

ROTAGRAM 3 — Directions

GEOFF GILES

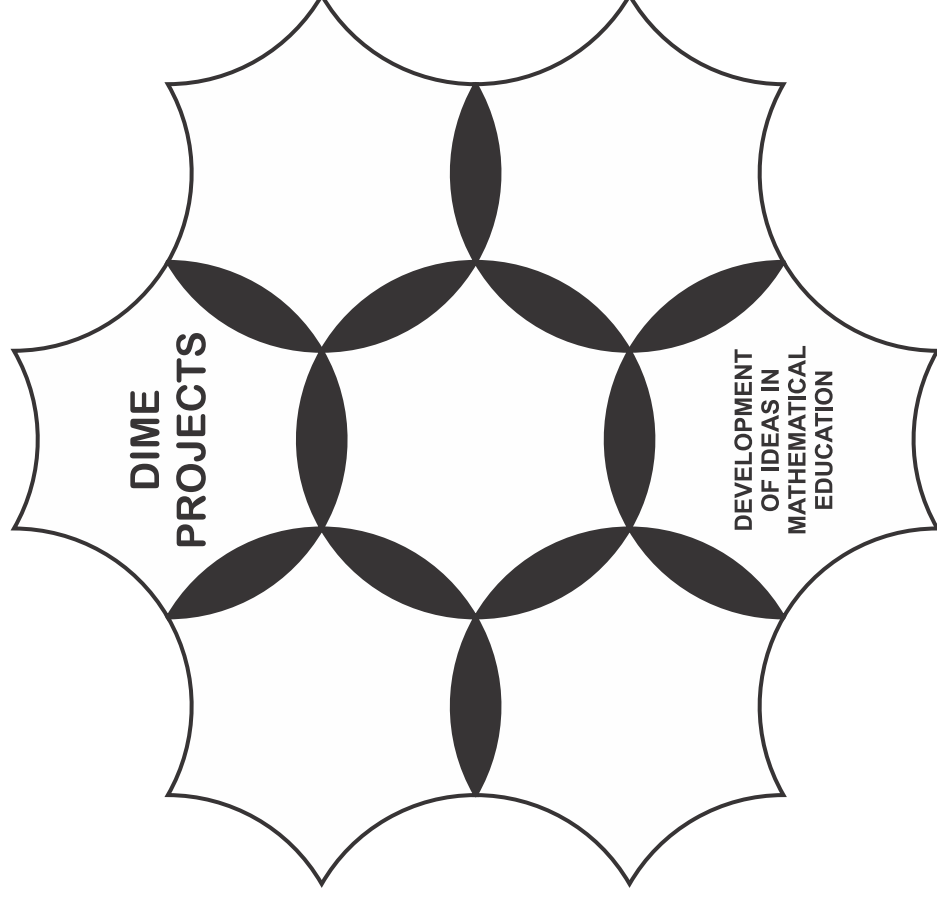
Related DIME Booklets and Worksheets

A rotagram is a deceptively simple tool made from transparent plastic which enables angle concepts to be quickly and easily understood. These concepts are developed in the series of three books and their related worksheets.

Rotagram 1 — *Equal Angles*
Rotagram 1 *Worksheets*
Rotagram 2 — *Rotation*
Rotagram 2 *Worksheets*
Rotagram 3 — *Directions*
Rotagram 3 *Worksheets*

