they may sometimes be close to it.

REMEMBER that a compass point not to True North but to Magnetic North-and the difference between the two varies both according to where you are in the world and because Magnetic North is slowly changing its position.

To take accurate bearings you need to know these variations, but even a rough idea of orientation will help you to match your map to the landscape.

If you have an adjustable compass and information on the deviation of it and of your map grid from True North you can carefully match up all of them so that even in poor visibility or where landscape features are beyond your horizon you can take accurate bearings and follow them dear Mr. Spock.

Many maps indicate the deviation or the direction of Magnetic North. If this is not given you can find it from the North Star or by using the watch method to point to North.

Use the Southern Cross in the same way in the Southern Hemisphere to establish South.

LOCAL MAGNETIC VARIATION:

To find the local Magnetic variation, when not recorded on a map, point the compass at the North Star. Note the difference between the pointer & indicated North.

Lining the compass up with the grid lines on the map you can discover their variation, if there is one.

If you then propose to walk on Magnetic bearings you **MUST REMEMBER** to compensate for the variation.

Map reading skills should be learned by anyone planning an expedition and are **particularly important in mountain country.**

Compasses are available mounted with calibrations, scales and direction markers that make this kind of orientation easier.

Check them out and have them explained to you. In a survival situation you will probably have to manage without such sophistication.

If unable to make appropriate corrections, then continually check your position against visible features.

YOUR OWN MAPS:

The survivor may not be lucky enough to have a map and should then set about making one. With a map you will always be able to find your way back to camp. It is**ESSENTIAL** if you are going for help for the sick, children or elderly left behind.

It is not possible for you to measure the exact contour heights, but you can devise your own system for indicating the contours. Find the best vantage point and look out over the terrain. Climbing a tree may give a better view. Note the direction of the ridges, count how many you can see.

Between each ridge there is probably a stream or river flowing, you cannot be sure-there will be a lot of "dead ground" territory you cannot see.

Make a general map with blank patches and then fill them in as you gain more information from other vantage points and from your own explorations on the ground.

Mark anything of interest on your map: watercourses, rocky outcrops, isolated trees, strangely shaped features that will act as landmarks, and areas of different vegetation.

You can plot positions of your traps, animal lairs, good place for foraging for food and fuel or finding useful stones for implements.

It will be much easier for you or your companions than relying on your memory or vague descriptions.

DIRECTION FINDING:

The earth's relationships to the rest of the solar system and the position of the stars in the sky help to locate any position on its surface.

Its revolution on its axis produces the changes from light to darkness and its orbit around the sun produces the seasons, for the earth is tilted at an angle to the sun & first the North and then the South becomes nearer to it.

The closest point traversing from the Tropic of Cancer (23.5 degrees North) to the Tropic of Capricorn (23.5 degrees South.)

The sun being above the Cancer on 22 June and above the Capricorn on 22 December. It is above the Equator on 21 March and 21 September.

The sun rises in the East and sets in the West (no kidding) but not EXACTLY in the East and West. There is also some seasonal variation.

In the Northern Hemisphere when at its highest point in the sky, the sun will be due South.

In the Southern Hemisphere this noonday point will mark due North. The hemisphere will be indicated by the way that shadows move**:**

Clockwise in the North, anticlockwise in the South. Shadows can be a guide to both direction and time of day.

SHADOW STICK METHOD # 1: *

On a patch of flat, clear grounds place a metre long (3 feet) stick as upright as possible. Note where its shadow falls and mark the top with a pebble or stick (*A)

Wait at least 15 minutes and mark the new shadow tip (*B) Joint the two and you have the directions of East and West-the first mark is West.

North and South will be at right angles to this line. This method works at any time of day when there is sunshine and at any latitude. Use it for spot checks as you proceed.

SHADOW STICK METHOD # 2: *

Another, more accurate, method if you have the time-is to mark the first shadow tip in the morning. Draw a clean arc at exactly this distance from the stick, using the stick as a centre point.

As midday approaches the shadow will shrink and move. In the afternoon, as the shadow lengthens again, mark the EXACT spot where it touches the arc.

Join the two points to give East and West- West is the morning mark IF YOU LIVE WEST!*

DIRECTION BY WATCH:

A traditional watch with 2 hands can be used to find direction, provided it is set to True local time (without variation for summer daylight saving & ignoring conventional time zones that do not match real time).

The nearer the Equator you are, the less accurate this method will be, for with the sun almost directly overhead it is **very** difficult to determine its direction.

NORTHERN HEMISPHERE: *

Hold the watch horizontal. Point the hour hand at the sun. Bisect the angle between the hour hand and the 12 mark to give a North-South line.

SOUTHERN HEMISPHERE: *

Hold the watch horizontal. Point 12 towards the sun. A mid-point between 12 and the hour will give you the North-South line.

IMPROVISED COMPASSES: *

A piece of ferrous metal wire, a sewing needle is ideal-stroked repeatedly **in one direction** against silk will become magnetised and can be suspended so that it points North. The magnetism will not be strong and will need regular topping up.

Suspend the needle in a loop of thread, so that it does not affect the balance. Any kinks in or twisting of the thread **MUST BE AVOIDED.**

Stroking with a magnet, should you have one, will be much more efficient than using silk. Stroke the metal smoothly from one end to the other in **1 direction only.**

FLOATING NEEDLE:

A suspended needle will be easier to handle on the move but in a camp or when making a halt a better method is to lay the needle on a piece of paper, bark or grass and float it on the surface of water.

USING ELECTRICITY:

If you have a power source of 2 volts or more (a small dry battery, for instance) the current can be used to magnetise the metal. You will also need a short length of wire, preferably insulated.

Coil the insulated wire around the "needle." If it has no ready-made insulation wrap a few layers of paper or piece of cardboard around the needle first. Attach the ends of the wire to the terminals of the battery for 5 minutes.

RAZOR BLADE COMPASS: (Sharp idea!) *

A thin flat razor blade can also be used as a compass needle because it is made of 2 metal bonded together.

It can be magnetised simply by stroking WITH CARE against the palm of the hand. Suspend it.

Use other methods to establish which general direction is North and then identify which end of your new compass needle is which, and mark one of them.

Top up your needle's magnetism from time to time, and **ALWAYS** check your reading with the sun. A "wild" reading may be given if large amounts of ferrous metal are nearby.

DESERT POOR MAN'S COMPASS:

Take a stick and push it in the sand or earth until it stands vertical and casts a shadow. Pick up 2 small stones and place one at the tip of the shadow.

Wait about 10-15 minutes before marking the distance the shadow has traveled with the other stone. Next draw a straight line from the first stone to the 2nd stone and extend it about half a meter beyond.

Then stand with the toe of your left foot at the first rock and the toe of your right foot where the line ended. Lifting your left arm and pointing straight ahead is the North and if you extend your right arm to the side is the East.

The nearest dune in line with your outstretched right arm and hand can be used as a reference point. Repeat the process every hour will keep you in line wherever you are going. P/S This compass can be used anywhere but the sea of course.

PLANT POINTERS:

Even without a compass or the sun to give direction you can get an indication of North and South from plants.

They tend to grow towards the sun so their flowers and most abundant growth will be to the South in the Northern Hemisphere, the North in the South.

On tree trunks' moss will tend to be greener and more abundant on that side too, on the other side it will be yellowish to brown.

Trees with a grainy bark will also display a tighter grain on the North side of the trunk.

If trees have been felled or struck down the pattern of the rings on the stump also indicates direction-more growth is made on the side towards the equator, so the rings are more widely spaced. There are even species of plant known for their North-South orientation**:**

NORTH POLE PLANT: *

Which grows in South Africa, leans towards the North to gain full advantage of the sun.

