

EVALUATION:

In a survival situation **before leaving a spot, REMEMBER** that is also **IMPORTANT** to note the time, distance of your path, trip, just as much as to maintain a straight course on your goal.

LOG BOOK:

A Journal well detailed and chronological becomes **ESSENTIAL to the success** of Sailing by #estimation # but also to Survival itself.

For centuries Sailors have use the sailing by EVALUATION to direct their ship when they see no coast or when the weather is bad. This method is also used for land travelling.

Moving upon land MUST be carefully planed. One **MUST** know if possible, for sure or at least approximately his starting point as well as his destination.

And if one has a map, these #points# will be shown as well as worthy landscape information. Those #points# when perfectly identifiable become that many control points.

When you have no map, this specific sight is done #point by point# on a piece of paper.

The scale used **MUST** permit to draw all the path on the same sheet. The Northern direction well established, the starting point and destination will be pointed, noted in exact relation with one another.

If the terrain allows it the ideal direction would be a straight line uniting the starting and ending point but this is rarely the case.

The trip is usually done in many portions and steps using the Azimuth (angle in degree) (see compass file *) and this Azimuth is taken & determined at the start of the first trip

One start to measure from his starting point all the way to next point or change of direction.

Then a new Azimuth is taken for the 2nd step and the distance is measured till the other goal or change of direction, etc.

EVERY READING MUST BE VERY CAREFULLY REGISTERED and all positions well entered and described.

STEP MEASURING:

To establish the distance made the step is the best unit to measure which is approx. 30 inches.

The steps are usually counted in 100 being easier to calculate and noted on a string and or in the Log-Book, or by small pebbles in your pants, etc.

Those distances are of course approximate but will do the trick but with practice they become more and more precise.

MEASURING STEP + OR - :

For anyone in survival it is **important to predetermined** ahead the average length of his step in inches or foot the distance travelled in 10 steps then to divide it by 10 = your step size.

On the terrain the account of the average step **MUST** be verified & checked according to the following conditions:

Slope or Inclinations:

The steps are longer going down, shorter = up.

Wind: Against the wind steps are shorter, with wind = longer.

Surface: Sand, gravel, mud all alike surfaces = shorter steps.

Weather: Snow, rain or ice = shorter steps.

Clothing: Too heavy = shorter steps.

Different Shoes: can also affect the traction and consequently the length of steps. Endurance & Resistance and Fatigue: Make us crawl at time.

#POINTS DE REPERE#*:

It is any objects well defined, seen, and located on the terrain, or ground in the direction that we want to follow and toward which a sailor sails for.

It is easier to move around by using these #point de repere# than to constantly use the compass orientation.

NUMBER EVALUATION:

How many trees are in an orchard or persons in a room? You count quickly how many items in 1/4 or 1/10 of the area then multiply by the total surface in order to get a good approximate.

EVALUATIONS:

To master your path in an unknown land it is not enough to have a sense of directions but also have the sense of distances.

It is not enough to locate correctly the stars and where you are but also to be able to measure the trip to travel.

Evaluate the importance of an obstacle, to estimate the height of a slope and its steepness and the variation of a road angle.

It is good to be able to measure distance on a map but **only** if you have sufficient ability to evaluate dimensions so that you can correctly be capable to represent what your measures will be once applied to the terrain.

Once **MUST** also **REMEMBER** that the habit to evaluate all type of height is absolutely needed in survival & rescuers

Not only to establish an optical system for signals but also to establish projects to build a small bridge or simply to divide rations.

First thing to do is to create the habit to know your personnel measurements (check it every 6 month for kids) thus you will carry on you your personnel measuring rulers without ever forgetting them home. Now to establish your steps see above.

Then you **MUST** retain the dimensions of the things that surround you; to evaluate the dimensions of a house with or no stories know the usual height of phone pole and of trees of same species or not that have the same height.

Then you **MUST** try to have a compass eye. It is not to get mixed up in complicated procedure but to acquire with training a sure and quick judgement.

The eye compass or nose sight is a result of long habit to evaluate and measure coming from a long training.

DISTANCE APPEAR LONGER:

Than they are in reality when the terrain is accidented & rough. If there are shadows or fog, also at sunset the object observed is hard to see lacking contrast, or because we are too low or hot.

DISTANCE APPEAR SHORTER:

Than they are if: the terrain is flat, or weather is real clear (after rain or storm), or just before and just after the sunset or if you observe over a water area.

Or if there is a colour contrast between the object under observation and the background or when we observe from a high point, or above a valley or if snow.

Now the quick evaluation of distance is not the only habit to acquire but also to learn to estimate in one quick look the surface & quantities, to evaluate weight and time.

SURFACES:

We evaluate them by comparing with known spaces that we know well after we have well taken the measurements of their sizes.

Then we check precisely and we calculate the surface. First evaluate with your eye then evaluate by comparison then check your measures.

QUANTITIES:

Evaluate also by trial and verification till errors are minimal. Check with scale for ration.

WEIGHTS:

Estimations by comparing with a known weight & holding the other one in the right hand then change.