First published 1979
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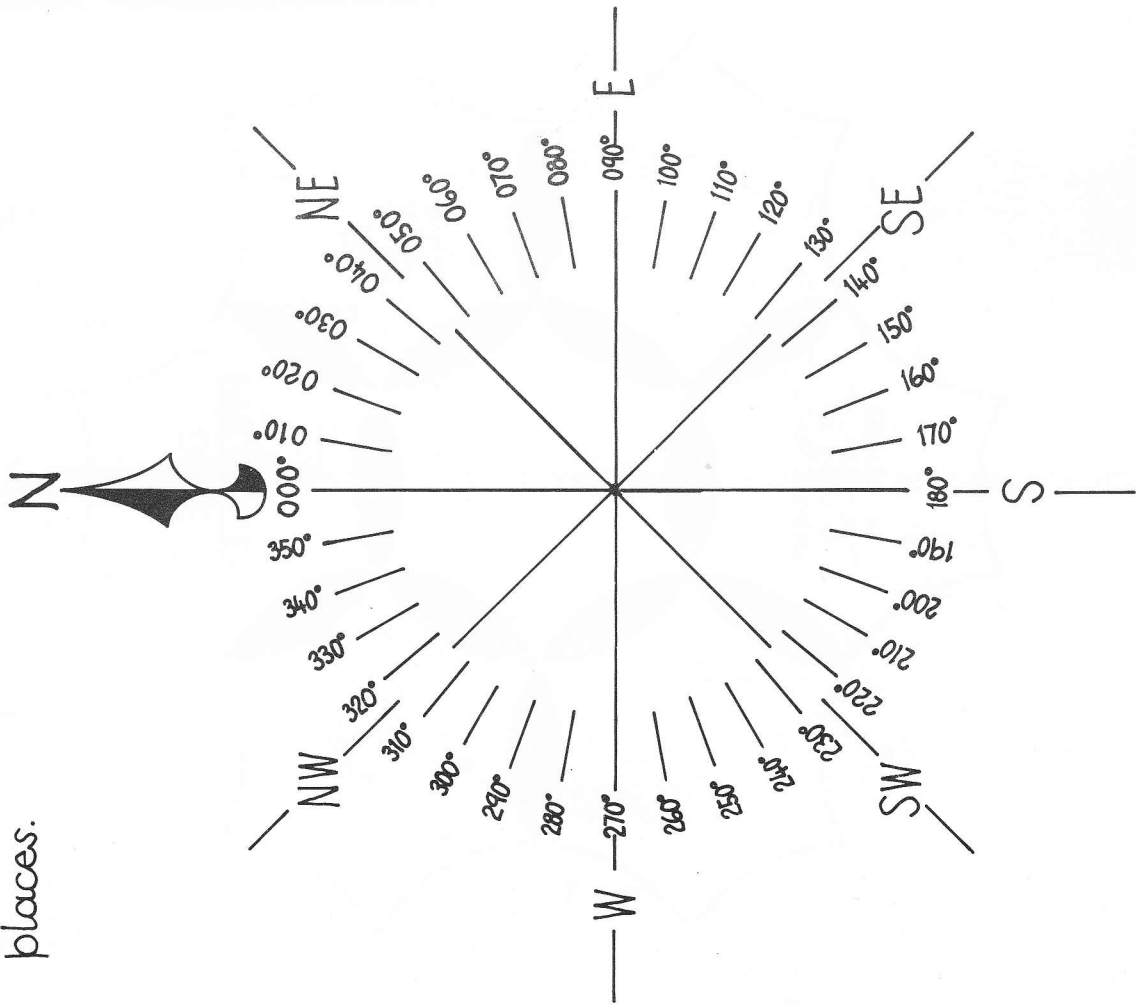
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Doug. Williams 2019



Start here ~

You will need a ROTAGRAM.

When you reach page 4 you will use this diagram to find the bearings of different places.

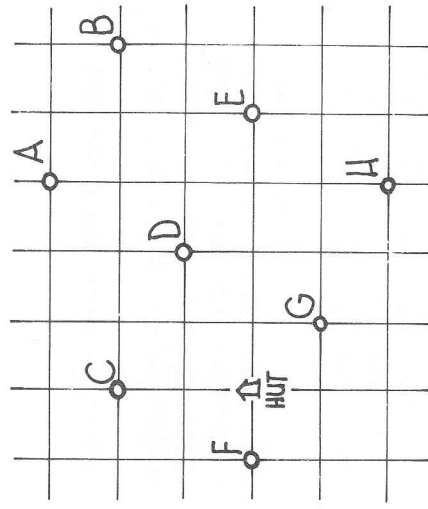


Before going on you will need a WORKSHEET.

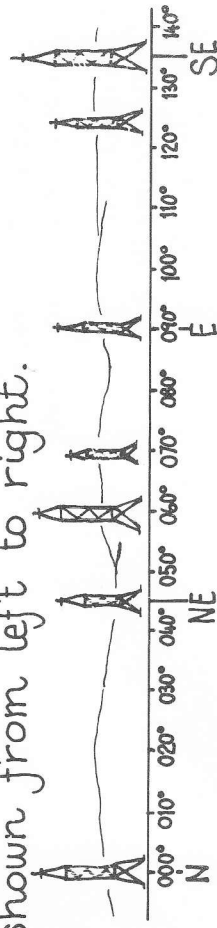
Target test - ADVANCED

DO NOT WRITE ON THIS PAGE.