COMPASS PLANT: *

Of North America direct its leaves in a North-South alignment. Its profile from East or West is quite different from that of North & South.

THE WIND DIRECTION:

If the wind direction of the prevailing wind is known it can be used for maintaining direction. There are consistent patterns throughout the world but they are not **ALWAYS**the same whole year round.

Where a strong wind **ALWAYS** comes from the same direction plants and trees may be bent in one direction, clear evidence of the wind's orientation.

But plants are not the only indication of wind direction**:** birds and insects will usually build their nests in the lee* of any cover and spiders cannot spin their webs in the wind.

Snow and sand dunes are also blown into distinctive patterns by prevailing wind that blows from the outside of the high central ridges.

MAKING USE OF THE MOON: *

The moon has no light of its own, it reflects that of the sun. As it orbits the earth over 28 days the shape of the light reflected varies according to its position.

When the moon is on the same side of the earth as the sun no light is visible-this is the "new moon" (*A)--then it reflects light from its apparent right-hand side, from a gradually increasing area at it "waxes."

At the full moon it is on the opposite side of the earth from the sun (*B) and then it "wanes" the reflecting area gradually reducing to a narrow sliver on the apparent left-hand side. This can be used to identify direction.

If the moon rises BEFORE the sun has set the illuminated side will be on the West. If the moon rises AFTER midnight the illuminated side will be in the East.

This may seem a little obvious, but it does mean you have moon as a rough East-West reference during the night.

DIRECTION BY THE STARS:

The stars stay in the same relation to one another and pass over the same places on the earth night after night.

Their passage over the horizon starts 4 minutes earlier each night- a 2 hour difference in time over a month.

If you study a star at a certain position at a certain time one evening and then check its position the next evening at the same time, you will find that it has moved 1 degree of arc Anticlockwise in the Northern Hemisphere Clockwise in the Southern.

Rising in the East, stars attain a zenith and set on the western horizon at the same distance from their zenith as they rose.

The stars have been studied for thousands of years & the groups or constellations, in which they appear to the naked eye were named in ancient times after animals and mythological figures that their shape suggested.

In the Northern Hemisphere there are groups of stars that remain visible throughout the night, wheeling around the only star that does not appear to move-the Pole Star that is a valuable navigation aid, for it is located almost above Polar North.

In the Southern Hemisphere the Pole Star is not visible and there is no comparable bright and stable Southern star but directions finding in the Southern Hemisphere make use of a constellation called the Southern Cross, in a way that is explained later*.

THE NORTHERN SKY: *

The main constellations to learn are the Plough, also known as the BIG DIPPER (A*), Cassiopeia (*B) and Orion (*C).

All of which, like all stars in the Northern sky, apparently circle the Pole star (*D), but the first two are recognisable groups that do not set.

These constellations come up at different times according to the latitude and Orion is most useful if you are near the Equator.

Each can be used in some way to check the position of the pole star, but once you have learned to recognise it you probably will not need to check each time.

A line can be drawn connecting Cassiopeia and the Plough (Big Dipper), through the Pole Star. You will notice that the two lowest stars of the Great Bar as shown here* point almost to the Pole Star.

It will help you to find these constellations if you look along the Milky Way, which stretches right across the sky, appearing as a hazy band of millions of stars.

THE PLOUGH OR BIG DIPPER: *

(*A) It is the central feature of a very large constellation, the Great Bear (Ursa Major). It wheels around the Pole Star.

The two stars Dubhe (X*) and Merak (*Y) point, beyond Dubhe, almost exactly to the Pole Star about four times farther away than the distance between them.

CASSIOPEIA: (*B)

It is shaped like a W and also wheel around the North Star. It is on the opposite side of the Pole Star and about the same apparent distances away as the Plough. (Big Dipper). On clear dark nights this constellation may be observed overlaying the Milky Way.

It is useful to find this constellation as a guide to the location of the Pole Star, if the Plough is obscured for some reasons. The centre star points almost directly towards it.

ORION: *

(C*) It rises above the Equator and can be seen in both hemispheres. It rises on its side, due East, irrespective of the observer's latitude, and sets due West. Mintaka (*A) is directly above the Equator.

Orion appears farther away from the Pole Star than the previous constellations. He is easy to spot by the three stars making his belt, and the lesser stars forming his sword.

OTHER STARS: *

That rise and set can be used to determine direction. Set two stakes in the ground, one shorter than the other, so that you can sight along them (or use the sights of a riffle propped in a steady position).

Looking along them at any star-except the Polar Star-it will appear to move. From the star's apparent movement you can deduce the direction in which you are facing**:**

Apparently rising = facing EAST Apparently falling = facing WEST Looping flatly to the right = facing SOUTH. Looping flatly to the left = facing NORTH.

These are **only** approximate directions but you will find them adequate for navigation. They will be **reversed** in the Southern Hemisphere.

READING THE SOUTHERN SKY:

There is no star near the South Celestial Pole bright enough to be easily recognised. Instead a prominent constellation is used as a signpost to South**:**

The Southern Cross (Crux), a constellation of 5 stars that can be distinguished from 2 other cross-shaped groups by its size-it are smaller-and its two pointer-stars.

FINDING THE SOUTHERN CROSS:

One way to find the Southern Cross is to look along the Milky Way the band of millions of distant stars that can be seen running across the sky on a clear night.

In the middle of it there is a dark patch where a cloud of dust blocks out the bright star background, known as the Coal Sack. On one side of it is the Southern Cross, on the other the two bright pointer stars.

FINDING SOUTH: *

To locate South project an imaginary line along the cross and 4 1/2 times longer and then drop it vertically down to the horizon.

Fix if you can, a prominent landmark on the horizon-or drive two sticks into the ground to enable you remember the position by day.

GLOBAL TRACKERS:

WHERE THE HECK AM I?:

BETTER THAN CRUMBS TRAILS!

(24 SATELLITES TRIANGULATION)

WHY YOU REALLY SHOULD BUY OR RENT ONE OF THEM!:

Here is a new development on this important survival aspect. An ever increasing raft of products is trying to answer this fundamental question.

If your question is more geographical than metaphysical, then you are a prime candidate for the **NEW PANASONIC KX-G5700.**

That mumbo jumbo name refers to the **SMALLEST HAND HELD GLOBAL POSITIONING SYSTEM YET.**

And it is the first with a built-in display. By tapping into the Defence Department's system of 24 satellites, **The KX-G5700 can determine YOUR EXACT LATITUDE, LONGITUDE and ALTITUDE. (Not attitude.**)

The price was announced but by the time this article gets to you there is no doubt in my mind that newer versions will have come about at good price, to rent or buy them.

If when one values his or her life, and that of his or her family and friends' safety & peace of mind should accident or mishap occur in the wild...

If one can afford car or yatch or to go hunting, etc. then one should real seriously consider the security and other advantages for him or his family in case of emergency and to buy or rent such a tracking unit for safety & peace of mind

If you don't go in the water without a life jacket! Then don't go into the wild without a tracking system that will work better than any older methods, specially when calling in for help. (S.O.S - SPOCK!)

So be prudent and wise and get on track; use new tracking system. Let science help you!

After all a compass was a good progress, why not use a better way, even bringing your old compass would not hurt anyway. Safety should prevail.

****SPECIAL NOTE: CELLULAR TELEPHONE**

As of June 1994 Canada is launching its biggest communication satellite that will be stationary around the Equator. Its function you will all be pleased to know is to allow Cellular telephone hook up.

