Workshop Sketching.



As an example in drawing a sketch, let it be required to draw a screw thread, as shown in Fig. 46. It is not necessary and therefore not usual in so small a screw to draw in the full lines representing a thread, but to draw in



WORKSHOP SKETCHING. FIG. 1. --MANNER OF INDICAT-ING THE THREAD UPON A SMALL BOLT.

place thereof thick and thin lines, the thick ones representing the bottom and the thin ones the top of the thread. The pencil lines would be drawn in the order shown in Fig. 47. Line 1 is the centre line, and line 2 a line to represent the lower side of the head; from the intersection of these two lines as a centre (as at A) short arcs 3 and 6, showing the diameter of the thread, are marked, and the arcs 5 and 6, representing the depth of the thread, are marked. The arc 7, representing the head,



FIG. 2. 47 .- ORDER IN WHICH THE LINES ARE DRAWN.

is not marked. The vertical lines 8, 9, 10 and 11 are then marked, and the outline of the screw is complete. The thick lines representing the bottom of the thread are next marked, in, as in Fig. 48, extending from line 9 to line 10. Midway between these lines fine ones are made for the tops of the thread. All the lines being penciled in, they may be inked in with the drawing instruments, taking care that they do not overrun one another. When the pencil lines are rubbed out, the sketch will appear as in Fig. 46.

For a bolt with a hexagon head the lines would be drawn in the order shown in Fig. 49. At a right angle to



FIG. 3.-THE BOTTOM LINES OF THE THEBAD IN PLACE.

centre line 1, line 2 is drawn. The compasses are then set to half the diameter of the bolt and from point A arcs 8 and 6 are penciled, thus showing the width of the front flat of the head, as well as the diameter of the stem. From the point where these arcs meet line 2, and with the same set of compasses, arcs 5 and 6 are marked, showing the widths of the other two flats of the head. The thickness of the head and the length of the bolt head may then be marked either by placing a rule on line 1 and marking the short lines (such as line 7) across line 1, or the compasses may be set to the rule and the lengths marked from



FIG. 4.-DRAWING A BOLT WITH HEXAGONAL HEAD.

point A. In the United States standard for bolt heads and nuts the thickness of the head is made equal to the diameter of the bolt. With the compasses set for the arcs 3 and 4, we may in two steps from A along the centre line mark off the thickness of the head without using the rule. But as the rule has to be applied along line 1 to mark line 7 for the length of the bolt, it is just as easy to mark the head thickness at the same time. The line 8 showing the length of the thread may be marked at the same time as the other lengths are marked, and the outlines 9, 10, 11, 18, 18 may be drawn in the order named. We have now to mark the aros at the top of the flats of the head to show the chamfer. The middle flat is the one to have its chamfer marked. The set of the compasses to mark the chamfer will depend upon the amount of chamfer there is to be. As the chamfer, however, is simply used to remove the sharp corners, it is not an important point, and for convenience the compasses may be set to the point A_{i} and arc 14 drawn, its distance from line 9 denoting the amount of chamfer. For the other two flats the compasses must be set to a radius that will cause them to mark an



FIG. 5.-REPRESENTATION OF A COARSE V THREAD.

arc the same distance from line 9 that arc 14 is, and meeting that arc on the line representing the middle flat. This point was fully explained in Fig. 27, of these articles, and the remarks that accompanied it. The lines representing the thread are, in bolts of such small diameter, usually marked in as described for Fig. 46.

In threads of larger diameter it is usual to mark in the