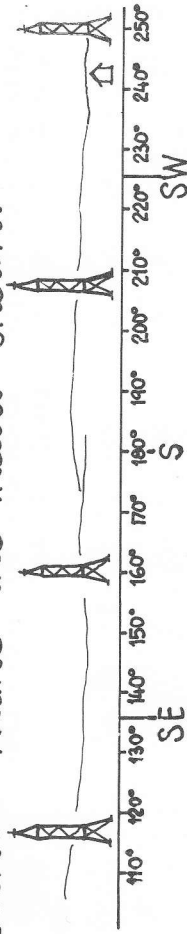
The diagram shows the positions of eight radio masts and a hut.



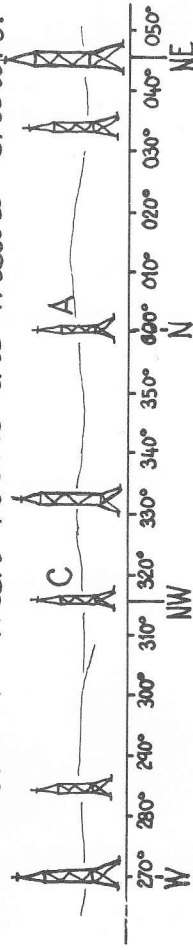
The first panorama is taken from the hut. Name the masts shown from left to right.



From which mast can this panorama be seen? Name the masts shown.



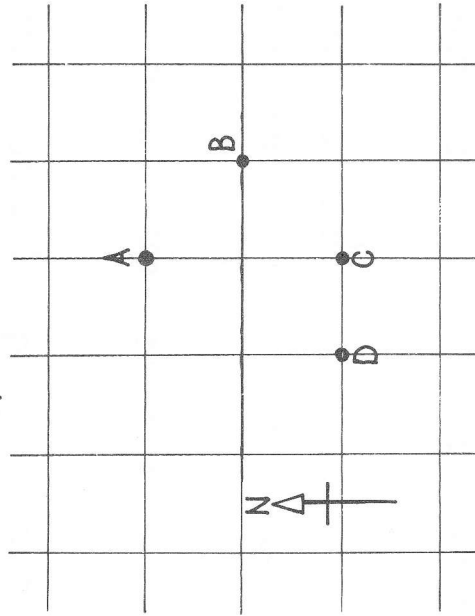
Find the point from which this panorama was drawn. Then name the masts shown.



Target test - STANDARD

DO NOT WRITE ON THIS PAGE.

1. Copy the diagram, then copy the table and complete it.



From	To	Direction	Bearing
A	C	S	
C	A		
A	B		
B	A		
B	C		
C	B		
C	D		
D	C		

From	To	Direction	Bearing
A	X	W	
D	X	NW	
Y	B		000°
Y	C		315°
Z	C		135°
Z	D		180°
Z	A		
Z	B		

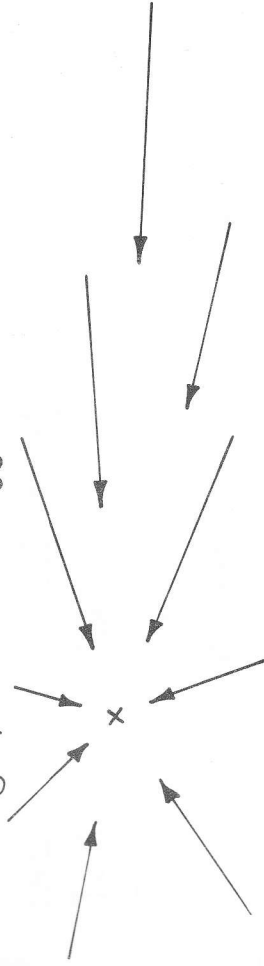
2. Use the information in the second table to find the positions of X, Y and Z.

Then copy the table and complete it.

