

# BORING IN THE LATHE

By "Scotia"

IN the selection of tools for a lathe job, it is true to say that this can be done by the experienced turner with the absolute minimum of trouble. This is a natural outcome of knowing what type of tool to look for, what it is capable of doing, and a fair idea of how it will perform.

However, it is only fair to say that such a tool as the writer has in mind isn't likely to be found in a turner's tool-chest. Let us say, rather, that it is more than probable that such a tool is "born" at the grindstone, being the result of inexperience.

It will be seen from the sketch, Fig. 1, that the leading edge of the boring tool, for such it is, has been ground away at much too acute an angle. Let it be said at this stage,

of hesitancy is almost sure to dive point first into the side of the material. Any tendency of the tool to evade cutting in the usual way will at one and the same time form a barrier opposing the leading edge of the tool, forcing the tool into disaster. The same conditions will arise when surfacing or sliding work in the lathe, when tools of similar faults are used.

The risk of using such tools is much increased when back-lash is present, as the shape of the tool lends itself to taking the least line of resistance, and there is every probability that it will charge the work, with disastrous results.

All this may appear to be of a very elementary nature, especially to

edge for the purpose of forming a recess.

Regarding rate of feed, many breakages are due to the eagerness of the worker, in his zest for the job in hand, to overwork the tool. One should always give the tool time to cut; if it is decided to use the lathe feed, a good plan is to select a feed just a little less than one would be inclined to use when hand-feeding the work. In this way, a reasonable margin of safety is allowed for all contingencies, such as tool breakage, work shifting in the chuck, etc.

In conclusion, it may be of interest to remark on the behaviour of a boring tool which has become (through old age or otherwise) rather too small in the head, generally. This type of tool, which quite often may still have a strong "neck" to support it, has an unpleasant habit, when cutting hard materials, of throwing metal cuttings up into the operator's face without warning.

In observations made during its performance, this phenomenon may



Fig. 1A. An incorrectly ground boring tool

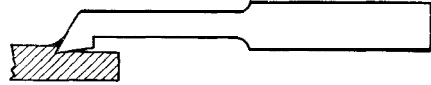


Fig. 1B. Showing the insecurity of its performance

that we are concerned only with the profile of the tool as seen in the plan view sketch, and it may be assumed that the necessary rake and clearances are correct, otherwise.

To use such a tool on anything other than the lightest of cuts is asking for trouble. Let us assume that a cut of say 1/16in. a side is being made with this tool in use. The fact that there may be no back-lash present in the lathe-saddle is no guarantee that the tool will perform correctly. There is every chance that during the course of the cut, the leading edge of the tool may become dull, and in the increased resistance set up towards the cutting of the material, it will almost certainly hesitate, and following that moment

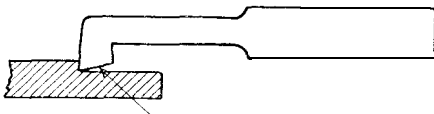
those of us who are experienced in lathe-work, but one must never lose sight of the fact, that there is a first time for everything in lathe-work, and indeed a first time for everyone.

The sketch, Fig. 2, shows a boring tool of correct shape in use. It will be noted that the trailing edge of the tool has a distinct clearance from the work. There is a tendency among those of little experience, to have little or no clearance on the trailing edge of a boring tool, resulting in much squealing and oscillation.

In this connection, the tool used for boring should be distinct from the recessing type of tool, as the latter has a straight or square

be explained by the fact that the tool, being small in the head, appears to dip in a series of tiny movements, while at the same time removing chips from the bore. The "neck" or body of the tool is constantly reverting to its original position, and the net result is that the chips are catapulted upwards in a most disconcerting manner.

This is much in evidence when a fairly large hole is in course of being toolled out, and consideration should be given to replacing such a tool at the earliest moment, either by the use of a boring bar and tool-bit, or another boring tool of heavier duty, if only for the purpose of working in safety and comfort.



NOTE THE TRAILING EDGE  
WELL CLEAR OF THE BORE

Fig. 2. Correctly ground boring tool

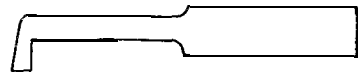


Fig. 3. Recessing tool-To use this for boring, it should be set slightly askew