

OF THE JUST
SHAPING OF
LETTERS

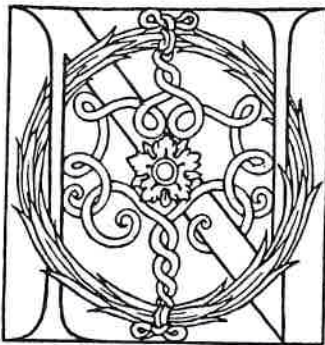
FROM THE APPLIED
GEOMETRY OF
ALBRECHT
DÜRER
BOOK
III



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OF THE JUST SHAPING OF LETTERS

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BOOK III.



NOW, since architects, painters & others at times are wont to set an inscription on lofty walls, it will make for the merit of the work that they form the letters correctly. Accordingly I am minded here to treat briefly of this. And first I will give rules for a Latin Alphabet, and then for one of our common Text: since it is of these two sorts of letters we customarily make use in such work; and

first, for the Roman letters: Draw for each a square of uniform size, in which the letter is to be contained. But when you draw in it the heavier limb of the letter, make this of the width of a tenth part of the square, and the lighter a third as wide as the heavier: and follow this rule for all letters of the Alphabet.

First, make an A after this fashion: Indicate the angles of the square by the letters a. b. c. d. (and so do for all the rest of the letters): then divide the square by two lines bisecting one another at right angles—the vertical e. f. the horizontal g. h.: then, in the lower line, take two points, i. and k., distant respectively one-tenth of the space c. d. from the points c. and d.: then, from the point i. draw upwards to the top of the square the lighter limb; & thence downwards the heavier limb, so that the outer edges of both may touch, respectively, the points i. and k.: then let a triangle be left between the limbs, and a point e. be fixed at top in the middle of the letter, and next join both limbs beneath the horizontal line, and let this limb be a third as broad as the heavier limb.

Now let the arc of a circle, applied to the top of the outside edge of the heavier limb, project beyond the square. Then cut off the top of

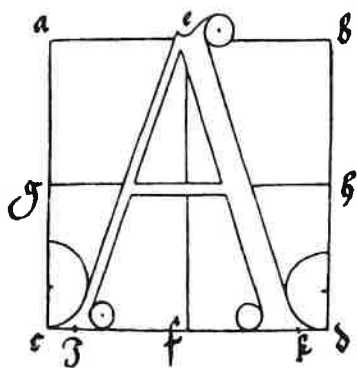
the letter with a serpentine or curving line, so that the concavity decline towards the lighter limb, and prolong acutely either limb of the letter at the bottom to either side, so as to meet the angles of the square at c. and d.: this you shall make with the arc of a circle, whose semi-diameter is one-seventh of the side of the square; but the two lower curves, mutually opposite, permit to extend so that each is a third of the heavier limb, and this you shall obtain by the arc of a circle whose diameter is equal to the breadth of the heavier limb.

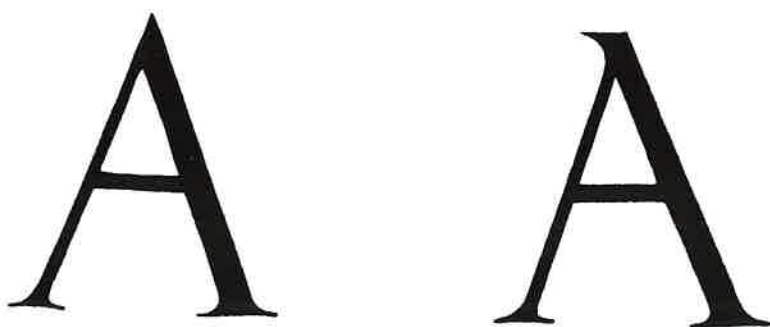
Moreover, this same letter A you may cut off at top with the side of the square, and then produce to a fine point in either direction, as you did the feet below, yet so that the longer production shall be to the fore-side (namely, the left); but in this case it will be necessary to draw in the limb k. a little closer.

Likewise the same A you may draw in yet another manner—that is, pointed at top. In that case let the limbs slope towards one another yet more closely; then lower the transverse a little and double its width. You may also cut off the limb at top bluntly, or sharpen it on the fore-side. You ought to make yourself familiar with these three forms, or whichever of them pleases you best.

And note likewise that in exactly the same fashion in which this letter is acutely prolonged at top & bottom, are the other letters to be so prolonged which are drawn with oblique lines, as V, X, Y, although a few changes may be necessary, as you shall hear below.

