



öFINDING YOUR WAYö

AN INTRODUCTION TO NAVIGATIONAL RALLIES, WRITTEN
FOR THE GUIDANCE OF NAVIGATORS.



by

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Completely revised and updated February 2000

FINDING YOUR WAY ON NAVIGATIONAL RALLIES

The Bulletin regularly reports on navigational rallies and probably leaves many readers bewildered over herringbones, tulips, grid squares and the like, but what has been missing until now is a guide to what these terms mean and how to go about competing in Navigational rallies. This note aims to explain some of the mysteries of Ordnance Survey Maps and what to expect when competing in VSCC rallies. With absolutely no apology, it is primarily aimed at the navigators side of the car, but drivers who want to understand the navigators role will find it useful.

Firstly a definition. A rally is not a race. Rather it is a competition run to find the crew who can best follow a particular route at a set schedule. Going too fast will incur penalties just as much as going too slow or going the wrong way. Rally navigators therefore have essentially two disciplines to master ó Navigation and Time keeping. VSCC rallies are purposely testing in both these skills. This does not mean that a novice or a newcomer entering one of these events will get hopelessly lost, as they are usually run by people who appreciate that not everyone can be an expert, so help in the form of easier instructions, rejoin points etc. is usually provided for the less experienced.

VSCC rallies usually last 4 - 5 hours (or all night if you enter the famous Measham) and you will need an eligible car, pre-1931 or P.V.T. Inter-register rallies are supposed to be easier and usually of about 2 - 3 hours duration on a Sunday afternoon. However, navigation instructions have been known to be devious. Again you require an eligible vehicle, pre-war from one of the participating marques; FIAT, Austin 10, STD, Humber, Alvis, Crossley or Riley. There are of course lots of other events you can get involved with, from evening runs to cross Europe epics, all have their own flavours and idiosyncrasies. There is not space to deal with that all here, so let us concentrate on VSCC events.

As already mentioned, there are two different tasks to cope with (really there are three, because you also have to keep the driver under the delusion that he is the more important part of the crew; most drivers have very delicate egos that have to be maintained! Joking apart, this is very much a team sport, and the driver/navigator relationship is all important, drivers can help with both navigating and particularly regularity timing). Whilst the crew who get closest to the schedule will be the winners, and therefore clock watching is all important, if you are perfectly on time, but gently heading into the wrong county, you are not on time at all! So the first golden rule is the priority of tasks.

NAVIGATION FIRST, TIMEKEEPING SECOND.

In accordance with this rule, let us now deal with these two aspects separately.

NAVIGATION

MAPS

Assuming you have decided to enter a rally, the first thing the Navigator will need to know is which map(s) is/are required for the event. Most organisers will describe this in the event regulations, typically as Landranger 1 in 50,000 series No:xx. e.g. No 100 (Malton & Pickering). This tells you it is an Ordnance Survey Map with metric units and a scale of 50,000 ó 1. These are the standard maps that all rally organisers use in Great Britain. The number refers to the area which the map covers. Competent organisers will also tell you the revision level of the map, which is printed at the bottom of the panel which shows what the symbols mean, and will be in the form of an edition number or letter. As junctions get revised, roads added, changed and up or downgraded, so route definitions can change from map to map.

These definitions have two different codes.

1. The GSGS number. In blue print at the bottom of the key page (RHS of all OS Maps) and also at the top left of the map, there will be a Series number, Sheet number (eg 100), and Edition number followed by the letters GSGS. (eg 5 -GSGS.) It follows that Edition 4 óGSGS is an earlier edition and may give you problems if you try to use it. However the OS have been known to revise maps within a GSGS edition, and thus this is not a perfect ID.
2. The letter code. At the bottom of the key page on the right just above the bold print **1:50000 SECOND SERIES SHEET xxø** will be a small letter, normally A, B or C. Sometimes this has additions of numbers, and occasionally bars and asterisks. All the following are possibles.

e.g. A

A1

A2**

A3

A3*_*

Nice organisers will try and check their route on earlier editions to save you having to buy new maps every rally, and should advise you which editions are valid in the instructions sent out before the event! Edition revisions can be significant for navigational events and if the Edition identification is not quoted in the regulations, ultimately the only way to find out which one was used for setting the course is to phone the organiser.

BEFORE YOU START PLOTTING, SOME GOOD ADVICE

You will need to make markings on your map. Firstly make a map board to rest on your lap. Use some old cardboard, **DO NOT** use anything too solid like wood; it needs to be able to fold up in an emergency. Make it so that that you can look at and mark on more than one horizontal sector of the map, but not big enough so the driver cannot see the instruments or change gear. Equip yourself with a few soft pencils, (2B or 3B are recommended), a decent rubber, and a ruler. Highlighter pens can be useful, but should only be used for marking features. Do use any other pens, ballpoints or anything else that uses indelible ink, your map will not be reusable, and any incorrect plot cannot be eradicated. Pencil marks do not run, and can be rubbed out. To plot accurate references it is really essential to have a romer, which is a piece of plastic with a scale along each edge which coincides with the 1/10th grid squares. These are available at most motoring øgoodyøshops or the VSCC office should be able to provide an address. Most navigators hang theirs on a string round their necks so it is always to hand. Tip ó donø make the string too long, if the romer is down by your ankles, and you are in a hurry to or from the car, you are likely to trip over it and have a good go at the noble art of self-strangulation. Finally, get a clipboard to put your timecard on, it saves time at controls, and is less easily lost. Marshals cannot write on soggy unsupported card.

In the text that follows, there are some examples to help you, if you want to try them, they are all on Map 100, Malton and Pickering. *They can be identified by being printed like this in italics.*

Now open out your map and study it. First of all, do not turn the map! Always use it the correct way up, and get used to translating your brain when heading in another direction. e.g. Heading South (from the top), to turn to the East, your road will go to the right as you look at it, but tell your driver to go left.

