

# ERROR IN THE EQUIPMENT

## 1. Collimation Error

This can be a serious source of error in levelling if sight lengths from one instrument position are not equal, since the collimation error is proportional to the difference in these. So, in all types of levelling, sight lengths should be kept equal, particularly back sights and fore sights and before using any level it is advisable to carry out a two peg test to ensure the collimation error is within acceptable limits.

## 2. Compensator not working

For an automatic or digital level, the compensator is checked by moving foot screw slightly off level, by tapping the telescope gently or by pushing the compensator check lever (if fitted) to ensure that a reading remains constant. If any of these checks fail, the compensator is not working properly and the instrument must be returned to the manufacturer for repair.

## 3. Parallax

This effect must be eliminated before any staff readings are taken.

## 4. Defects of the staff

The base of the staff should be checked to see if it has become badly worn – if this is the case then the staff has a zero error. This does not affect height differences if the same staff is used for all the levelling, but introduces errors if two staffs are being used for the same series of levels. When using a multi-section staff, it is important to ensure that it is properly extended by examining the graduations on either side of each section as it is extended. If any of the section become loose, the staff should be returned for repair.

## 5. Tripod defects

The stability of tripods should be checked before any fieldwork commences by testing to see if the tripod head is secure, that the metal shoes at the base of each leg are not loose and that, once extended, the legs can be tightened sufficiently.