I have here subjoined an engraving of this letter.





OF THE LETTER B.

And now you shall draw B in its square thus: First divide the square horizontally by the line e. f.; then bisect the lines a. e. and b. f. by the line g. h. Next, you must first set properly the broad vertical limb of the letter, distant its own breadth from the side a. c. of the square a. b. c. d. Then erect the line i. k. on the inner side of the limb already drawn, and distant from it one-tenth of a side of the square, and let it cut the line g. h. in the point l.

Next, draw strips narrower and horizontal (to be produced hereafter into the convex limbs) from the vertical band to meet the vertical line i. k. — namely, at top, below the line a. b.; next, above the line e. f.; and at bottom, above the line c. d.

Now set a leg of the compass on the point l. and describe a semicircle to the right of the transverse strips, so that the extremities of the circumference, in the vertical line i. k., below the side a. b., and above the line e. f. may coincide with those short transverse lines. Then bisect the narrow transverse strip which is above the line e. f. in the line i. k. by the point m.; and indicate the breadth of the letter, to the right of the semicircle, by the point n. in the line g. h.; and afterwards draw from the point m. above the line e. f. in the direction of f. a short horizontal line as great as need be: then describe a semicircle which shall include this line, and the point n., and, at the top, the side a. b.; and through n. let pass a vertical line. These all combine to form, below, the concave of the curved limb, and above, its convex.

Next, produce the transverse strip above c. d., in the direction of d.,

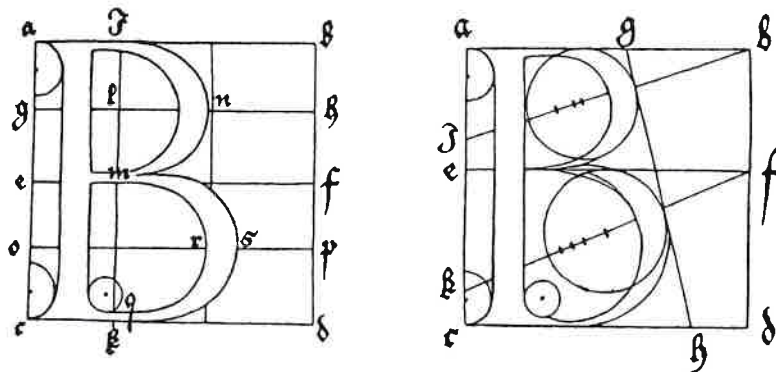
as far as required, and mark this q. Then bisect the line m. q. by the line o. p., cutting the line n. in the point r.; and next describe a semicircle touching the horizontal line e. f., the point r., and the position q. Then indicate the breadth of this limb of the letter by the point s. to the right of the point r. in the line o. p. and describe a semicircle, touching the line m., the point s., and the side of the square c. d. There will then remain in the letter three right angles to be eliminated: the interior and lower one may be shaped into a curve by a circle whose semidiameter is two-thirds of the breadth of the broad limb of the letter, and the exterior ones you shall fine to a point by circular lines whose semidiameter is equal to the breadth of that limb.

Another method.

Or you may make your B in this fashion: Let the side a. c. of the square be divided into nine equal parts, and cut off the four superior parts by the horizontal line e. f. Then erect your vertical limb as described above; and the superior curved limb you shall make between a. b. and e. f.; the inferior between e. f. and c. d.

Now divide a. b. into nine equal parts, and cut off four parts towards b. in the point g.; then divide c. d. into five equal parts, and the last, towards d. mark off in the point h. and join g. and h. by the line g. h. which should touch on their exterior edges the superior and inferior limbs of the letter. Now these limbs must be drawn of a particular form; and the compass, in drawing the circular lines, must be moved up and down their diagonals: and these two diagonals you shall determine in this wise.

Divide a. e. into four parts; the lowest, above e., call i. e.; the lowest of the five remaining, above c., call c. k. Then join the points i. and b. and k. and f. respectively, by the lines i. b. and k. f. Upon these lines move and turn your compass, & in this way you shall describe both curved limbs: and they must both be broader towards the top than towards the bottom, as follows naturally with the stroke of a pen, and, moreover, while approximately round, they are not to be circular; therefore you will have to move your compass at need along the diagonals, and withal to assist it also with the hand, as I have done in the picture on the following page.