As rallies go along a set route, effectively from point A to point B to point C etc it is important to understand what a junction is. Effectively all the vital decisions are made at junctions where you have a choice of route. Try to imagine a junction of two roads meeting as if you were standing in the central point of that junction. (Particularly useful for visualising herringbones ó see below) If you look around your imaginary junction, there are three distinct directions in which you can leave. Crossroads have four, some have even more.

Rally routes should not use the same road twice, unless you are specifically informed so (such as entering and leaving a halfway halt). So if you plot your route and it comes back on itself, you have misplotted. It is possible to turn left at a cross roads twice, as technically the two opposite route paths do not touch, but this is a rare event, and organisers are asked to try to avoid it, as two rally cars approaching each other is not a good policy.

Organisers should advise you the rule about shortest route. Generally the correct route is the shortest possible that fits with all the instructions. If they do not do this you are quite at liberty to take a longer route that fits, but this may end in disagreement after the finish! If it has not been stipulated, ask beforehand. Once you have plotted a section always check that the route you have plotted is the shortest if an alternative exists.

Draw your pencilled route down the side of the road, not on it, you might draw over useful detail.

Get used to the points of the compass. You will very often be asked to approach from or depart to a certain direction. Approach North (N) means arrive at that point as if you were coming **from** the North pole. Depart West (W) means leave that point as if heading **towards** sunset. Navigators tend to confuse East and West far more easily than North and South. Make sure you know the difference between the eight generally used points, e.g ENE is different from NE, is different from NNE

Road Colours. Organisers love different grades of road. Look at your map, and you will see Blue roads (Motorways), Reds (A roads), Browns (B roads) (actually the colour is more orange, but they are always known as Brown) , Yellow (unclassified) roads, and white roads (unmaintained or private tracks and roads). Check to see whether the organisers state Coloured Roads Only (CRO). This means do not take any white roads into account when plotting and driving.

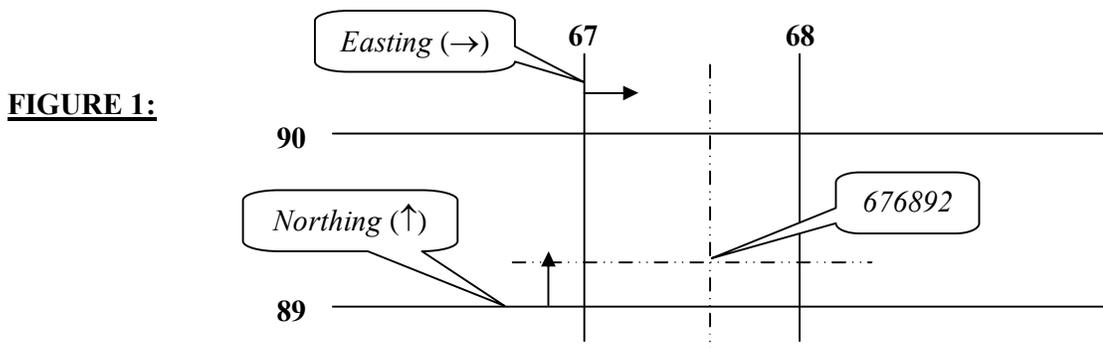
When plotting, you are plotting to a map. If the map shows a roundabout, the organisers will take that into account, even if when you get to the actual location, that roundabout has disappeared! Trying to plot to the road as you see it is not good policy.

Do bear in mind that the event takes place on the public highway, and you are not exempt from obeying the laws of the land. Drivers must beware that other traffic may be present, and has a perfect right to be there. Occasionally, you may get held up through no fault of your own, this is just one of those things, and there is no point in letting emotion get the better of you.

Finally, however hard they try, organisers are human beings and do make rare mistakes. Try to spot a deliberate trick from an unfortunate error, you may have to use your intuition! Now, to the maps.

MAP (GRID) REFERENCES

Once you have the correct map the first thing you will notice is that the map is divided up into grid squares by horizontal lines (Northings) and vertical lines (Eastings). These are numbered at the edge of the map by two digits 56, 97 etc., and are repeated about three times at intervals on each map. It is as well to highlight these numbers so they can be found quickly while bouncing around in a rally car (check that the figures across the map correspond with those along the edges).



Each grid square is denoted by a four digit number eg 6789. The first pair (67) refers to the grid line which forms the left hand edge of the square and the second pair (89) denotes the grid line which forms the lower edge of the square. Thus 6789 refers to the square to the right of Easting 67 and above Northing 89. (*This is the grid square where the village of Fadmoor will be found – Map 100 remember*)

Every rally will make use of map references (sometimes called Grid References) which are generally a six figure number pinpointing a location on the map e.g., 676892. The first 2 digits define the Easting and the third digit indicates the point of 6/10ths of a grid square to the right of the 67 grid line. Similarly 89 denotes the Northing and 2 denotes that the point lies 2/10ths of a square above the 89 Northing (see Figure 1). The defined point is the intersection of the vertical line defined by the first 3 numbers and the horizontal line defined by the last 3. Remember which way round they are by the expression *“along the corridor then up the stairs”*! (*676892 is the junction of the yellow road and the white road farm track heading North East in the bottom left of the square*).

Some map references may further subdivide each tenth of the square into a half (or even a quarter), resulting in a map reference such as 675½893½. (*This point defines the bottom of the triangle of yellow roads in the village of Fadmoor*) There are error tolerances on maps and romers, and organisers usually use the fractions to ensure you use the right road, (*for instance the reference 675894 refers to the top left corner of the triangle, see how close these last two references are, they could be used to define two different routes round the triangle*).

Actually to be correct, a six figure map reference refers not to a point, but an area of 100 m² to the right and above that point defined by the romer. Organisers will often err just a little bit below and to the left of a desired point in order to stipulate the correct road if there is a possibility of error. Again, you may have to use your intuition to “get inside their heads”

GRIDLINES

These gridlines can also be used on their own, and you may get a list of them, indicating you should cross them in a particular order, or in a particular direction. (*e.g Map 100. Start in the centre of Pickering. 80, 81, 85, 82, 83, 86, 87, 84, 88, 88, 87, 86, 85, 86 leads up the A169 towards Whitby, then turns right at the Fox and Rabbit, and finally left at Pexton Moor by crossing Eastings and Northings in order*). Rally organisers particularly love doing this when the numbers of the Eastings and Northings are similar, like this example. (*This route could just as well be defined by saying 84, 85, 86, 87, 87, 86, 86 (Northings only)*). Or they may use alternate Eastings and Northings. etc. etc.