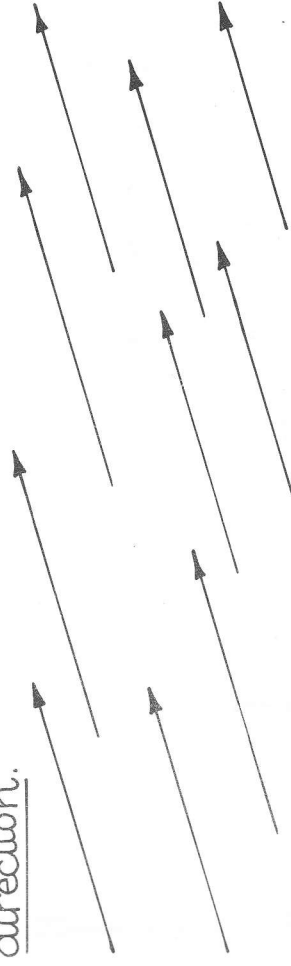
Directions

1

These arrows all point to the same spot, but they point in different directions.



All these arrows point in the same direction.

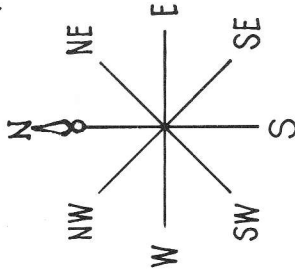


The twelve children on the worksheet are looking at their teacher. Use your ruler to draw arrows for the other nine children which show the direction each is looking. Which three children are looking in the same direction? Mark them like this: ⊗

2 Compass directions

For hundreds of years the magnetic compass has been used to tell directions. The main directions, or points of the compass are:

NORTH EAST
SOUTH WEST

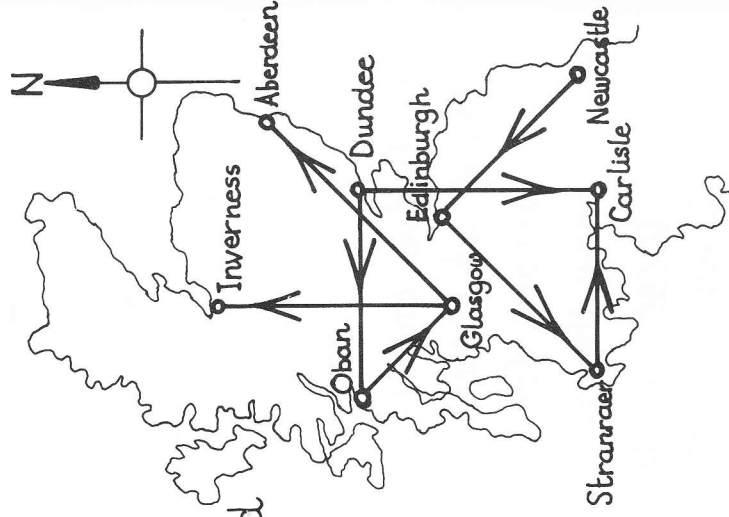


Between these come:

NORTHWEST NORTHEAST
SOUTHWEST SOUTHEAST

The diagram shows how each relates to north.

Maps are usually printed so that north is up the page like this:
On this map of Scotland one arrow shows that Inverness is north of Glasgow.



What do the others show?
Complete the table on the worksheet.

What have you learnt ?

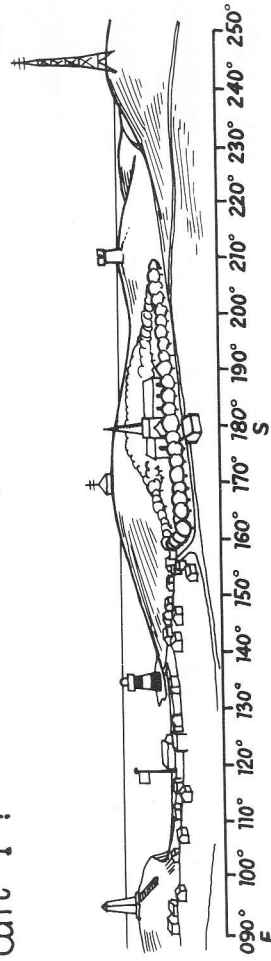
You should now be able to:

1. name the eight main points of the compass;
2. explain how each relates to NORTH;
3. find the bearing of one place from another using a map;
4. give the bearings of the eight main compass directions;
5. understand what a panorama is;
6. know how to find the position on a panorama of other places on the map;
7. given a panorama, find using a map where it was drawn from.

Test yourself on the Target Tests.

10 Puzzling panoramas

If this is the panorama I see, where am I?



As the bearing of the lighthouse is 135° from me, from the lighthouse my bearing must be $135^\circ + 180^\circ = 315^\circ$.