Now all you will have to do is to call 911 and say that you are lost or call your wife or girlfriend or boyfriend or husband to say you will be late. (Beam me up Spock is coming around fast.)

NOW SUPPOSE YOU DON'T HAVE THAT BEAUTIFUL TRACKING SYSTEM:

COMPASS OR NO COMPASS?:

THAT'S THE ?

Note #1: One should check the wind direction as he goes out of his camp as well as to **ALWAYS** take good written notes about what he sees and the most important sighting points. It will be easier for him then to retrace or find himself, use common sense?

Note #2: **It is Best to carry 2 compass**, should the first one be broken or lost or go berserk. You feel a lot safer.

LOG BOOK = VITAL BOOK:

A Log Book of all your observations, measurements, readings, time and look out points **MUST** be carefully kept.

IT IS A VITAL & NECESSARY BOOK TO KEEP IN ORDER TO SUCCESSFULLY BE A SURVIVOR.

IMPORTANT WARNING IF LOST:

You could loose yourself without map nor compass or find yourself in a terrain rich in iron ore or in Polar region where a compass is of no use.

If you are above the 60 degree latitude in the Northern #Hemisphere#, the ministry of defence both of Canada & USA advise anyone to:

STAY PUT!: YES! STAY PUT - DON'T MOVE!

They exhort stranded folks to stay on the premises & to wait to be located by rescue.

SPECIALISTS SAY:

Do not leave these crash site unless you can orient yourself and be certain that you can attain a welcoming village while following the stream of a river nearby.

The presence or position of all planes in Polar regions stay under the control of a multitudes of agencies both from government and foreign's one and all irregularities or distress signals quickly dispatch rescue teams.

However in other circumstances or other parts of the world it is logical and normal to try to reach civilisation instead of waiting with an open mouth that they come to your rescue.

Time to have Spock beam you out! But while so doing one **MUST MAKE SURE** to take care not to loose oneself again and to learn how to come back on your steps should the need arise.

Move only with caution & well designed plan and with exactitude in the chosen direction.

But before hitting the road and find that bar or lousy travelling agent who first got you into this mess you **MUST** first decide which direction to take and to repeat this at regular intervals all along your travelling.

FUNDAMENTAL = MOST IMPORTANT:

To do this it is **fundamental and primordial** that you can find the 4 cardinal points. There are many ways without a compass!

HOW TO #ORIENT#:

SPOCK WITHOUT MAP NOR COMPASS?

HOW TO FIND YOUR DIRECTION DURING THE DAY ?:

REMEMBER that the sun rise East (rarely full East) and goes to bed to West side story (rarely full West).

Meaning that the sun rises slightly South east and beds slightly North west, and the angle or declination differs with the seasons.
CANADA = NORTH East *

Also **remember** that the manner to direct toward your goal depends of the goal you want to reach.

If you want to attain a well defined goal, you **MUST** determine your direction in a precise fashion, based upon True North, The magnetic North or South. But if it is only to maintain one direction then the sun's arc becomes then your best reference's point.

SHADOW PROJECTION METHOD: *

In a clear ground, stick in the ground a stick or long branch. A shadow will appear on the ground mark the position at the tip end of this shadow with a stone or small peg.

Wait till the tip of the shadow has moved a few inches. If your stick is 3 feet long it will take about 15 minutes.

The longer the stick the faster the shadow will move, mark then the last position of the shadow as you've done for the first one.

Now draw a straight line on the 2 marks. You will thus have traced approximately a East-West line. The first shadow **ALWAYS** points towards West, whereas the second points East whatever be the hour or wherever you may be in the world.

Another line crossing at right angle and at any point the East-West line will indicate in an approximate way the North & South thus will help you to orient yourself in all other directions.

Incline the stick so as to get a better more adequate shadow (thickness or direction) this does not change in any way the exactness of the shadow method.

This means that a person travelling in a steep terrain or strongly wooden will not have to loose precious time to find a surface pretty much levelled.

A very small flat space as big as the hand is all one needs to use this method and the base of the stick can be placed just as well above as below as any side or the other.

Any stationary object such as the tip of a branch will do, as long as it is fixed into the ground, since its only purpose is to show the shadow tip.

THE HOUR OF THE DAY & THE SHADOW METHOD: (Shadow-clock) (Sun-Dial)

To know the time, trust a stick in the ground at the intersection of the 2 lines East-West and North/South, that you will have traced according to the shadow method above.

Everywhere in the world the West part or the East/West line indicates 6 AM whereas the East part of the same line show 6 PM.

The North / South line now becomes the noon line. The shadow from the stick indicates the hour based upon the Noon line & the 6 o'clock line.

According to your position and the season, the shadow can move either clockwise or conterclockwise, but this **MUST** not change your ways to read the sun dial.

A sun dial is not a time watch. It show the 12 hours in an unequal fashion all along the day but it **ALWAYS** shows without fail the 6 AM and 6 PM that is if the sun shows up, it gives a fairly accurate means to tell time when no watches are around.

2ND METHOD:

If you have an old watch the sun dial can be used to put in safe-keeping the direction. Set your watch upon the shadow showed by the stick then follow the method below.

This procedure avoids to wait 10 to 15 minutes which is required by the shadow projected method, thus permit you to take as many instant sighting as needed, so that you don't turn in circle.

After having walked about an hour, take a sighting on the shadow shown & adjust your watch accordingly if need be.

The direction obtained this way using your watch remains the same as that of the projected shadow method, these 2 methods give the same exact direction.

THE GOOD DIRECTION USING A WATCH:

One can use a watch to determine approximately the true North or South, it is only in Temperate regions of the North that the hour needle points toward the sun.

When you ask at what end of the line is the North? REMEMBER that the sun is East before noon, dead South at Noon and West in the afternoon

The watch can equally be used to show the direction inside the temperate region of the South but the method is different.

For the number 12 (noon) will be pointed toward the sun, placing the North line at mid-way between the number 12 and the needle hour.

In the summer the North line will pass at mid-way between the needle hour and the number 1. In both #hemispheres#* the temperate zones spread from latitude 23 1/2 to 66 1/2 degrees.

However the watch method can become hazardous specially in the lower latitudes regions, thus bringing you in circle.

To avoid this make a sun shadow clock and regulate your watch on it. After an hour of travelling, take another sighting of the sun dial if need be and reset your watch anew.

THE DIRECTION AND SHADOW METHOD EQUALLY DISTRIBUTED: *

This variation method using the projected shadow, comes more exact & can be used under all latitudes situated at less than 66 degrees at all time.

1) Upon a fairly well level ground trust vertically a stick or a branch so as to project a shadow of at least 12" long on the ground. Then mark the tip of the shadow with a stone. This **MUST** be done 5 to 10 minutes before Noon.

2) Using a string or another stick, trace a circle guided by the length of the shadow to determine the #rayon#, the base of the stick will indicate the centre.

3) The shadow will shorten at the approach of Noon, then she will lengthen to go crossing the circle arch that you will have traced. Mark the place where the tip of the shadow will come a second time to touch the arc.

4) Draw a straight line in a way as to join the 2 arks thus you will obtain a line East / West.

2ND METHOD:

This version of the projected shadow method is the most exact yet retain the following points

1) The operation **MUST BE DONE AT NOON TIME.**

2) To succeed, the sighter **MUST** complete the 3rd point mentioned above and this at the exact moment when the shadow tip come into contact with the #arc# of the circle.

3RD OTHER METHOD USING WATCH:

Using the sun and your watch is more complex but fairly precise.

First by putting your watch flat to the ground, point the needle of hours in the direction of the sun. Then in bisecting or dividing in two the angle situated between the needle hour and Noon. You thus obtain an imaginary line oriented North /South.