SPOT HEIGHTS

If you look at any road on the map you will notice a black dot with a number next to it. This is a spot height denoting the number of metres above sea level of that point on the road (*In grid square 5984, look for spot height 166*). Spot heights also appear off roads but these are more normally ignored for rally navigation purposes. (*In grid square 5984, look for spot height 155*). The use of a highlighter pen is useful but beware of missing one of the spot heights. Navigation instructions are often given around spot heights; for example, proceed via the following spot heights means you pass over the spot heights quoted. As you plot these there may be an extra one on the map not quoted on the list of instructions indicating a detour is necessary to avoid this extra spot height. The instructions may only give every second spot height in which case it is probably intended that you pass through the ones not mentioned. Sometimes the instructions may be, “proceed to MR without crossing spot heights 1 1 1 1 1 1 1 .”, detours must be made to avoid these spot heights.

e.g. Start at 527678 (roundabout) proceed to 590725 (Brandsby) via only the following:- 24, 27, 49, 38, 66, 55, 54, 94.

Try plotting a route using that information. Does it match with the following?

The route goes through Easingwold, then East and North East to Brandsby, but notice that there is only one spot height nominated between 38 and 55. Your route therefore cannot enter Crayke from the West (you would be going via 63 and 79), nor can it loop past Mount Pleasant farm to enter Crayke past the Castle (no spot height). The correct route uses the loop to the South past Woodhouse Farm.

MIXTURES

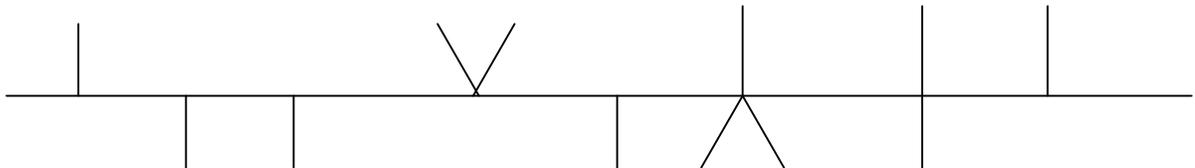
The possible combinations of instructions are endless. A particularly testing form of instruction can be as follows. Proceed via 662920 234 301 355 646965 355374. Being confronted by this while being shaken about in the car and interrogated by the driver as to which way next requires a laid back approach. The first thing to do is to look at the map. You should know roughly where this section starts from previous instructions so look at the spot heights and get an overall impression of the height of the roads. In the above example the area is around 300 metres above sea level. Next look at the grid square to get an overall impression of the numbers Eastings and Northings. In the example above the map would probably show Eastings from 60 to 80 and Northings from 80 to 00. So now it is possible to decipher the instructions. Obviously, the first feature is not a spot height as the area is not 50 metres or 500 metres above sea level, but the first six digits could be a map reference. If this plots on a road, lightly mark the instructions to keep track of where you are. Again the next part is probably a map reference for the same reason. The next six digits cannot be a map reference because they would be off the map, but a spot height is likely and so on until you have the route plotted. It is not uncommon for organisers to miss out the spaces, the above could just as well read 662920234301355646965355374, it is then up to you to work out how it all breaks down ó great fun! Furthermore, gridlines or contours might be added in to further complicate matters. (662920 234 301 355 646965 355374 plots from North of Boonhill Common, heading North up the white road over Rudland Rig, and turning left towards Cow Sike. The last six numbers are two spot heights together in one number)

CONTOURS AND T.P.s

While on the subject of height there are two other common ways of defining this on an O.S. map. Contours are lines in brown which denote lines of equal height. They are broken in places by a number which defines the height above the sea level of that particular contour. It follows that if contour lines are close together then the terrain is hilly and if spaced wide apart the ground will be flat. Crossing or not crossing contour lines is a regular feature of navigation. Triangulation points are shown as a dot in a triangle. These are rarely found on roads and are therefore not often used. (In grid square 5984, look for triangulation point 171).

HERRINGBONES

After map references, the herringbone is probably the most common method of route instruction found on navigational rallies, in its simplest form it looks like:

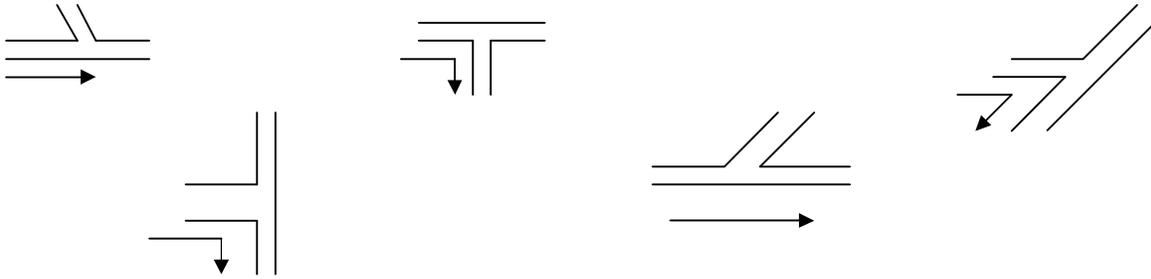


The idea is that the route is shown by the continuous line. If the organisers are kind then they will mark which end of the herringbone is the start; if they are devious then they may intend that it is read from right to left or it may be a mirror image.

