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Art of engraving

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THE
ART OF ENGRAVING

A PRACTICAL TREATISE
ON THE ENGRAVER'S ART, WITH SPECIAL REFERENCE
TO LETTER AND MONOGRAM ENGRAVING

SPECIALLY COMPILED
As a Text-Book for Students and Reference Book and
Guide for Engravers

OVER TWO HUNDRED ORIGINAL ILLUSTRATIONS

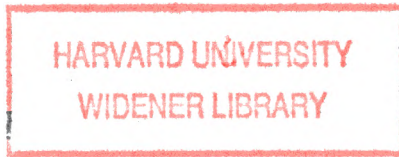
SECOND EDITION

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PREFACE TO SECOND EDITION

The great need which existed for a masterful treatise on practical engraving has been conclusively proved by the quick sale of the first edition of this work. Such has been the demand for it that the entire first edition has been sold within one year from the date of publication, an unusual record of sales in the case of a purely technical treatise. The explanation lies in the merit of the book and in the fact that previous to its publication there was no treatise available which could be truthfully described as thoroughly covering this important subject. The want of a standard text-book on the art of engraving was greatly felt by teachers and students alike, and it was to supply this want, as well as to aid in the advancement of the art itself, that this work was undertaken.

It means much for the student that the author of this book had the dual qualification of being an expert engraver and a successful instructor of engraving. This ensures at the same time accuracy and reliability of matter and such a course of instruction as experience has proved to be most effective in enabling the student to master the art.

A helpful feature of the work is an unusual abundance of original and carefully-executed illustrations.

THE PUBLISHER

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THE ART OF ENGRAVING

THE ART OF ENGRAVING.

CHAPTER I.

INTRODUCTORY.

In taking up the study of engraving with a determination to thoroughly master the art it may be interesting to look back over the fading pages of history and learn whence this art came. If we read the traditional story of prehistoric man down to and including the men of the stone age we learn that back in those dark ages when no other implements or tools were known save those made from stone, some of the men of the period were spending their leisure time whittling weapons and engraving on stone the forms of animals with which they were familiar.

It is difficult for the modern engraver sitting in the front window of a beautifully decorated jewelry store to conceive that the art of engraving had its birth amongst the cave-dwellers of the stone age, and that the first engraving tool was the hard stone with which softer stones were engraved. But so it was, for we have proof in abundance that the art of engraving was known to men before the discovery of metals and previous to the bronze age.

This most beautiful art, therefore, being the oldest known to man and one which has come down through the centuries gaining in excellence, popularity and prestige, it behooves the student who decides to study engraving and to follow it as a business or a department connected with his business to realize that he is dealing not with a mere trade, but with an art difficult of mastery and capable of limitless development.

ADVICE TO BEGINNERS.

Considering the advantages with which man is blessed in this age of higher education, beginners should so begin that the work which they do from the very start may be of permanent advantage to them. Mention of this is deemed advisable thus early because it is a well-known fact that there are many who have been

doing "engraving" for years with no apparent advancement. To begin right is the first step towards success, and such a beginning is not only advisable, but imperative, for we are living in a century that demands from all artisans the most thorough workmanship. The standard, too, is becoming more exacting. Indeed, the art has progressed so rapidly in recent years that it has reached a high point of perfection, far in advance of the workmanship accomplished in earlier times.

The student to-day should begin by learning the rudiments, that most valuable foundation which so many overlook. He must, if he ever hopes to be master of his chosen profession, become familiar with and an adept in all the details of the work which are the stepping stones leading up to a high degree of perfection. Such thorough study and mastery of detail are essential, too, as the means by which the most perfect work is accomplished in the least time. It is a fact that cannot be disputed that the great leaders of recent years in many professions, trades or businesses are those who have given strict attention to the study of little things, or the details appertaining to their work, and by so doing have mastered the work in much less time than they could have done so with any satisfaction by the stumbling-over method. It has been the privilege and experience of all teachers of engraving to observe students study and practice in both the thorough and the careless method, and the observation has proved that the student going about his work with a determination and a knowledge of the rudiments is the one who masters his work in the least time and the one whose finished work is complete and correct. Following this mode of procedure the engraver does not find it necessary to retrace his steps, "patch up" and tamper with his work after it has passed the finishing stages.