Start with mid heavy weight and to well know those of 1lb and 1 kg and 5lb - 5kg then learn to master weight of 10 grams (letter) to 20-30 kg.

TIME AND DURATION:

Their evaluation comes from a wide range of knowledge and habits where enters; the habit to evaluate the hour by the sun, moon or star.

The habit which becomes instinctive to know the darkening or increasing shadow of the scenery, length and rhythm of step, the memory of the effort to do the task, of the distance travelled, weather conditions, sense of rhythm to count the seconds, you can count out loud, 331, 332, 333 ...

In stressing on the 1 and 2 and 3 that tells you the number of seconds' past.

Control with a watch until you find a good rhythm, when relaxing you will have a tendency slowly, when excited times come you will count a little too fast because of hearth beat.

MONK! METHOD TO MEASURE TIME:

Using prayer, a Rosary or 5 decades takes about 15 minutes when said slowly! A full Rosary would take about 45 minutes to 1 hour, ask a catholic on that. 1 Hail Mary takes only 15 sec. 1 Our Father: 25 sec.

2 USEFUL THINGS TO LEARN ABOUT TIME MEASUREMENTS:

DISTANCES MEASURES:

To measure a distance; sounds travel at the speed of 330 meter per second approximate.

The interval in seconds and fractions of seconds are multiply by 330 will give you the distances in meter the echo gives you the double of distance.

DEPTH MEASURES:

To measure a depth, measure the interval of time in seconds between the moment where you drop a stone down the hole that you want to measure and the moment where you hear the shock of the stone in the bottom hole.

Here are from 0.5 sec to 3.5 sec the distances travelled approximately by a free falling stone.

0.5 sec = 1.20m; 1 sec.= 5m.; 1.5 sec = 11m; 2 sec = 19m; 2.5 sec = 30m; 3 sec = 44m; 3.5 sec = 60 meters = Boum!

EYE COMPASS: *photo p130

You have to create the habit by trial and error to evaluate the approximate measures and to do so quickly.

There are a great number of geometric procedures of estimation that are all based on the proportional sizes in similar triangle.

The drawing in this chapter will give you some method and procedures that we can vary as soon as we have Understood? The very simple geometric principles upon which they are based.

By using the proportions it permits you to tie #relier#, the real width of an object, the distance from where you see it, and the angle it takes which is a Compass Eye is all about!

Suppose that you are looking at the Game Keeper house or Forest Ranger in the photo* p130 If you really have it in the eye you follow this thought;

This house of average seems small compare to the distance because of the farness #eloignement#.

And with practice you will find at what distance **MUST** be situated a house of this size to seem so small, be seen under such a small angle.

If you want to fix the angle of your eye compass, the most simple means and way to do so, is the one that you use to #fixe# the opening of an angle on a compass.

For ex; 1cm. -- But under the condition that you indicate, show, the length of the compass' branches; for ex; 25cm. The angle measure is = 1cm to 25cm.

That same angle of your eye compass equally measures 2cm to 50cm or 2m to 50m; 20 to 500m...

It is perfectly defined by the equal reports between (width/distance)#*;2/50cm.--2/50m.-20/500m 1/25.

For this angle, the distance **ALWAYS** will be equal to 25 times the width of the observed building or object = X 25.

This is done in order to better our eye compass so as to be able to indicate with precision the apparent angle of the object under observation under the form or the proportion* (width/distance) of this angle.

REMEMBER that holding a pen at arm length is approximately at 50 cm from your eye. 1 cigarette is 7cm. Thus if you grade in 1/2cm you will be able to define the # angle de rapport# 1/100.

You **MUST** create the habit to use fluently the angles of 1/100 and their #multiples# that are more practical, useful for us.

The ruler or better the #grill# (where each square being fixed in width & height of #angle de rapport# of 1/100) will give us more precise indications.

A ruler divided in "cm and mm" * held at 50cm from the eye (string fixed to a button held between the teeth) gives between each 1/2cm and angle of 1/100 and between each * MM., an angle of 2/1000 or 0.2/100

An angle of 1/100 = 0 degree 34' or 0.5gr. and angle of 10 degree gives approximately a #rapport# of 18/100

The angle of a slope is usually given in % (a slope that rises of 1m per 100m gives an angle of 1/100 in relation with the horizon).

The height of the eyes is sensibly equal to a double usual foot step so in order to make an horizontal aim at the eye's height just walk till the aim #visee meets the slope (pente)# thus you will obtain a number of double step: 100/X -- angle in % (--in 1/100) This chapter needs proper #*.

ARMY EVALUATION DISTANCES:

In the German army the rules given to judge the distances are:

At 50m: One sees clearly the mouth and eyes of a man. / At 100m: The eyes look like dots. / At 200m: We still see the buttons and the details of the clothing.

At 300m: We still distinguish the face of a man./ At 400m: We see the legs moving. / At 500m. We still can distinguish the colour of the uniform.

FAST MEANS TO MEASURE APPROXIMATELY UNREACHABLE HEIGHT: (TREES-BUILDINGS)

1st. METHOD:

Stick a tree at some distance from the tree foot. Aim while leaning down the tip of the tree or building in such a way as to see it coincide with the tip of the stick.