Let us assume that the above herringbone is conventionally read from left to right. The first junction is shown as:-

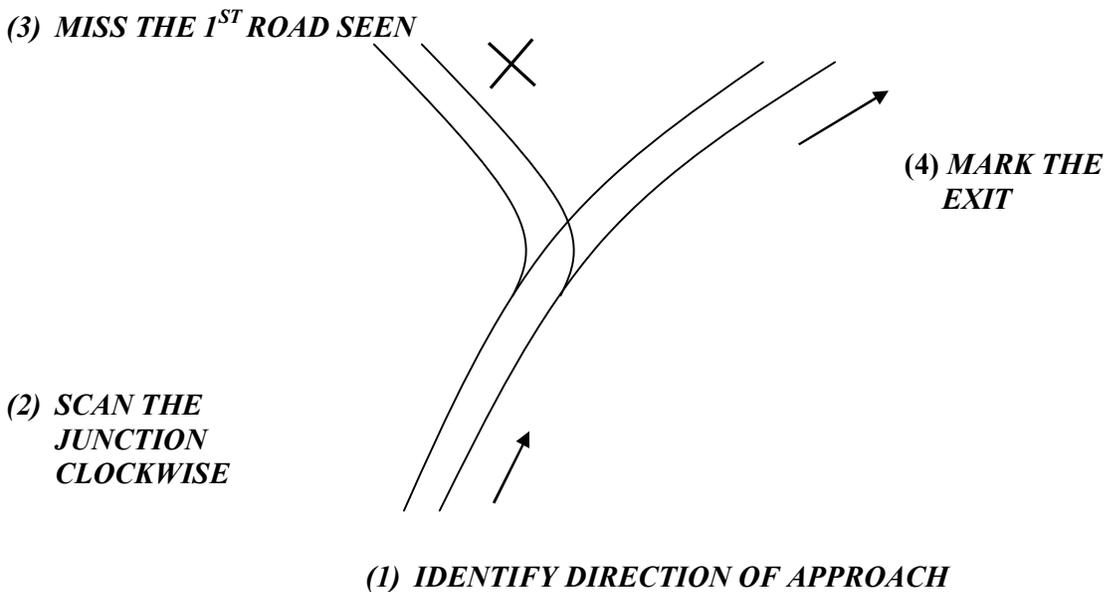


However on the map the junction could be any of the following configurations:



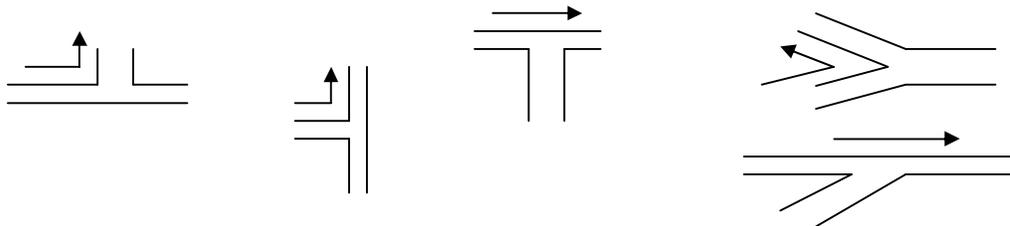
The arrow shows the correct route through the junction for the 1st junction of the example herringbone shown above.

In order to make sure the correct road is found the following process may be useful. For junction (1) in the sample herringbone above, think of it as 'miss a left'. Then identify the direction of approach to the junction on the map. Scan the junction clockwise and miss the 1st road seen. Mark the intended exit.



Continuing on the example, the second and third junctions on the example are 'miss a right' in which case the junction is scanned anti-clockwise and the first road missed.

The possible junctions on the map shown with the correct route through them for the second and third junctions of the example herringbone are shown below:

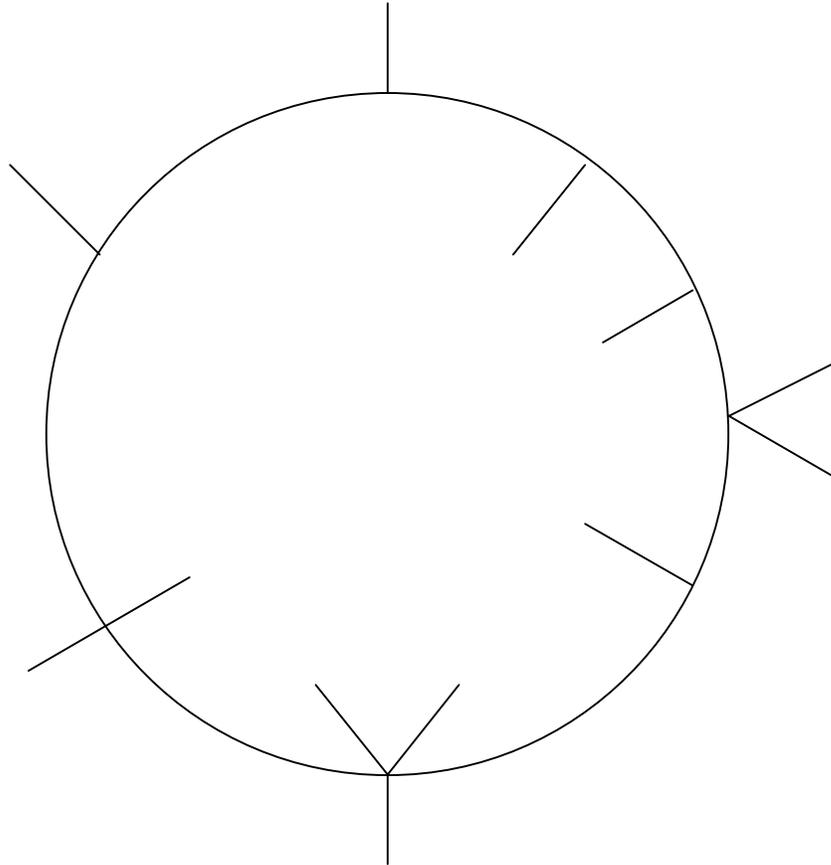


The fourth junction shown has to be a crossroads. The vee above the line indicates miss the left, miss the straight on and turn right, in fact the same procedure as used in the previous examples. A second crossroads is also shown on junction 7 of the herringbone which indicates straight on i.e., miss the right and left. At this point, it is worthwhile saying beware of roundabouts. Some organisers will denote them as crossroads, but this is not really technically correct, if the map shows roundabout, it should be shown as a series of junctions.