METHOD TO FIND NORTH USING SUN & WATCH:

Spock **MUST REMEMBER** that in the Polar regions when the sun beams up 24 hours of socks that confusion between noon and midnight will provoke an error of 180 Degrees, in ORIENTATION. In the example written above *

If the observation had been done at 8 PM instead of 8 AM the North would have been at the opposite end which makes the end go round the bend a bit it creates a Void; a Vortex; in other word you goofed badly, you are lost.

So before proceeding to this experience, **MAKE SURE** that your watch is either at the regular hour or the advanced hour.

If you fall into unknown country, your watch will not necessarily checked for the sun of that region thus it will not be of help to you until you can through shadow projection set it right.

The sun rise around 6 AM East, In France Holland Belgium the hour advance of one (1) hour on the rise of the sun.

In our regions N. America, Great Lakes and Northern Europe, it is preferable to use the watch only when the sun is at its peak at noon about.

The system of watch is only valid between the rise of the sun & about 10 AM and also 4 PM to sunset.

Whatever the season the sun **ALWAYS** indicates the South at noon. But only East and West at 6 AM or 6 PM on the days of #Equinox# of the fall and spring 21 March and 23 Septembre.

So the more we stay close to the Noon position the better are our chances not to GOOF !

#SOUTHERN HEMISPHERE#:

If lost in South Hemisphere, South Africa, Australia, Polynesia etc.

Your watch now indicates North instead of South but beware Spock! Put the number 12 in front of the sun and the point between 12 and the small needle (#bisectrices#*) will show the North.

One way to REMEMBER is: your face is South, your is back North, Left East ETC.

HOW TO #ORIENT# AT NIGHT: *

At night the stars are used to determine the Northern line of the *#Septentrional# Hemisphere or the South line of the #Meridian# Hemisphere.

To locate the North Star look for the Big Dipper not Diaper.

Now the 2 stars at the end of this figure are called Arrows and the North Star is in direct straight line with those 2 stars at about 5 times the distance that separates the first 2 stars.

The big dipper circles slowly around the North Star (pivot) thus does not appear **ALWAYS** in the same direction or position on the terrain. *

SECOND METHOD:

The Cassiopeia Constellation can equally be used for the same end. This group composed of 5 stars very brilliant takes the form of an " M " slanted or of a "W" when low in the sky.

The North Star if well in line with the central star of this constellation is at about the same distance as the one separating it from the Big Dipper.

Cassiopeia also turns slowly, cruising the North Star and **ALWAYS** stays nearly in front of the Big Dipper.

This location makes it a **PRECIOUS HELP** when the Big Dipper is low in the sky or hidden by vegetation or elevation or mountains.

At the South of Equator, the South CROSS constellation will help you locate the South direction and from there all else.

This group composed of 4 stars very bright takes the form of a slanted Cross and the 2 stars near the longest axial* also have the name of Arrow.

Starting at the foot of the Cross, imagine a point 4 1/2 times the length of that cross. This last point shows you the South, from there, direct your gaze down toward the horizon and choose a point of sights. #(point de repaire) # Then rock on Rambo or Rambett.

NOTE:

Since all stars move toward the West as the night rocks on, if Bozo does not want to deviate in a perverse way off his road, then he better get new reading of his location every hours.

MOUNTAIN OR JUNGLE ECHO ORIENTATION: *

Cut a Birch of about 6 feet in diameter *(to define in measure file*) and about 4 to 6 foot long, if you lift it up vertically and let it drop on the floor, you will then be able to tell on what side of the mountain you are.

The ground on the South side is very echo because of the sun that dries it, whereas the North is low, deafened sound because of dampness since the sun hardly gets in. The East side is also echo but not as much as the South.

The West side is nearly as low as North, if there are plenty of trees, but can be a lot less, if in the open & windswept but the ground is damp enough not to mix it with the East or West Side Story.

TREE ORIENTATION IN NORTH AMERICA:

Evergreen such as Pine, Spruce when exposed to

wind lean generally toward East.

HOW SMALL STREAMS CAN BE DECEIVING:

Using small streams as landmark in strange countries should be only a part of one's procedure of orientation for brooks loop around so much that they will confuse you.

Particularly confusing is the good size brook that suddenly disappear underground.

SO THE FIRST RULE, IF YOU DON'T HAVE A MAP IS:

NOT TO DEPEND ON TOPOGRAPHY UNLESS YOU ARE SURE OF IT.

COMPASS NOTE:

In orientation this is the ever faithful instrument to use and better to have 2 compass than one, for the first can be Lost, misplaced, wrong, broken etc.

Its a worth reassuring thought & part of the security and moral upkeep**. THE COMPASS IS THE SURE KEY TO GET OUT.**

From which it is impossible to get lost or not to find your way out if one has a good compass and the map of the terrain or regions he is in. But there are some conditions for this, one of them is:

TO MAKE SURE THAT NO STEEL NOR IRON IS CLOSE AT HAND.

For then your compass is gone crazy for sure, so **MAKE SURE** the knife, gun, belt buckle, axe, auto, etc. are far enough from you. Use your Bozo common sense? & a bit of practice.

Only the very young, the foolish or the unfortunate wanders off into unknown area without a compass. But with a compass, a topographic map and a bit of innate instinct this condition can be turned around quickly.

3 CLASS OF COMPASS:

Compass fall in 3 class all of which will do the job but some of which are more sophisticated.

One of the best on the market is the Da Silva which has 2 rulers, a magnifying glass, a strong safety pin to attach it well to you as well as the mirror Lensatic compass in a sturdy casing.

The MILITARY compass is the LENSATIC compass that has the same clockwise degree scale as the normal one but has the added feature of sighting system for taking a bearing on an object at a distance.

Another feature allows you to look at the scale at the base of the finder and read the bearing with the aid of a small lens in the viewfinder. This is extremely handy and this model as a rule is a better combination compass.

The 3rd one is the type used by surveyors etc. Cruiser Compass.

SIMPLE USE OF COMPASS ???:

Now before getting finally into how to use both a compass and a map, let's first discuss the simple use of a compass. This is where you want to go from point "A" to point "B" then back to "A".

That is simple Spock! Before leaving your car or base camp, remove the compass from your pocket and holding it steady, away from any metal such as gun, belt buckle, knife, pack etc. Now take a Reading.

If you have the model with the swinging or rotating marker such as the Lensatic model you can set it to point in the direction of the camp on the reciprocal heading.

This means that when you leave camp for ex; you may be going North and to return to camp all you need to do is go South.

This sounds simple, Spock however once you leave the road or camp you may not be able to travel in a straight line due to many reasons so to reach you have to go around them in an entirely different direction from that which you originally intended.

If this happens you need not to worry about true North or other situations you will meet in map reading.

All you need to do is follow the arrow as you lay it out. To do this when you meet an obstacle & **MUST** go around it take a reading on the compass.

Move approximately 100 steps or whatever it takes to get around the obstacle, clear the obstacle and use the reciprocal heading to return the 100 steps or more of the original line of direction.

You may not to have to count your steps, if you have a good landmark to use for direction, however if you don't you may forget to use the compass and you may find yourself in deep trouble.

The Landmark may become obscured by fog, a hill, a line of tree or almost anything that can block your view.

If you don't know how far you have gone off course it is difficult to get back to the original line of direction especially if the landmark you have chosen is no longer visible by the time you are able to get around the obstacle.

It is **ALWAYS** best to use your compass & if when you get around the obstacles you still can see your landmark well and good. Spock in Shock. You will have a double check. Once back to the original line of direction you can continue on your way.

