OVERCOMING

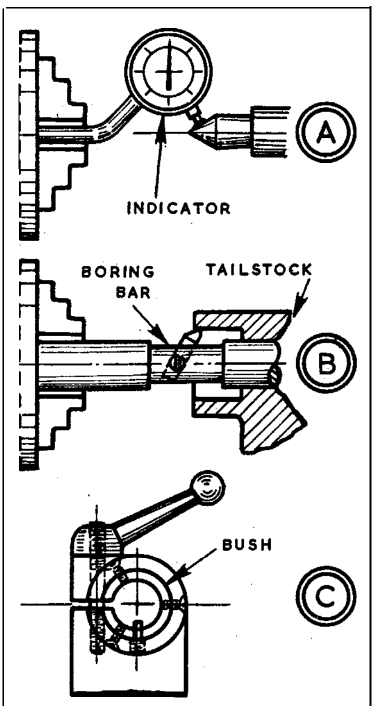
Tailstock faults

By GEOMETER

ON a lathe that has had some use, it is rare not to discover faults through certain characteristics of handling, or errors that appear in work-unless steps are taken to avoid them.

It may be the sort of machine that many of us have owned or used-and may still use-which is still capable of good service to anyone knowing its frailties, and is more stimulative of his skill, especially in the early stages of his career, than a super-lathe whose precision. is supported by numerous accessories.

The briefest acquaintance can bring to light typical faults in the tailstock. Its centre may not point truly to that in the headstock, from malalignment or wear at the base, between tailstock and bed, or its guides. Firm as clamping for the barrel may appear, it may yet permit more or less easy endwise movement, and even some sideways shake-from wear on the barrel, but often more particularly in the end of the bore in which it slides. And the whole tailstock may slew or move bodily across the bed, if this is the flat-topped type and there is wear against the engaging tongue.



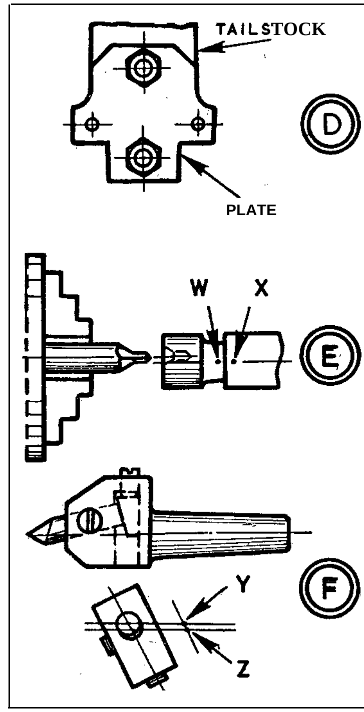
From such faults as these, the handling peculiarities arise. In using a centre drill, it may be found to be lifting to the axis of the work; during between-centre turning, the barrel adjustment may not hold, or there may be marked variations in cut; and whenever the tailstock is moved on the bed, it is unlikely to remain or reclamp in its previous alignment.

The severest test of tailstock alignment is made with an indicator in the chuck, as at ***A,*** moving it round the tailstock centre. The smallest amount of drop on the centre, or sideways malalignment, is revealed by variations in reading; and to search out other errors, the effect can be tried of resetting the tailstock on the bed, of extending and retracting the barrel, and of subjecting it to sideways pressure when clamped.

Some of the possible faults can be overcome by using special centres, after the two major ones have had attention-barrel support and clamping, and tailstock alignment to the bed.

The first can be dealt with by boring and bushing the open end of the tailstock bore where the clamping is done, as at ***B*** and C. A boring bar is made a good fit for the tailstock bore, and a tool is fitted that can be adjusted for cut. In this area, the diameter of the' bar can be reduced to give clearance for swarf. Often, of course, it would be possible to use standard mild steel bar.,

Packing in the slit of the tailstock (to open it slightly) and then firm clamping, will secure the open end of the bore; then advance can be given by clamping the tailstock lightly to the bed ahead of the saddle, and using this to move it along. With a smooth bore produced to required size, a bush in bronze or gunmetal can be machined to suit, split and fitted, and. secured by countersunk screws.



The second major fault-sideways malalignment of the tailstock on the bed can be overcome as at D, by attaching a plate (well-fitting in the guideways of the bed) at each end of the tailstock. Thickness is optional to the size of the lathe, though 1/4 in. is reasonable in small sizes, and the material may be steel, aluminium or bronze. Accurate setting and permanent tixing can be done by leaving the stud holes in the plates oversize, adjusting the tailstock true by experiment, clamping the plates on, and then removing the tailstock for drilling holes and fitting dowels.

Faults of alignment from dropped centre or lateral error, or both, can be counteracted with special holders, or adjustable centres, as at ***E*** and ***F.*** For example, the blank of a hollow centre can be centred and drilled, not in the headstock but in the tailstock, and can be given a re-aligning dot W to come to another while an adjustable pointed centre can be fitted at an angle for it to be set up to spindle axis Y from tailstock axis z.