Junction 6 might be a roundabout where the route takes the second exit (i.e. miss 1 left) or it more likely is a junction of 5 roads with instructions to miss 1 left.

Crossroads are particularly important on herringbones as they are a good check that you are plotting the correct route. This is particularly useful when the herringbone is reversed, broken or circular (see below) as they can be used to identify the start by working back from the nearest crossroads.

CIRCULAR HERRINGBONES

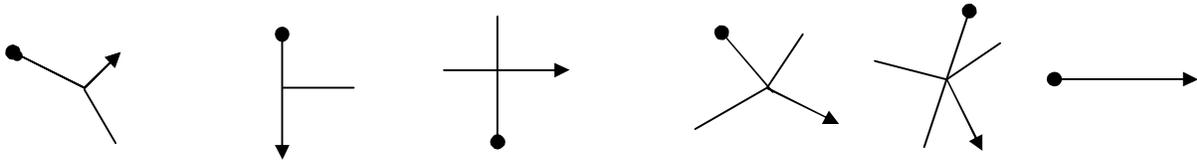


A circular herringbone is purely a normal herringbone turned back on itself. You have to go round the full circle missing left and rights as before, but this time you do not know the start and finish points, and which way round to travel the circle (unless the organiser is being very kind), and you will therefore have to resort to educated trial and error to find the solution. The above example has sixteen possible solutions ó very time consuming, but by using crossroads you can normally cut down the number of possible options. A useful tip to remember with herringbones, and many other instructions is if it doesn't work forwards, try it backwards. Many instructions will read 'proceed to xxxx by xxxö', therefore if the end point is known it may be possible to work back from there and overcome a problem which may not be so obvious when plotting forward.

There really is too much fuss made about herringbones as with a little practice they can be plotted easily and quickly!

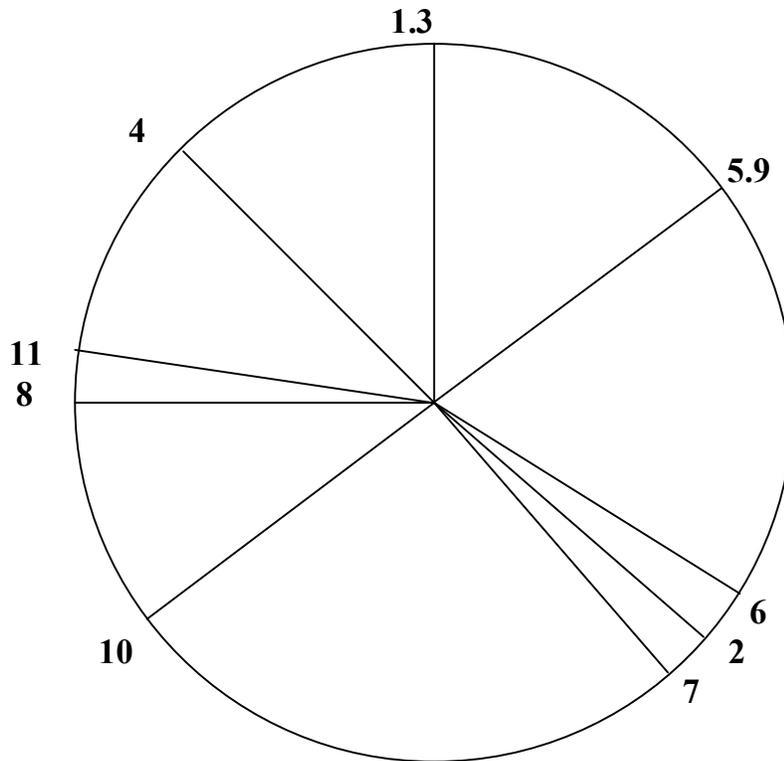
TULIPS

Tulips are another form of instruction which are used regularly, they are schematic versions of junctions on the map and are really straightforward. They look like this.:



These are simply a diagram of the junction; the dot being the entry road and the arrow showing the exit road. The only problem is because they are so easy, organisers are tempted to jumble them up when you have to look at the next junction on the map you may have to find a tulip which is that configuration and so on, or they may miss out a ball or an arrow or both, - or upside down, or some other combination!

An interesting variation on this theme is the bicycle wheel (or sundial) as shown below:



If you had a bicycle wheel with this many spokes missing you would be in trouble. However the spokes of the wheel show the direction of leaving the junction. For example; junction number 8 depart on the road which points West. Junctions 1 and 3 you would leave on the roads going North.

A variation is the sundial, much the same but without the outer circle.

ROAD COLOURS

These can be used in a variety of ways but this is a favourite.

YYY, YBB, YYYY, YRRY. Any ideas? These refer to the colours of the roads at a junction (use the standing in the middle method as explained above. Try finding a junction with three yellow roads, then a junction of yellow road meeting a brown, an all yellow crossroads, and a yellow road crossing a Red road. Plot your route by matching the junctions to the code.

CONCLUSION

This is a brief introduction to some of the more common methods of defining a route on Ordnance Survey maps. However there are numerous other means of doing this, and organisers are forever looking at maps trying to find new ways of making you think. Experience is the best educator. Once you understand and are proficient plotting routes described by methods so far, you are halfway to being a competent rally competitor. The second part of the job is to ensure your driver maintains the correct average speed required by the organisers.

TIMEKEEPING

INTRODUCTION & CONCEPTS

Despite some appearances to the contrary, a rally is a competition to reward the crew who can most accurately keep to a set schedule along a set route. There are a variety of ways and methods of timing rallies, but the essential principles do not vary. Every car is tasked to get from Control A to Control B to Control C etc. in a certain time. There will be penalties if the car arrives later than its expected time at controls, and there may be penalties if it arrives earlier than its expected time. It all depends on what the organiser is trying to achieve.