COMPASS ERRORS ???: (Her-roars?)

NOTE: A phenomenon which often occurs & can give backpackers some trouble in orientation is that anything that is iron or steel in your pack will effect the compass needle throwing it off to the right or left, so move the metal part to the centre of the pack so that it does not effect the compass needle.

Should you find yourself continuously ending up at the right of your goal check if you don't have something metallic on the right side of the pack.

This metal mass deviation **MUST** not be confused with compass declination which we cover later. **

The deviation is an error in your compass reading caused by an abundance of natural ore in the area or as mentioned a metallic mass in your pack. The deviation of the needle works by the inverse square law theory.

This means, and that if the metal object is one foot from the compass, it will deviate quite a bit and be obvious to the user.

However if the metal object is 2 feet away it will exert 4 times less attraction on the needle and the needle will not swing in its direction quite as noticeably.

If you move the objects 3 feet behind you, it would then have nine time less attraction so it would barely or not at all be noticeable.

If your compass continue to behave erratically, check for metal in your pack, or belt buckle or hip bag, then if none then you can assume that the needle is being affected by a natural ore deposit in the area.

STAR-CHECK !: NOT STAR-TRECK !

Stars are another means to determine your direction and they can be helpful in checking the accuracy of your compass. If you are out after dark on a clear night, you can check the compass on an object at the base of the star.

If the needle is not pointing North on the dial, however many degrees you are off it is your compass deviation and you can adjust your direction accordingly. Some compass have luminous dial for night use but if yours doesn't you should not worry.

Luminous dials are fine for military night manoeuvre but for the average person lost at night the last thing he should do is to move. Best to make yourself comfy as possible and wait for morning unless emergencies of course.

A compass that is going to be of any use **MUST** have degrees not less than units of 2. A graduation of 1 degree is difficult reading & one that is 5 degree will not be accurate enough but will have a variation that will throw you off your goal.

MAPS AND WHAT TO DO WITH THEM?:

(HIDE THEM?)

To most of us reading a road maps represents no problems but the reading of a topographical map has little similarity to the common road map since it shows a great deal more by showing the actual topography of the area. This type of map offers you all the information Tarzan needs to find his way in the back country.

A WORD OF CAUTION FOR THESE MAPS:

Often they are 10 years old thus do not show current roads or other man made structures so if you run into a uncharted road it is OK.

Just check the map date which will tell you that. Chances are the road was build after the map publishing.

TOPOGRAPHICAL MAP ???: or (TOPO)

The primary purpose of the topographic map is to show the contours of the terrain.

They are made from aerial pixgraphs of the area and by using stereoscopic viewing method and special machines map makers are able to project the actual contour line on the map.

When looking a TOPO map in the lower left hand corner you will find the date that the aerial pixgraph was taken.

Many maps were made in the mid 50 or 60's and we should keep this in mind when moving over unknown terrain.

The rivers, hills, streams, valleys and mountains will be shown but more likely many of the present roads and other made structures won't appear.

Use the map for determining the terrain and shift with the roads and other structures as you come upon them.

One time through the area and you will be familiar with these also. Topo maps are easily obtainable from the government & in ordering these maps you **MUSTREMEMBER** to give the exact quadrant or area you need.

An inexperienced map reader may be overwhelmed, when he first looks at a topo map, looking like a bunch of mysterious squiggly brown and green lines drawn in no apparent pattern. However with a little knowledge these soon begin to take on some meaning.

FIRST TO CHECK:

The first thing you MUST check is that you have a map of the right area which is written in the lower-right-hand corner of the map. Maps are normally named by landmarks or particular areas.

Just left of the quadrant name is a map of the state in which the section of the map appears & a dot that represents where the section is located within the state map.

Moving to the left of this, there is the scale for that particular map. These scales run from 1:1,000,000 a small scale map to one of 1:20,000.

A very large scale map. There will be a distance line marked off in scale for miles or feet and in some cases both.

This is an aid in plotting map distances before starting out. For ex: prior to leaving you can determine your nights campfire by using the maps to plot the distance & your average miles covered by day.

MAGNETIC DECLINATION & TRUE NORTH !:

An important item on the map is the magnetic declination diagram shown in the margin towards left of the map.

This will have a star with a straight line representing the North Star and a line to the right of it or left of it depending on the area, to denote the magnetic declination you**MUST apply** to correct your compass in order to use the map for true headings.

Another line with a GN will also appear which represent the Geographic North. The North Star is actually one degree to the East. The diagram is used to compute your true directions by compass on that particular map.

There are few basic rules to follow in order to do this. To change magnetic to true headings you will add East declination and subtract West declination.

If you want to convert from True to Magnetic you will subtract East and add West. This appears confusing, so let's use a map of an area as an example. *

The topo map has a declination angle at the bottom of the page which shows True North by using a star and a straight line as mentioned above. The declination for this particular area shows a 1 degree ** East declination from True North.

A reading with the compass will give a Magnetic North and if this is followed you would end up * degrees too far East.

To convert Magnetic North on the map on the compass to coincide with True North on the map, add *degrees to whatever reading is obtained on the compass and you will be back on course Spock. Along the edges of the map will be latitude & longitude markings.

In the middle section along the edge will be the name of the next quadrant that matches your map. If you plan a long hike **you MUST have both quadrant sections with you**. These can be cut and taped together to make one large map or use individually.

On the face of the map you will find the actual terrain markings. These will show you the features of the terrain such as streams peaks, rivers and forest.

In addition once you learned how to read the contour lines you will be able to predetermine the slopes of the terrain which is the beauty of the topo map. It saves one from hiking many miles only to find that you have run into an impassable peak or cliff.

By using contour lines one can plot his course to go around these obstacles prior to setting out & this can save many miles of backtracking

SHADING COLOURS:

In looking at a topo map you will notice that areas are shaded in various colours. These colours play an important function in map reading. Black stands for man made objects, such as roads, towns and buildings.

Blue represents rivers, lakes, creeks nor creeps and other bodies of water as well as permanent snow and ice. The colour Brown is used for all contour lines except those in an area of permanent snow and ice.

A darker brown line is used for altitude checks and will have the altitude written in small print alongside the line.

An area shaded in green represents a forest area with lighter shades of green used for a sage or lighter foliage area.

A tufted green area indicates marshes or a swamp area. Red is used for subdivision boundaries and more important roads.

A quick look at a topo map will tell you where the timber is, where the water & the roads are; and with a careful study of the contour lines, you can determine the steep areas that should be avoided.

When the brown contour line are close together and it's difficult to tell them apart, it means that you are looking at a virtual cliff face. Unless you are a rock climber or Superman this would be an area to avoid.

Where the contour lines are farther apart, it means the slope is more gradual and the walking should be easy.

By using these contour lines and taking compass bearings BEFORE setting off on your trip you can preplan your entire trip to Bozo land.

Should you get turn around, a good way to find your location is to check the contour high points on your map (peaks) then look around your for these peaks. By using them as a reference you can determine where you are in relation to your map.

You should use 2 or more check points, since this will enable you to better pinpoint the actual location of Enterprise or Jane or Tarzan.

ROADS ???:

Topo maps also show jeep roads, pack trails and some include hiking trails. There will be times when you find a trail not shown on the map.

The reason for this is that often where there is too much traffic on a particular trail, these trails will be left off the map in order to help lighten the traffic in the interest of ecology.

PRE-PLANNING:

By preplanning with a topo map you can mark each days hike before you leave. However if you plan to camp at a stream shown on your map, take along a canteen & keep it filled anyway

These streams can be dry at certain times of the year or may have dried up completely since the map was made.