1. Draw a line on the map from the lighthouse in the direction bearing 315° .

As the bearing of Raven Tower is 210° from me, from Raven Tower my bearing must be $210^\circ - 180^\circ = 030^\circ$.

2. Draw a line on the map from Raven Tower in the direction bearing 030° .

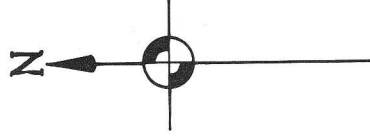
These lines cross at Eagle Crag so that is where I must be.

The panorama on the worksheet shows only three places. Find where it was drawn from and then put in the other places.

Name the girls

3

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	X



These letters show 24 girls sitting in a classroom. The arrow shows the direction north.

Who sits north of J?

Who sits east of P? (Which two girls?)

Who sits southwest of O?

Who sits north of M and also west of J?
(only one girl, which one?)

Check your answers by looking at the table on the worksheet.

Now answer the other questions.

4 Directions from Bedford

From Bedford what is the direction of Cambridge? To answer this use your rotogram on the map on the worksheet.

1. Put the centre on Bedford.
2. Make the black line point north.

(The dotted line points north.)

3. Rotate the blue line until it passes through Cambridge.

4. Now place the rotogram on the diagram opposite

page 1.

5. Read the scale where the blue line cuts it:

080° (approx)

(We say "oh-eight-oh degrees".)

This means that the direction

of Cambridge is 80 degrees east of north or the bearing of Cambridge is 080°.

Now complete the table on the worksheet.

Drawing a panorama 9

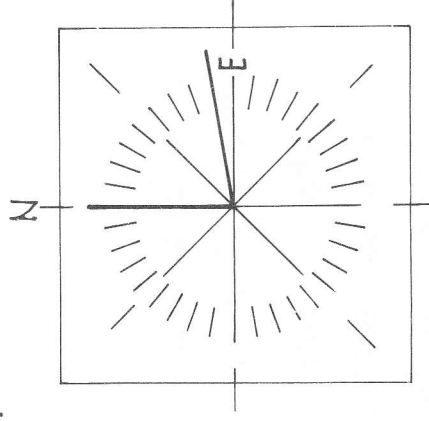
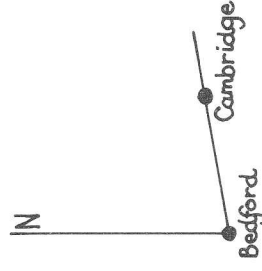
On the worksheet you will find the start of a panorama view from Raven Tower.

Draw the radio mast in its correct position. Now draw Eagle Crag and then the church spire in the trees.

The list you made for page 7 should give their bearings, but use the map to check. What else is needed to complete the panorama?

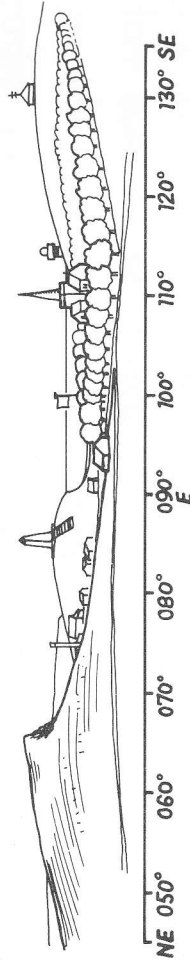
Does it look as if some of the places, like the monument, are much further away? Make sure you draw them smaller to show their distance.

Use a ruler to put in the sea horizon.



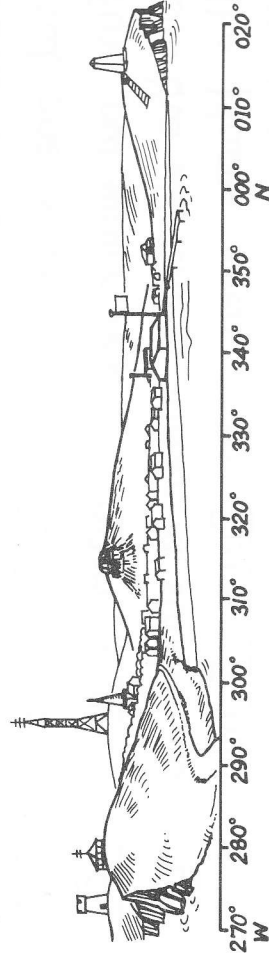
8 View from the radio mast

Here is a drawing showing what can be seen from the radio mast in different directions. It is called a PANORAMA.