Although some rally sections are timed to an accuracy of a second, (e.g. some regularity rallies, and nearly all special stages), for VSCC purposes we keep all our timings to the minute. This means the previous whole minute (the minute that is showing on the clock), not the nearest minute. For instance, if you arrive at a control at any time between 20:33 and 0 seconds, and 20:33 and 59 seconds, your time will be recorded as 20:33. On some rallies, you are permitted to enter the control on the previous minute, and wait for the next minute to come up. but this is not generally acceptable on VSCC events (except sometimes at starts and restarts), so that the minute you arrive is the minute you get. Running to the minute helps to reduce the driver's temptation to take imprudent chances in order to save a small fraction of time.

As a rally is a competition set by the organiser as a challenge for the competitor, rather than a contest between individual crews, cars are not all released in one big bunch at the start, (rather a dangerous state of affairs on the public road). Instead they are set off at individual times, almost universally minute intervals. Rally organisers commonly refer to the timings for Car 0, and if competitors are sent off in their numerical order, they can easily work out their schedule by adding their running number in minutes to Car 0's time.

For instance if Car 0 is due at the start at 10:30, car 1's due time at the start will be 10:31, Car 3 - 10:33, Car 35 - 11:05, Car 77 - 11:47 etc. The rally will then proceed around its route, and if every competitor reaches each subsequent control at their exact schedule, they should produce a very neat convoy running at precise minute intervals. Would that life were so simple!

One good rule is to synchronise the clock(s) you are using to the organiser's master clock, which is normally on display at the start or signing-on. If he has done his job properly, all the clocks at the various controls will be synchronised as well, and therefore you will know in advance of handing over your card what time the marshal should be reading on his clock as you reach the control. Many people also use a separate stopwatch to keep a time for each individual section, and this is generally regarded as the easiest way to keep tabs on your average speed between controls.

RUNNING WITHIN THE TIME LIMITS

Once on the move it should be appreciated that controls are only open for a finite period of time. Commonly and depending on the organiser's wishes, they open 15 minutes before the first car is due, and close 30 or 45 minutes after the expected arrival of the last car (the regulations will state the requirements). However, to ensure fair play for all, each competitor has the same amount of valid time in which to check into a control.

Let us assume the due time of Car 0 at Time Control 2 (TC2) is 11:50, and the controls open 15 mins before and close 30 minutes after as described above.

	<u>Car 1</u>	<u>Car 3</u>	<u>Car 35</u>
Earliest permitted time of arrival	11:36	11:38	12:10
Ideal time of arrival	11:51	11:53	12:25
Latest time of arrival	12:21	12:23	12:55

What happens if a car arrives outside those times? It is assumed not to have reached that control. So if car 3 reached the control at 12:37, the crew will find the control open, and get a time and a signature for their trouble, but when the score comes to be marked, the control will be scored as a missed control, and they will be penalised accordingly because they were more than 30 minutes behind their due time. They are deemed to be OTL (Over Time Limit). Similar penalties will apply for arrival before the earliest permitted time. e.g. if car 35 arrived at 11:59, it will be marked as missing that control.

One way of visualising this concept is to consider an individual window of time, (in this case 45 minutes - 15 minutes before to 30 minutes after your ideal time) moving around the clock as the rally progresses, and each competitor has their own window in which to maintain a schedule.

So now, we know what we have to do to at least visit all the controls whilst they are open for us. This is a jolly good thing to know as to qualify to finish most rallies, a fairly high proportion of controls must be visited. Otherwise you might spend perhaps over half an hour plotting the route at the side of the road outside the first control, travel the whole route, arriving 35 minutes late everywhere incurring no further differences in your time to the ideal schedule, get all the signatures, and then wonder why your fantastic navigation hasn't got you your reward of a very good placing.

RUNNING TO TIME

All this does not however preclude incurring penalties for poor time-keeping within your schedule. The objective is to maintain a much more accurate pace than just within a 45 minute window of opportunity. Ideally, the aim is to arrive at each control at the exact minute of your schedule. For each section from control to control, there is a set amount of time that you are scheduled to take. Should you take longer than this schedule you will be penalised according to how late you arrive at the next control.

e.g. Time at TC2 was 12:25.

Scheduled length of time to TC3 - 23 minutes.

Scheduled arrival time 12:48.

Actual arrival time 12:51.

Lateness=3 minutes.

That is not too bad for that one control, but bear in mind that if 3 minutes is dropped at every control, and there are 12 controls, you are going to be OTL at the last two if the maximum permitted lateness is 30 minutes. So, you have to keep in mind your total lateness as well as just your schedule for that particular section. One of the difficulties of regularity rallies, where the control locations are not known in advance, is that it is impossible to know how one is doing in relation to your own schedule, without some input from the organiser.

Some organisers hand out slips to each car, and others display a board at the control, showing information along the lines of - **Ideal time of car 0 at TCx = 22:35**. Using this, and knowing your own number, you can work out your ideal time, and how well you are doing within your own schedule. However, rally organisers are not obliged to give you this information, so in these cases you have to use your extra senses and judgment to decide how well you are doing.

MAKING UP FOR LOST TIME

If you find that you are getting close to your maximum lateness, and you consider that you are unlikely to catch any time up on the road (of which more anon), then you may have to consider making a judicious short cut to rejoin the rally route earlier within your time window. This may well mean that you will miss a time control or two, especially on a regularity section where you don't know where they are, but it is better to do this than arrive at all the controls too late. You will get a standard penalty for each missed control (often the same penalty as the maximum lateness that is permitted), but you will have achieved the chance of running earlier within your time schedule. Furthermore, you will generally not receive any time penalty at the control where you rejoin on the assumption that having avoided route, your timing cannot be judged. All this is known as cutting and running, and is used to ensure that you can at least remain in the rally.