Move the stick if need be farther back. (Stick should be **at least** 4-5ft.) The height will be $S \cdot X \cdot D \div O$.

S = Height of the stick. pix 131**

D=Distance between the eye and the foot of the tree.

O= Distance between the aiming point and the stick.

VARIATION # 1:

If there is sunshine, we proceed in similar fashion by placing the stick and in measuring the respective shadow of the tree and of the stick.

The formula is similar: if AB the height of the tree to measure, and if AC length of the tree's shadow measured with a scaled rope, & ED the height of the stick, and DF the length of the shadow's stick we thus obtain: $AB = AC \cdot ED \div DF$.

VARIATION # 2:

Measure 18m. from the foot of the tree, fix a stick in the ground at point 18m. then at 2m. from the stick, while leaning on the ground. Aim at the tip of the tree so as to be able to measure the height of #ligne de visee le long du stick#; 10 times this height will give you the height of the tree without further calculation.

The triangle base being 10 times greater than that of the smaller one. (20m. & 2m.) Evidently the height to measure will be 10 times the one of the #cursor above ground.# ($H=10h$). *

NOTE: To gain time, we will move the #cursor# while aiming using a helper, a friend. Place the aiming eye as close to the ground as possible to get better reading.

2ND METHOD:

Place at the foot of a tree or against a building, an object of known dimension, your walking stick for example.

Holding yourself at a distance **at least** the double of the presumed height count using a pen held at arm's length the number of units of the (stick) which would be contained in the height to be measured.

NOTE: In reality the measured length is that of the #arc de circle tangent to the object# being measured.

Thus we commit a small error but this one will be lessen if we place ourselves higher than the base of the object to be measured. On the pix p131* the height of the telephone pole is a little more than 4 times that of the stick.

3rd METHOD:

Take a square paper a, b, c, d; fold it in the diagonal CD, near C prick a needle E.*

Now join *AB by a string to which you will hang a stone P.* If we hold the # viseur# by the needle, the CA side will be vertical # (fil a plomb)# and the diagonal CD* will make a 45 degree angle with the ground.

Aim the tip of the tree with the diagonal CD while going forward or backward in order to spot (determine) A*.

Then measure the distance of that point to the foot of the tree B*. Add to this distance the height of the eye above the foot of the object to measure (*h) thus: $AB = h + L$.

4th METHOD:

Place on the ground a vase full of water "M"* Place yourself in such way that we see the summit "S"* of the object to measure being reflected in the water in "M".

The law of reflection of light makes it that the angles X and Y are equals. Now measure the distances A & B. Now measure "h" height of the eye above the ground we obtain: $H = h \times A \div B$.

NOTE: If a terrain is in slope this method is false. Don't use it.

DISTANCES:

The sound travels 330m. per sec. A far off noise that you can see the visual start (Industrial whistle) permits us to calculate immediately the distance by counting the exact number of seconds that the sound takes to reach our ears.

In mountain the echo permits to measure **very** exactly the distance of a rock face.

WIDTH OF RIVER: 1ST METHOD:

Plant a stick according to the photo* P131b **MAKING SURE** that they are at exact right angle

#angle droits# Now on AC perpendicular to AP (AP-L) takes a point B so that $AB = BC$.

Now aim PB & #prolonger.# The perpendicular in AC in C #cuts PB in D# = $AP = L$?

2ND METHOD: *

Plant a stick A in front of #reper# * P situated on the other side of the river.

Measure a perpendicular distance superior to 1/10 the presumed width of the river then plant another peg B.

Back-up away from the river in the #alignment# of AP on a distance of **at least** 1/4 of the presumed width of the river the plant C peg. Plant a last peg D behind * B in the alignment of P and perpendicularly to C.

The width of the river will be give by the formula: $L = AC \times AB \div CD - AB$?* #.

NOTE: The length $CD - AB$? * # is very small thus it has to be **measured very strictly**.

3RD METHOD Napoleon's Hat:

Facing the other side of the river, lower your hat on your face until the rim of your hat nearly hides the aimed point on the other side of the river.

Then without moving your head, on the right or on the left then find #reper# on your side of the river where is #le point du terrain# seen at the rim of your hat.

In other word you carry over this distance across to your left or right side to locate a fix, which would represent the distance across to the other side of the river. Now measure this distance from your feet to this #point de reper.#

In flat terrain the length found is the width of the river. A helper moving with a stick would permit to quickly determine the distance D to measure. If you check $D = L$.

HOW TO CONSTRUCT A RIGHT ANGLE ON THE GROUND:

We want to make at point B on a base AB a perpendicular vise /aim#.

- 1) Mark B with a small peg*
- 2) Fold in 2 a rope & mark its middle by a knot N*
- 3) Put the ends of the rope to A & B, the distance AB being whatever you want. Stretch the rope thus tying farther the knot that you fix with a small peg.
- 4) Bring the B end to point C so that ANC is an in straight line. The angle ABC is at right angle.