You should **NEVER** rely completely upon your map without obtaining current information from other sources, a good source the smugglers, the game warden or forestry service office of the area where you plan to hike.

It is also a good idea? to check in with them and let them know who you are (Spock) and where you plan to go.

How long you plan to be there and if something should happen and you are late in returning there will be someone in the immediate area who might become alarmed & come looking for you.

With this in mind be sure to advise them when you are leaving the area, to go back to Enterprise!

#QUADRANT# ?!?:

If you don't know the exact quadrant area you need you should ask for the index of the state in which you are interested. In USA the USGS will send an index map that has all the quadrant available in that area.

When you receive this larger map which is too small a scale for use, you can pinpoint the area needed and order it by quadrant designation. Quadrants maps cost is cheap.

The department of Agriculture had maps but without contour lines they do show access road and all man-made structure, but very little else, so stick to topo map as much as you can.

If the use of aerial pixgraphs sounds interesting to you they may be obtained from the Map Information Office US Geo. Survey Washington DC 20242

COMPASS MAP READING: *

#Align# the compass on this road as shown on pix*. Turn the #logement of the compass# until the #meridians# on the see through face of the compass is parallel to the #meridians# of the map and that the North (N) points to the geographic North of the maps as pix*

The perimeter of the compass face is divided in intervals of 2 degrees represented by a small line and at intervals of 10 degrees marked by a bigger line then by Arabic number every 20 degrees. The number 2 represent 020 degree and the number 4,040 degrees as well.

The number 26 represent 260 degrees and so on and the N = 360 degrees North. Now the road you **MUST** take in regard to the direction. According to the pix* the road to follow would be approximately at 040 degree on the Geographic North.

MAGNETIC DECLINATION:

Now you know the road to take as far as the Geographic North. **To follow this road you MUST take in account the local magnetic declination**.

In other words the difference between the Geographic North and the Magnetic North. The declination will be toward the East or West & it is **ALWAYS** indicated on topo map.

There is a good rule to REMEMBER the declination. If the declination is East = subtract if it is West = add.

Ex: The Pix * 121b shows that the road to follow from A to B is at 040 degree on the Geo North. Lets suppose that the local declination is of 20 degree East thus:

Consequently to the rule we **MUST** subtract 20 degree of declination toward the East of our:" 040 degrees" in so far as to the Geo. North which represents the road that Spock or you **MUST follow.**

This operation gives us a Magnetic direction of 020 degrees which is indicated on the compass facing the direction indicator.

HOW TO USE YOUR COMPASS:

Once the Magnetic direction is established and marked on the compass you are ready to go. Holding your compass in your hand (away from buckle, steel etc.) turn around slowly on yourself till the red tip end of the arrow points to the North "N" on the compass face and that the magnetic needle is parallel to the 2 luminous lines.

The compass is now pointed into the direction of the road to take and you can trace a direction line..

The reading of the magnetic needle is done between the 2 lines which should be luminous by the reflection of your dial.

When using the dial you will notice that when the needle is orientated between the 2 parallel lines it seems that it is closer from to another. Which gives you the impression that the needle is not exactly in the centre *

This is explained by the law of the #parallax on the reflexion# for the dial tip at an angle of 41 degree acts on the #reflexion#.

Consequently when you use your dial, put the needle parallel to the orientation line which appears to be the nearest thus you will get an exact reading.

WHEN USING THE DIAL MAKE SURE THAT THE COMPASS IS AT LEVEL.

NEEDLE WRONG POSITION ???: (oooppss!)

The magnetic needle seems to be centred between the 2 luminous lines but not parallel to it.

So take a #point de repere# toward which points # la ligne de viser# (tree, rock etc.)

Walk in the direction of this aiming point. Once your have reach it, aim again & take another point of sight as you did before. Progressing from one point to the next you will move in a straight line in the wild toward your destination.

EVALUATION OF DISTANCES:

When we move one may have to know a mean to evaluate the distance done as for ex;

A) To explore the region of your crash and to discover its possibilities.

B) To move in zigzag in order to continue moving your path on the other side of the obstacle.

C) Because it is not easy to orient yourself on the terrain using a map at the scale of 16 miles to the inch.

You **MUST** establish a relation between the true distance taken on the ground & the distances taken on the map scale which simplifies a lot the interpretation.

30 INCHES STEP:

There is an estimation method for distances which consist in counting the number of feet in a predetermined fashion.

For this we base ourselves on the measure that 1 step = 30 inches which is the one used in most military exercise. It is not a small nor a big step for most people but it is usually the one you use everyday.

1 step = 30" A double step (each time the same foot hits ground) is = 60" or 5 feet) so 66 double step = 330 feet or 1# portee.# So make a knot in your string for each #portee.# And 16 #portee# = 5,280 or 1 mile.

READING MAPS: *

Since its not easy to learn all the conventional signs indicated on different maps, it is still good to know the one indicating the difficult paths or impracticable ones. Terrain breakdowns are generally indicated in this manner.

SWAMPS:

The dotted line indicates that the border of the swamp is undetermined.

RAPIDS:

They are indicated by a series of light line drawn across the river where the RAPIDS are located. Generally they are indicated only for navigable rivers. *

FALLS:

Usually shown as a double light line across the river with the word FALLS or chute and a number showing height of the Fall in feet. (FALL-INNG!)

TRAILS:

Shown usually by a dotted line either simple or double. A simple dotted line usually shows a horse trail whereas the double dotted line usually shows a truck or tractor trail.

CABINS:

The forest warden cabins are marked by a black square with the mention Cabins, mission or look out tower. The trading post are equally indicated with a black square with the indication (TR) across.

You **MUST REMEMBER** that the straight line is not necessarily the fastest way to go from one point to another.

Determine carefully your path by following the terrain offering the best walking conditions even if you have to walk further by a couple miles. At the end you'll be the winner.

A steep slope of 25 feet will take you the same time as to walk around for 300 feet. And it may be less tiring and dangerous to go around. Saving energy is essential in Survival!

#MARKINGS#:

When moving across an unknown region the marking of the trees represents numerous advantages.

Used not only to guide the rescue team but equally helps the victim survivor to retrace his path and to come back to his crash site should he changes his mind or that he**MUST** resign to move.

In the Bush the marks MUST be on both side of the trees. Markings right, messages & change of directions different markings signs.

In a more arid region or low growth just brake the branch of a shrub to indicate your path.

If for any reasons you leave emergency camp even if only for a short period then leave a note stating in detail your plans and where you are going.

AZIMUTH ??? OR DIRECTION ANGLE:

To indicate the direction when practising the orientation we give the Azimuth or direction angle. What is an Azimuth? It is an angle which measures in degree in the clockwise fashion; this angle is formed by the Geo. North line and by the direction line of your walk.

If you have a compass at hand an Azimuth is the number of degree between the coloured pointed of the needle of your compass (taking in account the magnetic declination) and the Imaginary line which starts from the centre of your compass and which aims the goal you want to reach.

Ex: tree, rock etc. You can then say that this tree has such an Azimuth degree. Taken for ex; the Azimuth 90 you are going East and the azimuth 270 means going West.

If you want to try the compass, place yourself in an open land and follow the Azimuth 45 for 20 steps then come back on your step **ALWAYS** using the compass you will then notice that you are following the Azimuth 225. You will **ALWAYS** notice a difference of 180 degrees.

#AZIMUTH OF A SIGHT (REPERE)#:

To find it and without taking in account of the magnetic declination lets say of a tree, you place your compass directly on the horizon, the tip of the needle and the North are well in line.