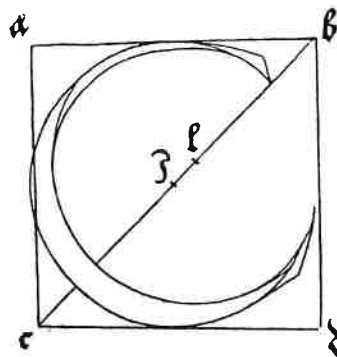
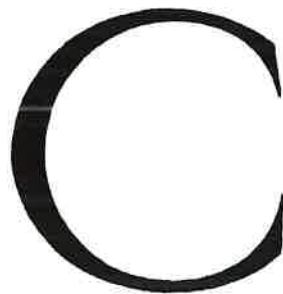
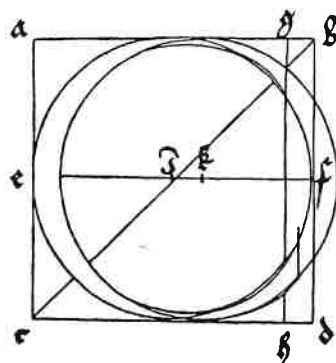
OF THE LETTER C.

Next you shall make the letter C in its own square thus: Bisect the square a. b. c. d. by the horizontal line e. f. and in it let i. be the middle point. From this point as the centre, & i. f. or i. e. as the radius, describe a circle touching interiorly all four sides of the square. Now move the leg of the compass, but without varying its span, to a point k. a little to the right of i. in the line e. f., letting the space i. k. denote the greatest breadth of the letter you desire; & from the centre k. describe another circle which shall cut twice the line b. d., and whose circumference to the left will mark the required breadth of the letter. Next, draw the vertical line g. h., parallel to b. d., distant from b. a tenth part of the line a. b. This will cut off for you at top and bottom the letter C as the ancients were accustomed to use it. But I would have you cut off the lower limb in the middle point between g. h. and b. d.: then make the limbs somewhat finer and rounder on the inside towards top and bottom from the point where the circles intersect; and for its greater perfection

round out the letter, above and below, to touch the sides of the square a. b. and c. d. Next, low down, where the letter with one foot crosses the line g. h, there, under the circular line make the form a little more incurved, yet so that with the tip of its end it shall again touch the circular line. Similarly, but higher up, make the foot more hollow on the inside than the circle left it: and thus two circular lines will give you very nearly the whole form of the letter.

Another method.

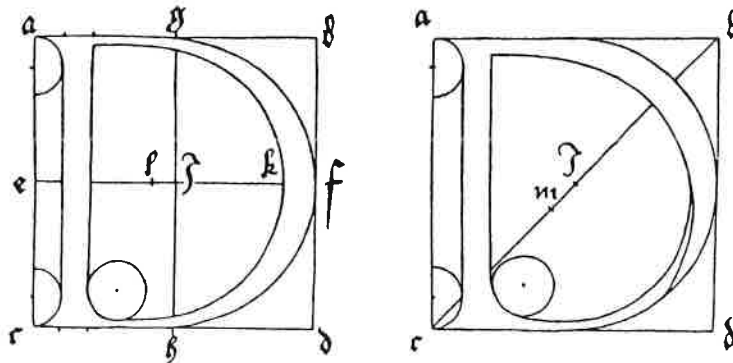
Or, secondly, you may make the letter C thus: Draw in the square a diagonal c. b.; set the leg of your compass on its middle point i. and with the other leg describe the exterior circle as before, terminating it above at the diagonal c. b.; but below, make your circle pass a little beyond the former sweep. Then set the leg of your compass, but without changing its gauge, as far above i. in the diagonal as the letter's greatest width, and describe your inner circle; and, as though made with a pen, let the descending stroke be heavier than the ascending. The rest you may elaborate with your hand; & let the trimming of the ends of the letter, above, slope upwards, & below, downwards, exactly as I have here drawn the shapes.

