How do I set my telescopic sight up correctly?

A question that is asked time and time again and with a bit of luck this article might go someway to answering both. I stress this is only the way I do it and there are others but I find this works for me.

You will need: a small spirit level, a length of string, correct Allen keys to mount and adjust your scope, the pellets you normally use, 3 pieces of A4 paper, a pen, your scope, your mounts and of course your air rifle.

Firstly check the mounting rails on your gun are clean and that the mounts that you are going to use are in good order. It is important to note if you are fitting a new scope that the mounts you have are high enough to allow the objective end (the bigger one) to be mounted without touching the barrel of your air rifle and that you can still fit the magazine, if required, without it touching the bottom of the scope.

Now place the mounts on the rails and tighten them hand tight, don't worry about spacing them exactly at this time just enough so that your scope fits between them.

Place the scope on the mounts and put the top of the mounts on and screw it down very loosely. Carefully shoulder your rifle and look through the scope, if you move the scope back and forward until you can see the whole circle of the sight picture with no blurry bits around the edges its in the correct place. Noting the position of the scope now undo the rail mounts and place them as far apart as practicable to give maximum support to the scope tube, check you still have the full sight picture then tighten hand tight plus a further half turn of the Allen key.

Now take the piece of string and walk about 20 yards and hang it from something and tie a weight to the bottom so that it acts as a plumb line. Go back to your rifle and place the small spirit bubble on the rear of the rifle action and move the rifle until the rifle is level i.e. the bubble is in the middle. Now the tricky bit look through the scope and checking with your free eye that the rifle is still level rotate the scope and sight the vertical cross hair on the string. When the vertical cross hair is inline with the string and the bubble is level tighten the top mount screws. I find this much easier to do on a lower magnification setting as you get a wider field of view.

The top mount screws should be tightened from one side to the other and try and keep the gaps at both sides the same, it's the same principle as tightening the wheels on a car tyre. The screws should be finger tight then a further quarter turn, on an air rifle they should not have to be any tighter than this as you could crush the scope body. Once you have tightened all the screws put the spirit bubble back on the action and check that you have full sight picture and the vertical cross hair is in line with the string.

Your scope is now ready to zero, put a back stop at 12 yards, take a piece of A4 paper and draw a thick vertical line only from top to bottom and place it on

the back stop. The reason for the single line at this stage is it simplifies the process and you will find it much easier to hold steady aim on just the vertical.

Return to the firing line make sure the scope is on minimum magnification and load your rifle, take aim at the piece of paper and sight the vertical line with your vertical cross hair and press the trigger. Look at the pellet hole and it will invariably be left or right of this line.

Unscrew the cap from the turret on the right hand side of your scope and look at it. It will have an arrow on it pointing in one direction with left or right next to it. In the majority of scopes it is indicating the direction that you will move the aim point if you turn it in that direction however there are a few makes of scope that are the exact opposite and this will become apparent.

Dependant on the distance between the mark of the pellet strike and the vertical line, lets say for example it strikes three inches right of the line, turn the turret to move the point of aim i.e. ten clicks to the left. Now repeat the process and aim at the line again and fire another pellet and it should appear closer to the line. Keep repeating this action until you have "walked" the pellet strike mark onto the centre of the line. Thereafter fire another few shots just to double check and they should all land on the vertical line.

We now need to repeat this action with a horizontal line on a bit of paper at 12 yards, we follow the same routine as above but this time we use the top turret to move the pellet strike up or down until we again "walk" the pellet strike onto the horizontal line. The scope is now roughly zeroed.

Next we need to pick out a range that we want our rifle to be zeroed at. Depending on the type of shooting you do this can be any range that is practical for an air rifle however anything over 40 yards tends to make the trajectory pretty difficult to shoot accurately at closer targets. In the *"Should I buy an air rifle in .22 or .177 calibre?"* article I will try to show you some evidence and advantages for particular ranges but can I suggest that you start at 30 yards for .22 and 35 yards for .177.

Now take another sheet of A4 paper and draw a large cross in the centre of it. Place this on the back stop and set it at your chosen range to zero in on. Fire three shots at the piece of paper and note where the group has landed. Now using the turrets as before, first "walk" your strike marks on to the vertical part of the cross and then "walk" them to the centre.

Your scope is now zeroed. It is not uncommon for some scopes to run out of elevation movement (the top turret) so that your rifle always strikes low, providing that your rifle is mechanically sound I suggest that you shim the rear mount, place something between the mount and underside of your scope. I have used both a cut up bit of film negative and insulating tape in the past but if I had a choice I find lead tape to be the easiest to use.