The other way of catching up time is driving faster than the speed required whilst continuing along the route, perhaps along a fairly easy section of road. Here you have to watch for the standing $\frac{3}{4}$ rule, which imposes large penalties if the time taken between 2 consecutive controls is less than $\frac{3}{4}$ of the expected schedule. For the purposes of easy calculation, only the integer of the 75% is applied e.g 75% of 9 is 6.75, so that for a nine minute section, threequarter penalties will apply if the section is travelled in less than 6 minutes.

e.g. Time at TC2 was 12:25.
Scheduled length of time to TC3 - 23 minutes.
Scheduled arrival time 12:48.
Actual arrival time 12:43 (18 minutes)
Early arrival=5 minutes

Time at TC2 was 12:25
Scheduled length of time to TC3 - 23 minutes
Scheduled arrival time 12:48
Actual arrival time 12:41 (16 minutes)
Early arrival=7 minutes (Breaks $\frac{3}{4}$ rule)

*$\frac{3}{4}$ rule:- $23 * 75\% = 17.25$ (17 minutes 15 seconds) therefore minimum allowable = 17 minutes.*

Whether running faster is penalised depends upon the type of section, and the timing system used, but breaking the $\frac{3}{4}$ rule is always penalised.

TIMING SYSTEMS

As mentioned in the Navigational Section, there are essentially two types of timing used on British events, called respectively Schedule and Target (or Stage). The fundamental difference between these two is that you can generally make up time lost without further penalty on an event using Schedule Timing. However you will be penalised for doing this on a Target Timed event. Just to add complications, VSCC rallies run to Schedule Timing, but treat almost all competitive sections as regularity where, as detailed below, penalties are incurred for being both early and late!

TYPES OF SECTION, & PENALTIES

Regularity - The majority of VSCC rallies are run almost entirely with regularity sections, which entails trying to maintain an exact pace. Generally, the location of controls is secret, so that you have to keep a constant watch on the timekeeping as a control may lurk round any corner.

Penalties for being either early or late at every regularity control.

Neutral - A non-competitive section designed to be run at a relaxed pace, normally used to convey competitors through a PR sensitive zone, town, or via a fuel halt etc.

Penalties for being early, no penalties for being late, (except that this still eats into the maximum lateness).

There are others less often used on our sort of rally, but once you have mastered the basic principles outlined here, it is suggested that you read the appropriate sections of the MSA's 'Bible', The Blue Book, which describes timing and sections in greater detail.

Keep in mind that apart from your overall lateness, each section is marked separately. So if for instance you are late at the first control, and then keep to time to the next control (so that you are the same amount of lateness at both controls compared to your ideal schedule), you will receive no further penalties. You start each section afresh. Whether you arrive at 1 second or 59 seconds into the minute, your time at the control is marked as that minute, and therefore the timing to the next section effectively assumes that you started at the beginning of the minute. Similarly, distance is marked from control to control so that at every control you are judged as if starting from 'square 1' each time. The ideal situation would be to zero the mileometer at each control, and restart your stopwatch at the beginning of the minute that you reached the control. Unless you have second sight, this latter is impossible of course, so you have to work out other methods of keeping tally, all part of the navigator's skill.

REGULARITY

When running to regularity, the objective is to keep a watch on both the distance travelled, and the elapsed time from the last control in order that you can judge how early or late you are running. To keep accurately to a set average speed you must consider how you are going to monitor your average speed. Firstly, vehicle driven average speed devices and computers are deemed to be cheating, they didn't exist when the cars were made, so you have to make do with what you could have had then, except that you are generally allowed to run a digital stop watch or wristwatch as long as it is not connected to the car in any way.

Two vital pieces of information are the recorded mileage at the start (0 if you are fortunate enough to have a resettable trip recorder) and the start time. The choice is then to either convert elapsed miles into a target time using the defined average speed and judging lateness or earliness by comparison with elapsed time, or you can calculate target miles via the average speed from elapsed time and compare this with actual miles completed. Either way requires considerable mental arithmetic, so it's as well to generate conversion tables beforehand (see below) to ease some of the mental strain. Invariably the milometer in your car will not be calculated exactly the same as the organisers so it is usual, on VSCC events, for a mileage check to be included in the instructions. In this way individual corrections for each car may be applied!

Most competitors use tables to show distance covered at regular time intervals for a wide range of speeds, using these does make the mental timekeeping somewhat easier. For those that do not have the time or inclination to produce their own, these average speed tables are also available commercially from various suppliers, and sometimes the VSCC office.

CONCLUSION

So now you have the basis of knowledge to enable you to go out and understand what constitutes the basics of rally timing. Well done, if you have understood this, and also the earlier navigation section, you will be far in advance of most first timers.

The way to advance is start and continue doing events, so building up your knowledge and experience. Be prepared for a few problems, and don't get easily discouraged. Most rallying people are a friendly bunch, so do not be afraid to ask the organisers or experts for their advice (not in the middle of a competitive section of course, you might find they are rather busy), everyone was a beginner once. Also think about marshalling on an event or two, you can learn a lot from watching the activities of others, both expert and otherwise.

We hope you have found the information in this booklet illuminating and worthwhile.

Dick Patten and Robert Ellis

Sample Rally Results

The table below represents an example of the scores achieved by Car 16 on an example rally. All the sections are regularity, the organisers have decided that the maximum earliness and lateness are 15 and 30 minutes respectively, and the penalties are to be as follows:

Every minute late	-	1
Every minute early	-	2
Miss Control	-	30
Breaking 3/4 rule	-	60

<u>Control</u>	<u>Car 0</u> <u>Schedule</u>	<u>Ideal</u> <u>Time</u>	<u>Car 16</u> <u>Schedule</u>	<u>Car 16</u> <u>Times</u>	<u>Time</u> <u>Taken</u>	<u>Diff.</u>	<u>Penalties</u>	<u>Comments</u>
Start	09:00		09:16	09:16			0	OK
TC1	09:14	14	09:30	09:31	15	1	1	late
TC2	10:01	47	10:17	10:18	47	0	0	OK
TC3	10:11	10	10:27	10:30	12	2	2	late
TC4	10:35	24	10:51	10:47	17	-7	60*	faster than 3/4 of schedule
TC5	11:17	42	11:33	11:18	31	-11	22	fast
TC6	11:25	8	11:41	11:25	7	-1	30*	too early
TC7	11:59	34	12:15	12:07	43	9	0	rejoined within time limits
TC8	12:26	27	12:42	13:05	58	31	31	late
TC9	12:41	15	12:57	13:29	24	9	30*	OTL
TC10	12:57	16	13:13	-	-	-	30*	missed control to cut route
TC11	13:24	27	13:40	13:51	-	-	0	rejoined within time limits
TC12	13:44	20	14:00	14:19	28	8	8	late