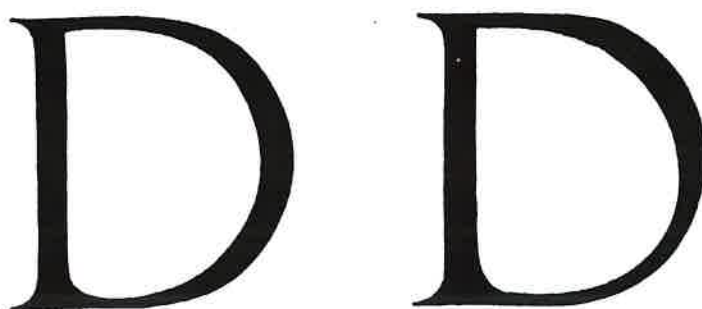


The letter D you shall make thus: Divide its square by the perpendicular or vertical line g. h. and by the horizontal line e. f. into four small squares, and call their point of intersection i.: then draw the broader limb of the letter from the side a. b. downwards, to meet the side c. d. and at the distance of its own width from a. c.; and produce the limb at top and bottom to a sharp point at the angles a. and c. as was shown above in B; using the same method in all straight limbs in the remaining letters. Next you are to produce from this limb two narrower tracts horizontally, and from these are to be described the circular arcs of the letter between the line a. b. at top and the line c. d. at bottom, and extending as far as the perpendicular g. h.; next, with your compass join g. f. h. Then, in the line e. f. lay off a portion equal in breadth to the widest limb of the letter, at the point k.; next, set one foot of your compass on k. and let the other cut the said line e. f. in l.; let this be the immovable leg of your compass, and with the other, beginning from k., describe internally, to the narrower transverse limbs, an arc which shall touch both, completing your acute angle above, but rounding out the lower one by a circular arc of the same diameter as the one by which you sharpened your exterior subtending angle.

Another method.

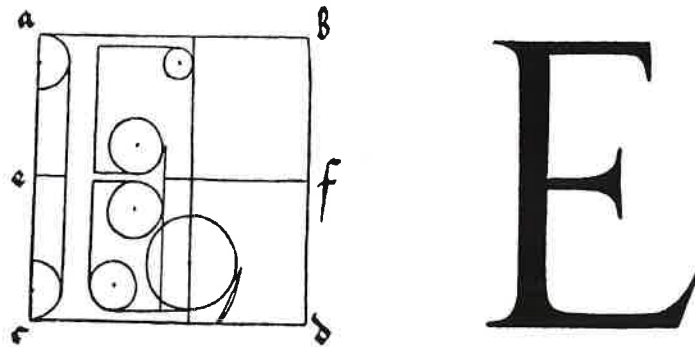
You may make the round limb of the same D in another fashion; namely, as a pen naturally would, broader above than below. For this, draw the diagonal c. b. and describe your exterior arc as before; but to describe the interior, in the line c. b. take a point m. lower down than i. and distant from it the width of the broader limb, and without altering your compass describe an interior line; but where the limb must needs be narrower, there you are to accommodate it with your hand, both below and above, as in the following cut.





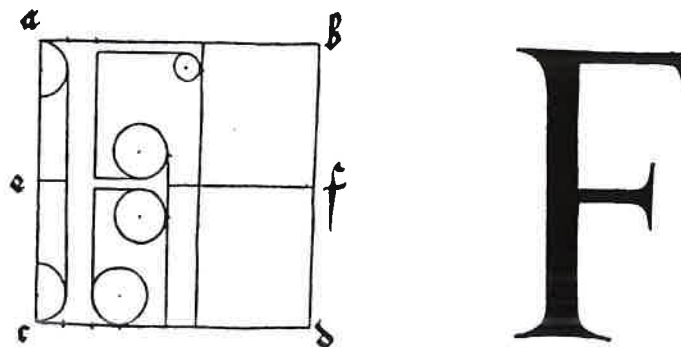
THE LETTER E.

The letter E you shall form in its square thus: Draw a transverse line e. f. bisecting a. b. and c. d. in e. and f.; then draw the great vertical limb of the letter, to the left, as you did for D. Next draw also an upper transverse limb of narrower dimensions, parallel to a. b. and in length six-tenths minus one-third of one-tenth of the length of a. b.; and the end of this bend downwards one-tenth of the length of a. b. and use this as the diameter of the circle with which you round out the inner angle of this extremity: then draw your narrow middle limb parallel to the median line e. f. and above it, so that it may be shorter than the upper limb by one-tenth of the length of a. b., but at its terminus double as wide; & you are to round it out (in either direction) by the arc of a circle whose diameter is one-sixth the length of e. f. Now construct your lowest limb upon the line c. d., so that at its ultimate angle it may exceed in length the upper limb by one-tenth of c. d.; the cusp, however, you are to prolong beyond this part by two-thirds of one-tenth part, and erect above it to one-sixth of the length of c. d, and round out the same by a circle whose semi-diameter is also a sixth of c. d. In like manner the final angle of the letter you shall round out by an arc of the same circle by which you rounded out the middle transverse limb: the other angles you are to leave acute, as in the following cut.



THE LETTER F.

The letter F you are to form in the same manner as E; except that you shall omit the lower limb altogether, and, in its place, round out the letter on both sides below, as you did E on one side only, as I have shown you below.



