

# AIDS IN MARKING OFF

THE first operation in many classes of work is marking off to locate the centres of holes and the positions of edges and out-lines. Suitable tools and methods must be employed, or you will begin with errors that cause trouble later.

For marking off by hand, basic tools are a keen scriber, a sharp centre punch, and a good quality steel rule. A magnifying glass aids precision, and a good light, natural or artificial, is essential.

With these, and with care, much of the spade work of marking off can be performed very accurately.

## By Geometer

A toolmaker with whom I once worked used to obtain results equal to those of his comrades who used vernier gauges.

A scriber to mark the finest lines can be made in a few minutes at little or no cost from a Bic ball-point pen and a sewing needle. You grind the ball from the brass end of the pen and insert the needle from the back, after pulling the end from the body and drawing off the plastic tube in which the ink has been contained. The point of the needle can be pressed through the brass end without difficulty. Then you drive it to the required projection, *Q*, diagram A, with a few light taps from a small hammer. I make this projection on my scribers 3/8 in. to 7/16 in.

To fix the needle so that it cannot push back when the scriber is in use, solder can be run into the back of the brass end. It is advisable to press the point of the needle into a piece of potato or wet felt, to prevent its temper from being drawn. A small soldering iron should be used.

Alternatively, as at A, you can insert a plug behind the broken-off needle and solder it into the brass end, or peen the end over it. Yet another way is to fit a rivet in the body of the pen and push a plug up to it, as an abutment for the needle which does not then have to be soldered to hold.

A draughtsman finds a tool like this useful in pricking centres for his compasses. A tracer may employ it to scratch minor errors and small blobs of ink from drawings—a use for which the needle can be ground as a small scraper or blade. Other users are photographers working on plates or prints.

You can use the plastic ink tube of the Bic pen as at B. Drill a cork to hold it tightly, and bend a piece of metal tube for the outside to make a bent spout. Push the cork into a Fairy green liquid container—which makes the holder for your lathe suds. Motorists can use it for distilled water, or for topping up shock absorbers in awkward positions.

When the needle point of the scriber has become blunted by use, it can be sharpened in the lathe, as at C, by rubbing an india oilstone at an angle *R* across the rapidly running end.

In using the scriber with a rule, be sure that it is with the guiding edge and drawn along at the proper angle. This is illustrated at D1.

Beginning with the scriber vertical, it should be tipped sideways *S* about 30 deg., and back *T* about 30 deg.

If you scribe dimensions from the end of the rule, you get them more accurate than by scratching to graduations. You correct for the line being over the end as at D2. Look straight down on a line already marked and the rule graduation: and they should be just off-set *U*. Then when line *V* is scribed, it is correct. This is how my toolmaker friend used to do it.

To join two centre pops by a scribed line, work as at E1. Locate the scriber in one *W*, and push the rule to it. Then move the scriber to the other *X*, and pivot the rule towards *Y*. Check with the scriber at centre pop *W*, hold the rule firmly, and scribe the line. You can hear and feel the scriber crossing the centre pops. For cross lines, work on the end of the rule, *Z*, at E2.

Diagram F shows a normal centre punch 1, an improved type for small work 2, and how the scriber is inserted a centre pop 3.