Notes

1. from TC3 to TC4 minimum time allowed before $\frac{3}{4}$ rule is applied - 18 (24*75%)
2. at TC5 1 minute faster would have been before earliest schedule. i.e. control not scored ó 30 penalties
3. at TC6 arrived 1 minute too early
3. at TC9 arrived 2 minutes too late

GOLDEN RULES

Beforehand

Know the relevant sections of the Blue Book, all events in this country run to these basic rules.

Be aware of the organiser's requirements and penalties, and the relationships therein. **STUDY THE REGULATIONS IN ADVANCE.** Understand what it is you are trying to do.

Prepare average speed charts before the event.

Think how you will adjust your calculations if you make a route error.

Set your clocks to the organiser's master clock, and work out the error reading of your tripmeter to the organiser's set distance.

Set yourself a target of what you want to achieve for the event.

On the move (in order of priority)

1. Navigate correctly.
2. Watch overall lateness.
3. Keep track of average speed for the section. (Reset trips and stopwatches at each control if possible).
4. Remember the $\frac{3}{4}$ rule.
5. If hopelessly late it may be beneficial to take a short cut to avoid accumulated penalties and try to find a rejoin point that you can get to and make up some time.
6. If you think you are doing badly, do not get fed up and leave the event in a huff. Stop, work out a plan to get you back onto the route in time, and keep going. However poorly you think you may be doing, there is always someone doing worse than yourself! Furthermore, as they say *ó* practice makes perfect.

Afterwards

Check the results to see if they tally with your calculations. If you don't agree, check with the officials.

Did you reach your target? Work out how you can do better next time.

And finally - just accept that the organiser is only trying to get his own back for having been a navigator in the past!

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Good luck!

SAMPLE AVERAGE SPEED TABLES

<u>SPEED=</u> <u>22mph.</u>		<u>SPEED=</u> <u>23mph.</u>		<u>SPEED=</u> <u>24mph.</u>		<u>SPEED=</u> <u>25mph.</u>	
<u>Dist</u>	<u>Min.sec</u>	<u>Dist</u>	<u>Min.sec</u>	<u>Dist</u>	<u>Min.sec</u>	<u>Dist</u>	<u>Min.sec</u>
0.5	1.22	0.5	1.18	0.5	1.15	0.5	1.12
1.0	2.44	1.0	2.37	1.0	2.30	1.0	2.24
1.5	4.05	1.5	3.55	1.5	3.45	1.5	3.36
2.0	5.27	2.0	5.13	2.0	5.00	2.0	4.48
2.5	6.49	2.5	6.31	2.5	6.15	2.5	6.00
3.0	8.11	3.0	7.50	3.0	7.30	3.0	7.12
3.5	9.33	3.5	9.08	3.5	8.45	3.5	8.24
4.0	10.55	4.0	10.26	4.0	10.00	4.0	9.36
4.5	12.16	4.5	11.44	4.5	11.15	4.5	10.48
5.0	13.38	5.0	13.03	5.0	12.30	5.0	12.00
5.5	15.00	5.5	14.21	5.5	13.45	5.5	13.12
6.0	16.22	6.0	15.39	6.0	15.00	6.0	14.24
6.5	17.44	6.5	16.57	6.5	16.15	6.5	15.36
7.0	19.05	7.0	18.16	7.0	17.30	7.0	16.48
7.5	20.27	7.5	19.34	7.5	18.45	7.5	18.00
8.0	21.49	8.0	20.52	8.0	20.00	8.0	19.12
8.5	23.11	8.5	22.10	8.5	21.15	8.5	20.24
9.0	24.33	9.0	23.29	9.0	22.30	9.0	21.36
9.5	25.55	9.5	24.47	9.5	23.45	9.5	22.48
10.0	27.16	10.0	26.05	10.0	25.00	10.0	24.00
10.5	28.38	10.5	27.23	10.5	26.15	10.5	25.12
11.0	30.00	11.0	28.42	11.0	27.30	11.0	26.24
11.5	31.22	11.5	30.00	11.5	28.45	11.5	27.36
12.0	32.44	12.0	31.18	12.0	30.00	12.0	28.48
12.5	34.05	12.5	32.37	12.5	31.15	12.5	30.00
13.0	35.27	13.0	33.55	13.0	32.30	13.0	31.12
13.5	36.49	13.5	35.13	13.5	33.45	13.5	32.24
14.0	38.11	14.0	36.31	14.0	35.00	14.0	33.36
14.5	39.33	14.5	37.50	14.5	36.15	14.5	34.48
15.0	40.55	15.0	39.08	15.0	37.30	15.0	36.00
15.5	42.16	15.5	40.26	15.5	38.45	15.5	37.12
16.0	43.38	16.0	41.44	16.0	40.00	16.0	38.24
16.5	45.00	16.5	43.03	16.5	41.15	16.5	39.36
17.0	46.22	17.0	44.21	17.0	42.30	17.0	40.48
17.5	47.44	17.5	45.39	17.5	43.45	17.5	42.00
18.0	49.05	18.0	46.57	18.0	45.00	18.0	43.12
18.5	50.27	18.5	48.16	18.5	46.15	18.5	44.24
19.0	51.49	19.0	49.34	19.0	47.30	19.0	45.36
19.5	53.11	19.5	50.52	19.5	48.45	19.5	46.48
20.0	54.33	20.0	52.10	20.0	50.00	20.0	48.00

FLOW CHART OF TIME CONTROL PENALTIES FOR REGULARITY SECTIONS