It shows the order of the different places from NE to SE when seen from the radio mast. This panorama could have been used to make the list on page 7. (Have you found the mistake in that list?)

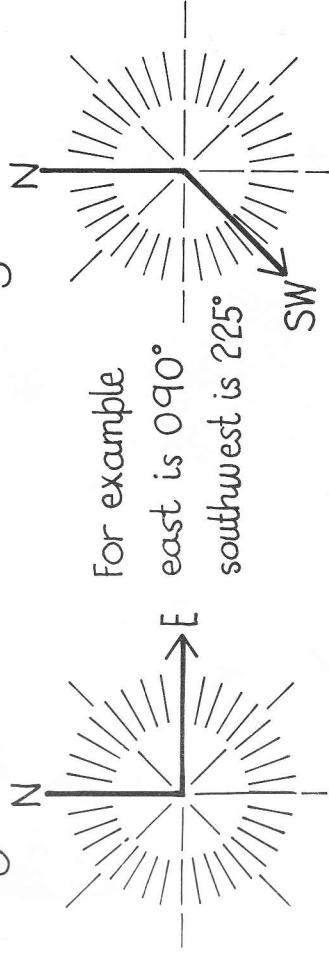
Make a similar list for the view from the lighthouse using this panorama.



Check by using your rotogram on the map.

Finding your bearings 5

Every direction has a bearing.

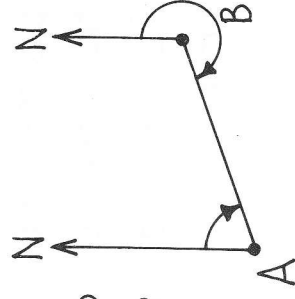


If you start by facing north, the bearing of any direction is the angle in degrees you have to turn CLOCKWISE before you face in that direction.

In this diagram,

what is the bearing of B from A?

what is the bearing of A from B?



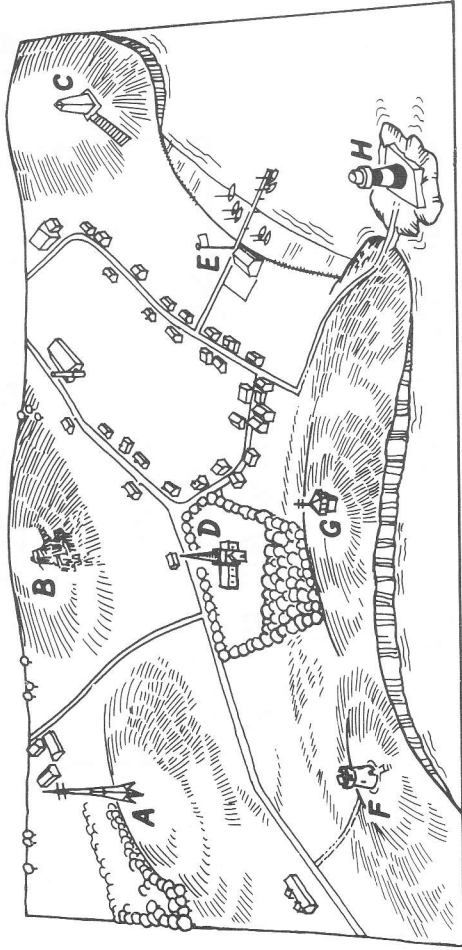
Do you notice that the difference between them

is 180°? Will this always be the case?

Complete the table on the worksheet.

Make sure you have the black line on the rotogram pointing north.

6 A stretch of coast



A map of this area of coast is drawn on the worksheet.

Find the names of the eight special places which have been given letters in the aerial view on this page.

Fill in the spaces in the table on the worksheet.

Looking through a telescope

Suppose you are standing at the radio
mast.

If you look through a telescope you see Eagle Crag roughly northeast. As you swing the telescope round to the right you see other places.

Put the rotagram on the map with its centre on the radio mast and the black line pointing north.

The blue line is your telescope.

Check that you see the places in the order given in the table. The bearings are given to the nearest 5° —but one is wrong. Find out which one.

Place	Bearing
Eagle Crag Monument	065°
Flagstaff Church	085°
Lighthouse	100°
Coastguard	110°
Raven Tower	115°
	150°
	175°

On the worksheet make a similar list of the places seen from Raven Tower.
Start from north.