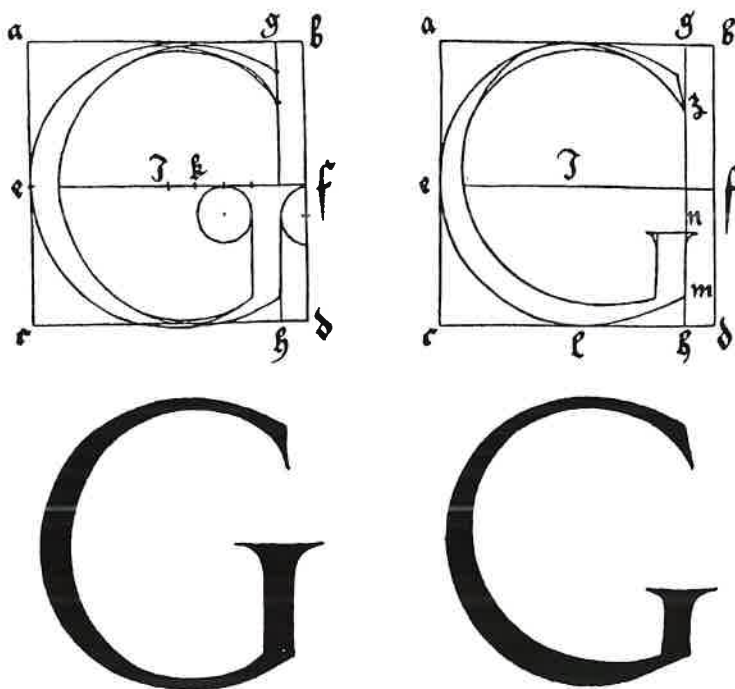
THE LETTER G.

Likewise the letter G you are to make as you did C, before described; this, however, excepted: that in front (that is, to the left) of the line g. h. is to be erected the broad limb of the letter, upwards from the curve to the line e. f., and above it is to be rounded to a point, on either side, as before was said; but below, both angles are to remain.

Or, you shall form G in the following fashion in the said square, divided as before: Draw the diagonal c. b. and set your compass with one leg on the point i. and with the other describe an arc from e. to the middle point c. d. and mark this point l.; in like manner also, describe

an arc upwards to the line a. b. so as to meet the perpendicular line g. h. & mark that point z. Then, in the line g. h., take a point m. so that the part m. h. shall be one-tenth of the line g. h.; then, with a sweep of your hand join l. & m. with the curved line l. m. Next, you are to draw from z. a line upwards, as broad as the standard of the letter, but oblique and in direction midway between your circular line & the perpendicular g. h. and from the extremity of this line you must draw a curved line to meet a. b. at the point where your circular line touches it. Next, cut off from the bottom of g. h. a part one-third of its length, & indicate this by the point n., & to this height, from the level of m. upwards, produce the broad limb of the letter, and let its extremities above be finished in either direction, of the same size. After this set the leg of your compass on the diagonal c. b. the breadth of the standard of the letter above i. & at the distance e. i. describe an arc, which above shall touch the exterior boundary a. b. but below shall stop short above l.; & from this point you must with your hand draw a line to the vertical limb at the height of m.

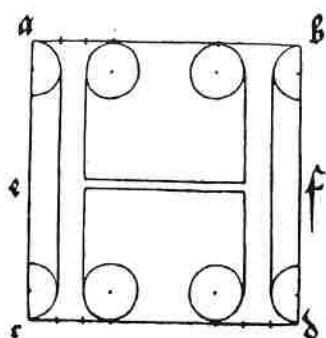
And the same you shall do above in drawing the narrower limb of the letter, as seen in the following diagram.



THE LETTER H.

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The letter H is to be formed of two broad, great, & vertical limbs of the height of the square, in such fashion that their extremities, being produced exteriorly, shall touch the four angles of the square, a. c. and b. d. respectively. Now in what fashion the projections of the broader limbs of letters are to be rounded out at top and bottom and on either side, you have been instructed; for in any letter you please, any broad and vertical limb is to be depicted at top and bottom thrice as broad as at its middle: provided always it is not joined to a narrower limb. So when this has been accomplished, then draw your narrower transverse limb upon the line e. f. as is shown below.



THE LETTER I.

The letter I you are to make of a single broad vertical tract in the midst of its square, touching the latter top and bottom; and of this, at both ends, and on either side, you are to round out the productions or projections as below is shown.

