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ADJUSTING THE FARM LEVEL

by
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Accurate work cannot be done with a farm level unless it is kept in adjustment. The steps in checking the level are relatively simple and can be done by most individuals if a little care and patience are used.

There are two adjustments on the level which should be checked. These adjustments are:

(1) The adjustment of the bubble tube, and
(2) The adjustment of the line of sight parallel to the bubble tube.

Steps in Checking and Adjusting the Bubble Tube:

(1) Set up the instrument and level the bubble tube with the leveling screws. Set the instrument on firm ground so that individuals walking around it will not jar it and thus throw it out of adjustment.

After the bubble tube has been leveled, it should be possible to turn the telescope one-half revolution, or 180°, with the bubble remaining between the marks. In other words, the tube should still be level. If the bubble does not remain between the marks, the bubble tube is out of adjustment and should be corrected.

(2) The bubble tube can be adjusted by turning the two adjusting screws located on the end of the bubble tube. The individual adjusting the instrument can determine whether the end of the bubble tube will have to be moved up or down by keeping in mind that the bubble always moves to the high end of the tube. Care should be used in making the adjustment that the instrument is kept level, and that the screws on the bubble tube are tight. All adjustments should be made very gradually.

NOTE: IF THE BUBBLE TUBE ON THE INSTRUMENT IS ADJUSTED, IT IS ALWAYS NECESSARY TO CHECK THE AJDUSTMENT OF THE BUBBLE TUBE AND THE LINE OF SIGHT. IN OTHER WORDS, WHEN CHECKING THE INSTRUMENT ALWAYS CHECK THE BUBBLE TUBE FIRST, AND FOLLOW THIS CHECK TO SEE WHETHER THE BUBBLE TUBE AND THE LINE OF SIGHT ARE PARALLEL, AS OUTLINED BELOW.

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Steps in Checking and Adjusting the Line of Sight Parallel to the Bubble Tube.

1. Select a fairly level piece of ground and set up the instrument as shown in Figure No. 1. See that the bubble is carefully leveled.

2. Measure at least 100 or, preferably 150 feet from the instrument and drive Stake "A" as shown in Figure No. 1. Take the rod reading while the rodman holds the rod on Stake "A".

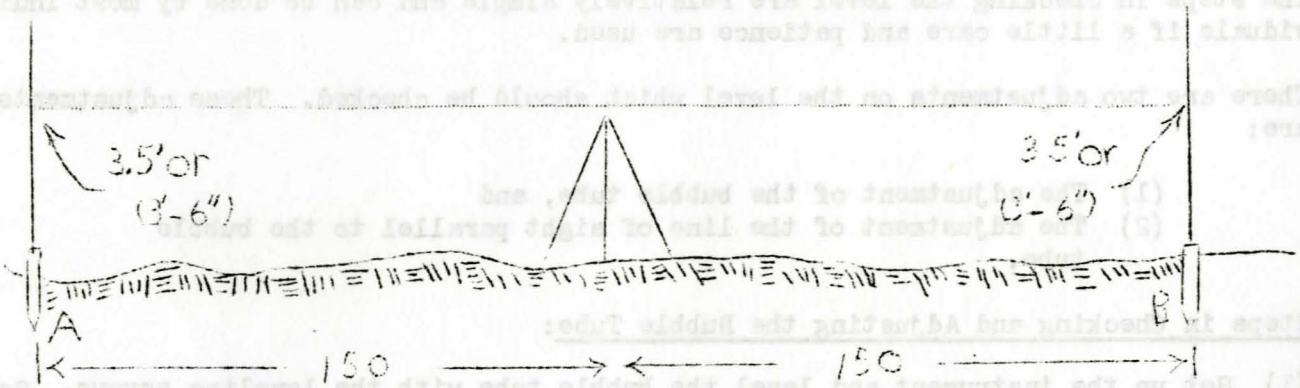

FIG NO. 1

3. Now measure in the opposite direction from the instrument for locating Stake "B". This distance must be the same as the distance from the instrument to "A". A tape can be used for measuring the distance, however, careful pacing will be satisfactory. Drive Stake "B" into the ground until the same reading is obtained as the rod reading on Stake "A". For example, suppose the reading on the rod at "A" was 3.5 feet, or 3 feet - 6 inches. The rod reading on either one of the two stakes should be exactly the same.

4. Re-set the instrument near Stake "B". Again be sure the instrument is accurately leveled. Set the instrument in such a manner that the end of the telescope will only be a few inches from the rod when held on Stake "B". Now, by looking through the telescope backwards it will be possible to obtain the rod reading on Stake "B" It may be necessary to hold a pencil on the rod to accurately get this reading.

5. Next the rodman proceeds to Stake "A" where the rod reading is again noted. The reading on the rod at Stake "A" should be the same as the reading on "B" if the instrument is in adjustment. For example see Figure No. 2. The reading on Stake "B" and "A" was 4.0 feet, thus indicating that the instrument is in adjustment.

If the rod reading at "A" had been above or below 4.0 feet the instrument is out of adjustment. If the instrument is found out of adjustment raise or lower the end of the telescope as needed. Considerable care and patience may be necessary to obtain the desired rod reading. The allowable error should not be greater than .02 of a foot, (less than 1/32 of an inch), at a distance of 200 feet.

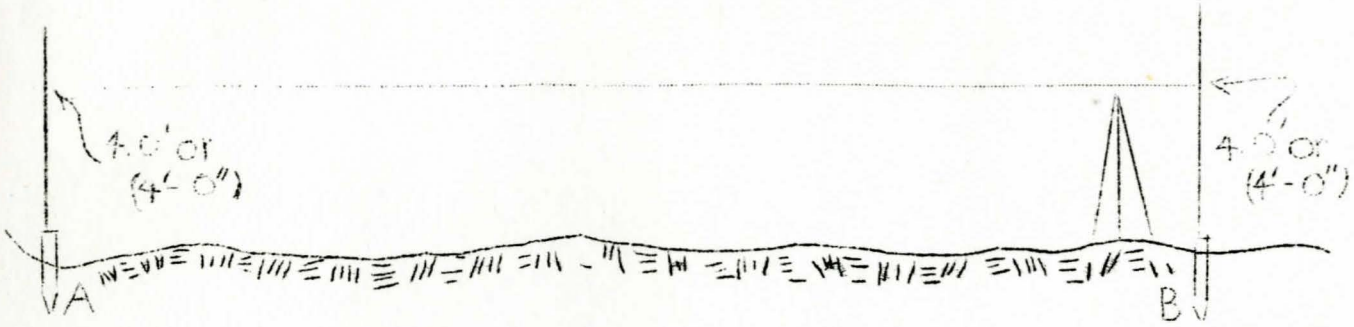

FIG. NO. 2

6. After making the necessary adjustments, the instrument should again be set midway between "A" and "B". Repeat the above procedure to check any possible error.

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