You then read the number on the circumference of the graduated dial at the spot where would cut an imaginary line which would start from the centre of the compass to go toward your sight # repere# (tree). This number is the Azimuth you look for.

If you use a Silva compass this operation is even simpler. You point the arrow direction of your walk toward the #repere#, sight and you turn the moving receptacle so that the arrow North/South engraved at the bottom is in line with the magnetic needle. You then read your Azimuth at the base of the arrow showing the direction of your walk.

WALKING USING AN AZIMUTH:

To walk in a straight line while following an Azimuth you only have to chose a #point de repere# located on your walk path (tree, house, cliff) in order to orient yourself. If the your path is a long one from A to B.

You MUST then MAKE SURE that you find another #point de repere# in line with the first one, so that you bear aim on it before reaching it.

FROM TIME TO TIME YOU MUST CHECK THE AZIMUTH WITH THE COMPASS SO AS NOT TO ERR.

Here is a game to help develop your skills to follow a determined direction. On a flat land place a stone at your feet then walk 20 steps at 25 degree then 20 steps at 145 then 20 steps at 265. Now bend down the stone should be at your foot.

MEASURING DISTANCES ON THE MAP:

If you want to measure distance between 2 points, scale, draw this distance on a piece of paper the length between these 2 points then report this distance on the scale of the map.

If the road curves a lot bring on the paper all different parts of this distance of the road then report the total length with the map scale. You might be off a bit but not much.

CARDINAL POINTS ON MAP:

The top part of the Map is North, the left side = West.

MAP ORIENTATION USING A COMPASS: *

1) Spread the map flat and on the vertical side and place your compass.

2) In the case of needle compass your turn carefully the box until the North is under the coloured tip of the needle. If you have a compass with a dial, it's easier to do.

3) You raise slightly the compass without moving the dial position and then you turn the map until the vertical border side of the map is in line with the number of degree of the Magnetic declination.

Use the declination shown on your map that is written at the bottom. That's all Spock. Your map is now oriented. Study carefully the Pix you will get it better. We have used a Magnetic declination of 16*

4) This way to orient the map permits you to aim direct azimuth without bothering with the Magnetic declination.

MAP ORIENTATION COMPARING WITH TERRAIN:

You can orient a map without the compass by simply comparing first with the elements of the surrounding scenery but this method is far from being as fast and as precise. You sometime can identify on the map the point where you are. This point is called observation point.

When it is the case you orient your map while locating on the terrain and on the map 2 #point de repere# far enough from you but at a visible distance such as a tower etc.

On the map you trace those 2 lines that tie the far away points to the observation point. #ligne de visee#.

You then make the map to pivot until the lines that you have traced coincide with the imaginary lines that tie them to the far off points of reference. Once you have obtained the coincidence your map is oriented.

It is very important to know how to orient a map if one wants to trace a precise path or wants to find back his original starting point.

Once you learned to read the conventional signs of the map and that you know how to orient it, it will be very easy to hit the bush with difficult terrain ahead.

#QUADRILLAGE#:* (?*Quadrant)

You have noted that on topo map and military map they are covered of squares either brown or purple and that the lines are oriented N/S or E/W and each wears a number.

So in order to give the position in #coordinations# you first give the number of the N/S line closest to the place you want to point or to beam up then you give the number of the E/W line. That's all to beam you up.

TO FIND YOUR POSITION WITHOUT COMPASS ON A CLOUDY DAY: (Call 911?)

Lay the edge of your knife on a white sheet of paper then turn the blade edge till the shadow is as thin as a thread, the sun is at the opposite of the shadow.

Knowing that the sun rises East & knowing what time it is, then you can figure out the sun direction and the path to choose from to reach Enterprise

#TOPOGRAPHICAL CROQUIS#* or MAP MAKING:

In an unknown country Note as we move along all that is important on our path in order to know the feeling of the land. This knowledge will increase your confidence and lessen panic.

A GOOD MAP MUST BE ORIENTED!:

1) It **MUST** well indicates where the North /

South/East /West are.

2) Done on a Scale. You choose the scale according to the terrain dimension and size, and the quantity of details to enter. At the scale of 1/1200, an inch on your map represents 100 feet on the land.

This is good for establishing a camp site. You can use a smaller scale 1/63,360 for ex; which gives 1" inch for 1 mile or a scale 1/31,680 = 2 inches for 1 mile. This scale can be used to situate the position of your camp in a region.

However you will not be able to an exact mapping at this scale because it would need a scale of precise instruments only use by surveyors etc. But you would do this to give an overall view of a full excursion trip.

3) Use the Conventional Signs. Use those of normal top map.

HERE'S HOW TO DO THIS:

1) Use a ruler and a piece of board on which is pinned a paper sheet use rock, pin, sticky paper, gum etc.

2) Orient your Map board and Don't move till the operation is done. Trace the Northern Direction.

3) Pin a needle in a spot on the sheet chosen in such way that the land surveyed comes to take place on your sheet *. The Needle represents You Rambo!

4) Trace lightly on the sheet the directions of the #points de repere# aimed in the scenery by using the ruler leaning on the needle.

5) Measure the distances from this objects by using one of the methods explain in the file *Estime.

6) Report those distances #sur la ligne des visees# while reducing down to a scale which you will write at the bottom of the map. Mark well on the sheet the positions of those #points de repere# using conventional signs see above.

7) Next Put in place the secondary #points de repere# then the roads, rivers, fences, joining up to points.

8) Indicate the zone covered by forest, swamps etc.

PANORAMIC MAP:

It consists to represent as exactly as possible what we see from a particular look out point. This map clearly indicates the position of #accidents du terrain# in their relation one to another, the best method is to use the grill system.

#GRILL MAKE UP:*#

Using strong cardboard a frame as shown of pix*p124. In the size or dimensions you **MUST** take in account that the frame **MUST** be divided in certain number of equal square

Meaning that if you want to divide your frame every inch the 2 dimensions of the frame **MUST** be #multiples entiers# for ex; 4 X 6 or 3 X 5 or 10 X 14.

Once you have marked using the ruler the starting and ending points of the thread you pass the thread using a good needle in the order indicated on the Pix right to left.

USE OF THE GRILL: *

1) Trace on a sheet of paper a #quadrillage# similar to the grill.

2) Hold the frame at a constant (same) distance from your eyes at harm's length. During the whole operation, your head **MUST** stay at the same place, freeze Rambo.

3) The sheet of paper being #quadrillated as the grill# you only have to draw as for a copy.

The place and position of each detail of the land are determined by the square in which we see it and according to his place in the square, then you just have to report it at its proper place in the drawing.

STEP TO FOLLOW in MAP MAKING:

1) Place the grill in a way as to get the desired land in sight.

2) Take a #point de repere# which you'll note the position into the grill and which will permit to replace this one at **ALWAYS** the same place # so as to **ALWAYS** see the same scenery across the similar squares#

3) Draw the main points of the scenery: bridges, church towers, hills, etc.

4) Trace the principal, main lines (roads, tree lines, wood edges) .

5) Complete the drawing by objects of lesser importance.

6) Darken your drawing line even more when they represent closer #plans#.

7) Shadow the wood zone.

8) Write the indications permitting to situate the scenery sight.

9) The station point where you are observing from.

10) The sight direction of the observer in the centre of scenery.

11) Indication of the names or nature of the main sites shown on the map.

12) Date & signature of the map is very important.

#Note: All those following indication * 8 a-d will have to be written on the outside of the drawing frame in order not to overwrite.# ***

NOTE ABOUT CALCULATION OF POSITION VIA SEA TO BE FOUND IN THE SEA CHAPTER.?***

COMPASS ADDED NOTES:

A COMPASS IS AS ESSENTIAL AN ITEM TO HAVE IN THE SURVIVAL AS A KNIFE.

