

Figure 6

Twist Drills as ordinarily supplied by maker (left) and as standardized under Taylor practice (right).

by the studies. The same set of elements showed in some observations to have taken two to three times as long as in others. Our analysis located this variation all in one element, that of selecting

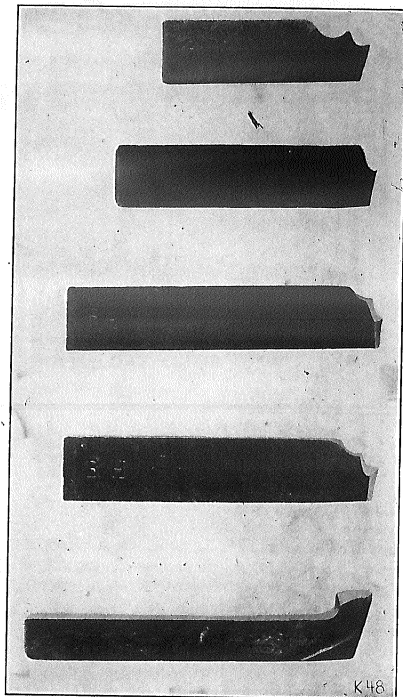


Figure 7

Lathe Tools (side view). The bottom one is Taylor standard tool-machine ground; the others unstandardized—ground by hand by workmen.

the drill and verifying the size. This was due, as it proved, to the fact that the makers stamped the size in small figures, difficult to read, as will be seen on the first drill in the accompanying illustration. They are also upside down with reference to the position occupied by the drill when put into the spindle, which necessitates its being turned end for end by the workman. By filing a good sized flat spot on the drill and stamping thereon the size in easily read figures as shown in the photograph we killed two birds with one stone, eliminating the variable element, cutting

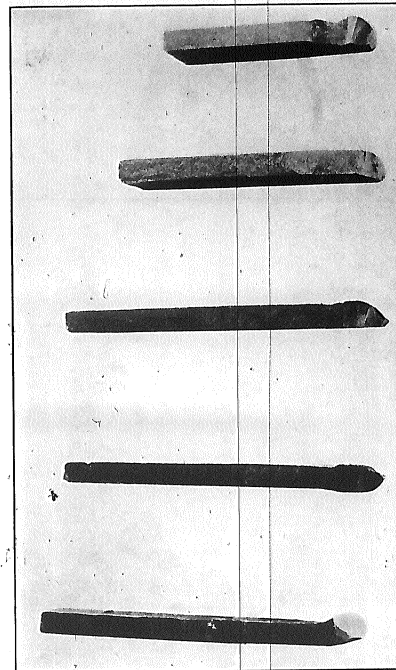


Figure 8

Lathe Tools (top view of tools shown in Figure 7).

out a superfluous element and making a proportionately large saving in time. My recollection is that the time saved exceeded the total time required after this feature had been standardized. Another standard adopted in connection with twist drills—the Barth key and keyway for driving—which has replaced in all machine shops operated under the Taylor System and even in some others, the weak and troublesome tang ordinarily furnished by the makers, does not show in the photograph.

Standardization of cutting tools by reason of its primary importance occupied the attention of Taylor, Barth, Gantt and others associated with them over a period of twenty-five or more years during

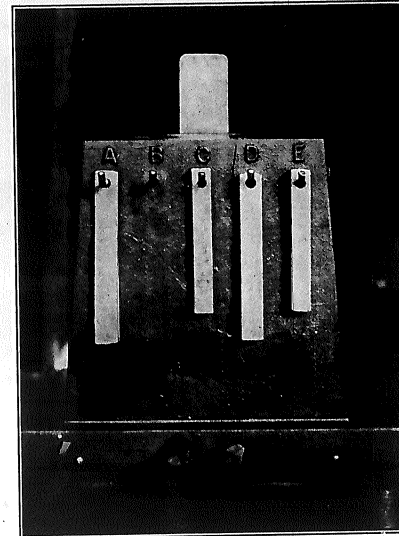


Figure 9

Height Gauge and Standard Packing Pieces, for facilitating the setting of lathe tools in tool post. (The graduations on the gauge indicating packing pieces to be used do not show clearly.)

which exhaustive experiment and research continued. The results of these experiments up to 1906 were described by Mr. Taylor in his presidential address before the American Society of Mechanical Engineers and attracted the attention of the foremost engineers and metallurgists of this country and Europe. Mr. Barth has been continuing this research, extending it to other classes of metal cutting such as drilling and milling. While this treatise "On the Art of Cutting Metals" primarily and directly applies to machine shop work, every manager, student of scientific management and management engineer may derive profit from reading and studying it.

As an apprentice I was taught by men ranking as first-class mechanics that a tool should be ground with a curved lip in order that when cutting steel the chip would be turned off in a long continuous helix, similar to the curled shaving from