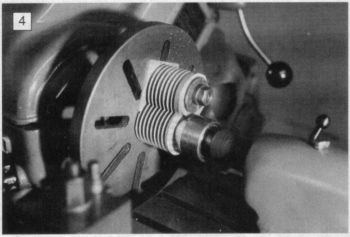

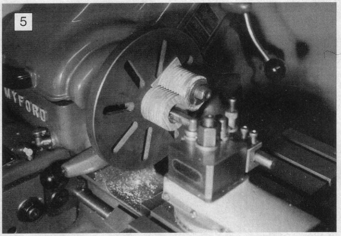

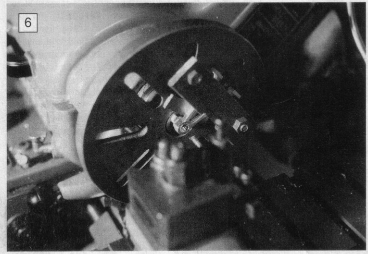

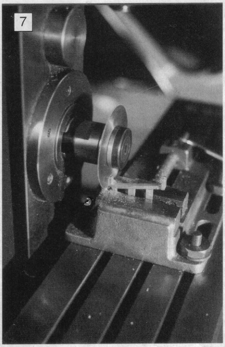

4: Centring on faceplate prior to boring.

5: Power cylinder boring in progress.

6: 'A'-frame mounted on faceplate for boring the boss.

7: Slitting 'A'-frame bearing boss.

and I found that the only filing necessary on the feet was that required to clean up the surfaces.

Apart from that, the frames can be left 'as cast'. **Photograph 7** shows the slitting of the bearing housing. It could obviously be done by hand, but the cutter I used was the thinnest saw I had, so I let the machine do the work. **Photograph 8** shows the frames assembled to the cylinder block and the displacer cylinder cover, with the crankshaft blank in situ. To ensure that the crankshaft and the axis of the displacer rod would intersect properly a rod was set in the bush to touch the crankshaft while the frames were clamped to the cylinder cover and jiggled into the correct places.

The feet were then drilled 6BA clearance from below using the four fixing holes already drilled in the cover as guides. **Photograph 9** shows the power cylinder cover in place.

Crankshaft

This is somewhat unusual in that the webs are inclined at 115deg. to the axis of the shaft instead of the more usual 90 degrees. This seems to be because it has to clear the A-shape of the displacer connecting rod; consequently the webs have to be drilled at this angle. Obviously the spacing of the holes must be exactly the same in the two webs so care is needed in getting the holes started on the sloping surfaces. The construction notes suggest that some form of jig should be made but gave no hint as to its form. A support inclined at 115deg. is obviously desirable.

I thought about drilling the two webs together, but awareness of the LPC (Law of Pure Cussedness) soon caused me to abandon this idea. I decided to rely on the milling machine graduations to get the spacing right and my jig turned out to be so simple that you can call it crude if you like. It took the form of a wooden wedge, its thickness slightly greater than the width of the steel strip supplied for the webs. With the strip firmly pressed down onto the wedge, the machine vice was tightened and the wedge was gripped and compressed until the jaws took hold of the steel strip. In this way both the wedge and the strip were firmly held.

That still let the problem of getting the holes started without having the drill try (by bending) to wander down the slope. One way would have been to start with a centre drill. Another way, which I used, was to use slot drills. With a very slow feed rate until the drill was cutting a full circle this worked out nicely. There may be more elegant ways of doing it but this one worked for me. Alternatively, although it is not mentioned in the construction notes, the problem could be avoided by putting the crankpins at right angles to the shaft with the 1in. spacing shown on the drawing. This would, of course, call for a longer crankpin. The assembly has to be silver-soldered and the part of the crankshaft between the webs has to be cut away. To ensure that the crankpin was parallel to the shaft I did not use the short piece of silver steel supplied for the pin. Instead I used a longer piece reaching as far as the longer end of the crankshaft where a clamp was applied to hold it parallel while the soldering was in progress.

The pin being smaller in diameter than the shaft, some packing was needed in the clamp but this presented no difficulty.

Having made the crankshaft the thought struck me that maybe its shape had been dictated by the need to enable it to pass the conrod big-end housing over it since the bearing housing does not have a detachable cap. The difficult spots are obviously the ends of the web. Reinforcing this view was the fact that the drawings call for the web metal to be filed away completely round half the circumference of the crank pin. I did not like the look of this so I left a little metal there. I then found that it was quite easy to pass the conrod over the end of the web which led to the thought that per-