

# MICROSCOPE ON THE LATHE - 2

**L**AST week we saw how a needle point mounted in a holder in the independent chuck could be brought true by watching it through a microscope and carefully adjusting the chuck jaws. This is the only way in which we can be certain that a point is not wobbling slightly before it is used for setting up.

We noted three ways by which a microscope can be mounted on the lathe for this task—by standing it on the bed, by clamping it to the cross-slide table, and by using a wood platform on the bed. These offer a choice to accommodate variations in size of lathes and instruments, so that normally there should be no difficulty in effecting a mounting.

This week we examine two methods for truing marked-off work which is held in the independent chuck. We take the chuck as an example only, for our methods apply to work which is clamped to the faceplate, and to work which is bolted to it to an angle plate.

We decide which of the methods to employ from features of the set-up. When there are no obstructions to the work, such as projecting bolts or clamps, we can use a centre finder with the microscope, which we can mount in any of the three ways that we use for truing a needle point; we can place the instrument on the bed, on the cross-slide table, or on a platform on the bed, near the face of the work.

## Horizontal mounting

When bolts or clamps prevent this approach, we must adopt the other method, by which the microscope is mounted horizontally, with its objective pointing at the centre dot or lines on the face of the work. For this, a holder is used for the microscope body-tube which is mounted on the topslide. In making the holder, of which I shall say more in a later article, we have to consider the available space, although on most small lathes there are no insurmountable difficulties. The tailstock is drawn back or taken off.

We scribe the work as usual, with crossing lines, as at A. Then we punch the intersections (1) to use the centre finder, as we do to scribe a

circle with dividers (2). The punching demands exceptional care if we are not to begin with an error—a drawback of the centre-finder method, although a magnifying glass will help us to see the spot to place our centre punch.

With the work gripped in the chuck, we centre it as truly as possible with a scribing block. Then we mount the centre finder, as at B, and locate the microscope with its objective near the end, on line X-Y.

## Centring cross-lines

This centre finder we make from 1/4 in. rod by soldering a sewing needle at one end and a sleeve at the other. We have the thing long enough for convenient working. The rod we drill in the chuck to a depth of 3/8 in. for the needle, which is broken to leave another 3/8 in. projecting. The sleeve we countersink deeply for holding friction on the tailstock centre. At the needle end of the rod, we file a flat, and along it scribe a longitudinal line on which to focus the microscope. By adjusting the chuck jaws we bring the line steady in the field of the instrument as the chuck is turned.

To set up work by viewing scribed lines through the microscope, we are not forced to centre punch the intersections—except if we would mark a circle. It is enough to see where the lines cross, although in the example a dot has been shown for emphasis.

We mount the work in the chuck, as at C, and set the microscope at centre height in the holder on the topslide, as at D. We bring the field to the lathe axis by using the topslide, and focus it with the topslide.

After placing a scriber point to the work near the centre of rotation, we have a view as at E1, with the dot, or intersection of lines, describing a circle. We true it steady on the scriber point as at E2.

If we wish to focus on a scribed circle, we move the microscope by the cross-slide, so that the edge of the circle is in the centre of the field. Then, rotating the work, we see a wobble Z, as at F1, against the scriber point; and by adjusting the chuck jaws, we true it out, as at F2.