Folks who have never learned to use a compass generally have the impression that learning to do so requires a college degree education. Not so.

A compass simply points towards magnetic North. It points North all the time, every day no matter which direction its owner is facing & that is pretty much it.

WARNING:

ALWAYS MAKE SURE THAT WHEN USING A COMPASS THERE IS NO IRON PART NEAR BY, SUCH AS YOUR BELT OR GUN OR WORSE THE HOOD OF A CAR.

All of the wonderful things that can be done using a compass are based on knowing where North lies and is performed by the user more than by the instrument.

Thanks to modern technology the woodsman of today can head into wilderness carrying the most reliable & versatile portable land navigation system in history. *

Most have a rotating bezel marked to 360 degrees in increment of one degree, a built-in map scale marked in miles, kilometers or both, a luminous needle or dial for night travel, and a highly accurate sighting system for zeroing in on prominent landmarks.

The compass still just points North as the old days but now also has the measuring tools necessary to calculate distances, plot multi-directional courses or simply lead a confuses hunter out of the woods.

In days gone by it was air-filled, fortunately, the majority of quality-made compasses on the market are liquid-filled. They have a very sensitive movement immersed in liquid and encased in a watertight housing.

The liquid does nothing to impede the movement of the indicator as it rotates toward magnetic North, but it does provide a braking action to prevent the indicator from bouncing back and forth before settling, a problem common to cheaply made air compasses.

The liquid will not freeze, even in subzero conditions, especially if the instrument is worn around the neck inside the coat as it should be.

The biggest concern about the liquid-filled compass is that of durability. What if it springs a leak?

The truth is that a leak is nearly impossible, even under conditions of hard abuse and even without liquid the compass will still function, it just takes several seconds for the indicator to settle.

One problem that should be looked for when

purchasing a compass is that of a bubble in the liquid. Small bubbles do not affect the movement of the indicator, but a large bubble can actually trap the needle and prevent it from pointing to Magnetic North.

Small bubble can occur naturally in the field from the forces of expansion and contraction, but a bubble in a new compass is a pretty good indication that something went wrong at the factory.

One of the most popular compasses among hunters is the so called "Hunter's Compass," a small, simple compass that pins onto the wearer's coat.

Some are the dial type, some are spherical and most are liquid-filled **but all of them should be avoided.** Too many hunters have discovered the lost of their compass ripped from their coats by a branch somewhere behind them.

All quality compasses are liquid filled. Some have a rotating bezel marked to 360 degrees and a few have an integral carrying case with hinged cover.

Simple pocket compasses are somewhat limited because the map scales, sighting system and other tools found on more complexes have been sacrificed in the interest of economy.

But don't get the idea that a pocket compass will not do the job. It may not be suitable for plotting a zigzag course through mountains or deep swamp, but it's very much capable of leading a plane crash victim or stranded canoeist or hunter to civilization along the most direct route.

The Lensatic compass, a military design dating back to WW2 is considered by many to be the best one available.

It comes equipped with a rotating bezel marked to the nearest degree, folding front and rear sight for zeroing in on distant landmarks, and a built-in map scale. The entire unit is encased in a non magnetic or plastic housing that folds into a compact package.

It is difficult to fault a compass design that has proven its usefulness from the jungle of Okinawa to the desert of Irak, but the Lensatic compass has been forced to take a backseat to smaller and more versatile compasses in the last decade.

Its only deficiencies are that it does not work as well with a map as some of the newer map compasses and its sighting system, so accurate for locating landmarks in open country, is nearly useless in the forest.

The map compass is the latest addition to the survivalist's orienteering arsenal. Official compass of the Boy Scouts and a favorite of professional woodsmen around the world, these highly versatile compasses are made of clear Plexiglas or high-impact plastic and, as the name implies are specifically designed for use with a map.

They have a rotating bezel for determining course direction to the nearest degree, map scales to determine distances in miles and kilometers, a liquid-filled housing and a luminous indicator for night travel.

The beauty of the map compass lies in its simple, uncomplicated design, durability and versatility, all of which have strong appeal to the survivalist.

Like survival knives, there are fine compasses on the market, all of which will perform admirably in any weather or terrain.

Following is a list of what we consider to be among the best in order of preference. US Price 1991

Silva Type 3 Map Compass = $15.00

Silva Polaris Type 7 = $10.00

Silva Trekker Type 20 = $20.00

Silva Guide Type 26 = $13.00

Suunto M3-D = $19.00

USING THE COMPASS:

Any compass, no matter how well made, is useless to its owner if he does not understand how it works and how to use it.

A GOOD COMPASS IS ABSOLUTELY ESSENTIAL TO THE WOODSMEN BUT SO IS THE MAP OF THE TERRAIN.

The first step in learning to use a compass is to understand that it points toward magnetic North all the time.

Magnetic North is not necessarily true North, but since most good maps take into account the amount of "declination" (the discrepancy between true North and magnetic North), this is almost never a problem.

The direction shown on a topographical map will be referenced to magnetic North rather than true North. For the purpose of simplification we will refer to magnetic North simply as "North."

The bezel of the compass is marked in graduation of one degree, beginning at zero or North and rotating in a clockwise direction to 360 degrees, which is also zero.

Put simply, the points of the compass begin and end at North, which is both the 360 & zero degree mark.

The compass is also divided into "quadrants" or fourths with each quadrant equal to ninety degrees. Each of these quadrants represents a direction.

The direction found at the 90 degree mark to the right of North is due East. The direction found at the 180 (90+90=180) degree mark opposite North is due South.

At 270 degree (180+90=270), we find due West. And 90 degrees further brings us back to 360 degrees that is also zero or due North.

Of course, any return course will be in exactly the opposite direction of the one taken into the woods, or 180 degrees from the original direction.

If a hiker enters the forest on a course of 300 degrees West by Northwest, the direction that will head him back out will be 120 degrees by Southeast, or 180 degrees from the original direction. (300-180=120).

Each quadrant is further divided into halves for the purpose of communicating directions. Half of 90 degrees is 45 degrees. The 45 degrees mark is the dividing line between a direction and its adjacent directions.

For instance, the 34 degree mark would be stated as "34 degrees North by Northeast." 72 degrees would be 72 degrees East by Northeast. 260 degrees would be 260 degrees West by Southwest and so on & on.

It is ESSENTIAL that any woodsman entering the woods take a compass reading or "bearing," BEFORE starting his trek.

To determine the location of roads, railways, and other large landmarks that would be hard to miss. It is difficult to determine which direction leads out when one does not know which direction brought him in.

Whenever possible the compass should be complemented by a map. Topographical maps available from outfitters, Fish & Game Field offices and bookstores are best because they show terrain contours, & elevations that are very handy for avoiding obstacles such as mountains. But any map is better than none.

To plot a course with the map and compass, lay the map on as flat a surface as possible **but (NEVER ON A CAR HOOD)** and place the compass on top of it.

Align both the map and compass toward the North. Determine your present location as closely as possible on the map, and the direction of your objective.

Using the map scale of the compass as a straightedge draw a line connecting the two. (A pencil & a pad should be part of any survivalist kit.)

Now lay the compass on the map so that the center of the dial is directly on top of the point indicating your present location.

(This is much easier with a transparent map compass) and read your course direction in degrees at the point where the pencil line interest (points to) the bezel.

Actual distances can be determined by using the map scale on the compass. This is all the orienteering the person in a survival situation needs to know.