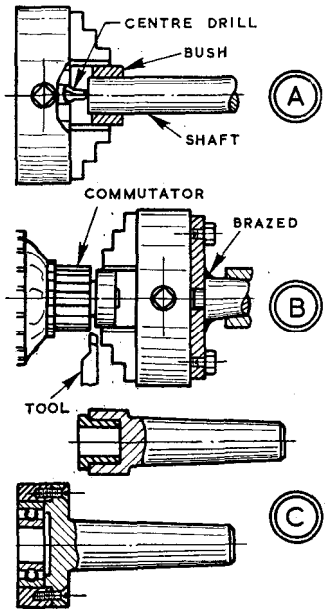
Bearings and centres for lathes

By GEOMETER



WITH standard lathe equipment supplemented by quite simple devices, there are often advantages to be had by way of increase in scope of work, faster working or improved results, and compensation for defects or ommissions in the work or the lathe itself. In such respects, bushes and bearings for support of work or tools have their particular advantages, while special centres facilitate working or setting up.

The jaws of the fixed steady function together as a bearing for a long shaft, with or without the tailstock centre; but as the jaws are of relatively small area, they can score the shaft if hard, or if soft, noticeably wear in the course of a lengthy operation. A bush in brass, bronze or aluminium alloy made to fit the shaft has distinct advantages. A long round hollow part, too, can be supported in this way at the free end for boring from the saddle.

By an adaptation, employing a bush as a bearing, a long shaft can be supported for centring the end in the chuck, as at A. The centre drill is in a holder in the spindle taper, and the bush gripped in the chuck is bored to take the shaft. The free end of this is supported by the fixed steady. To prevent rotation and provide end push, a normal carrier is fitted to the shaft to rest on and be advanced by the saddle.

For various operations requiring the tailstock, support by a bearing is advantageous-especially if an existing centre in the work is likely to cause eccentricity in the machining. Again, use of a bearing may obviate centring a part-or this may not even be practicable with hard material. The worn or burnt commutator of a dynamo or starter motor can be machined with the spindle supported by a bearing. There may be no centre in the spindle, or the centre may be damaged; and unless the armature is set up for the spindle to run truly, the commutator will be machined eccentrically. Naturally, this will lead later to rising and falling of the brushes in the holders; and in the case of a car dynamo running at several thousand r.p.m., there is sparking and burning at the commutator.

Use of self-centring **chuck**

A small self-centring chuck will hold a bearing, as at ***B,*** when mounted on a circular plate brazed to a taper shank to be fitted to the tailstock. So if, as may happen, a ball race comes away with the armature spindle, it can be convemently gripped and utilised

A plain bronze bush or a small ball race fitted to a taper shank, as at C, will provide substantial support for the end of a revolving cutter bar or milling cutter spindle. Heavier cuts may then be taken without deflection, and wear and slackness avoided, as the arrangement is more in keeping with milling.

When much smaller work than normal for a lathe is undertaken,. it can be helpful to use a small live centre with its own driving pin, as at ***D.*** Such a centre can be held and trued in the independent chuck. Then the saddle can be used in the habitual position-not over a gap, or on a little-worn part of the bed, where its action may be sticky.

A tailstock centre which revolves and one that can be set over or adjusted for height have their-particular advantages. The one obviates wear of work centres on roughing cuts, and the other can be set to correct centre drop with a worn tailstock, and adjusted to eliminate taper, or provide slight taper if required, when the tailstock itself cannot be set over. Small designs are as at ***E*** and ***F.***

In each case, the body of the centre can be in mild steel, and the end cover held by four countersunk screws. On the revolving centre, the end cover has a V-groove serving as a raceway for balls-so it should be in cast or silver steel,. hardened and tempered. On the adjustable centre, the end cover can be mild steel. Both actual centres should be in cast or silver steel, hardened and tempered, as should the adjusting screw of the revolving centre. But mild steel can be used for the screws of the adjustable centre. El