The necessity of beginning aright and following technical lines cannot be too thoroughly impressed upon the student's mind. To the knowledge of the author there have been men connected with the jewelry business for thirty or thirty-five years, during which time they have made an attempt to engrave (if the term may be used without discredit to the art) all the goods they sold that called for engraving. After these years of nervous strain on all sides they are aroused from their slumbers and find that the reason they cannot do better after so much practice is because they did not know how to do any of the work correctly, and they were willing to admit

that a few of the necessary beginning points, if explained and followed, would have enabled them to accomplish much better work in much less time. How many pieces of gold and silver go forth from a jewelry store simply to proclaim the awkwardness and inability of the engraver? And if we compare such work with the beautiful specimens taken from some of our high-class stores we are convinced at once that the former show the lack of knowledge of the first lessons while the latter show the highest degree of adherence to the strict rules of detail.

TECHNICAL TRAINING.

There are many technical points connected with learning the art of engraving correctly and thoroughly that may be considered unnecessary by many of our readers. It is true that some may not be able to foresee wherein some one particular point to which attention will be called will, in time to come, be of value to him, nevertheless, the knowledge will help him in many ways, and at times when he is least aware of the necessity or advantage of it. Thus, readers who follow this work to the end will find only such technicalities as are advantageous and worthy of careful consideration.

For instance, some readers may deem it unnecessary to possess any knowledge of geometry or mechanical drawing to master the art of engraving. While it is true that there are a great many high-class artists who have overlooked some of these points, yet it is possible that, had they deemed it advisable at the beginning to study the little points in geometry, they would have executed the work even better and easier. The error of not beginning properly by the thorough study of the preliminaries and technicalities can be proven in many cases, but one reference will suffice. We will suppose the engraver has to engrave a duplicate of a watch dial on the front case of a watch to enable the owner to see the time by cutting out a small hole over the center of the timepiece, as shown in the demi-hunter here illustrated. An instance of this came to the attention of the author a few years since, it being necessary to engrave on the outside of the front case a fac-simile of the watch dial.



Now, if we have no knowledge of mechanical drawing how are we to do the work with such accuracy and rapidity as we would if we were the happy possessors of such knowledge. It can be done by guess work, but not with that degree of accuracy that would be required by the customers who patronize high-class stores. While, on the other hand, it could be easily accomplished by one with but a little knowledge of mechanical drawing, which it will be our pleasure to illustrate in another chapter. There are hundreds of cases where such information will be found necessary. This being true, and considering the short time required to learn this branch, why neglect it? It is safe to say that some engravers spend more time in three months correcting errors that could be avoided if they had some knowledge of mechanical drawing than would be required to gain such knowledge. This treatise will, however, be written with only such mention and description of geometrical problems and other detail work as are considered by the author necessary to expert work, and the judgment dictating these details is based upon years of observation and practical instructing. There are many ambitious young men, to-day, who would find their work a pleasure if they had been properly trained in their work in the beginning.

Appealing to the good judgment of the reader to admit the advisability of thoroughness, it will be the author's pleasure to direct the reader correctly and with rapidity. The age in which we live demands care and knowledge, and it is necessary that those desirous of learning the art of engraving should have at their disposal written instructions outlining the detail of the work in such a manner that the treatise will be not merely a text-book for the beginner, but a guide and book of reference for the qualified engraver.

While it is true that the art of engraving, especially in monogram and ornamental work, depends largely upon the artistic skill of the engraver, it is also a fact that those possessing such artistic ideas have passed through an early training of a character sufficiently technical to give to a fertile brain and correct eye a broad conception of the art. Taking for granted, therefore, that an elementary knowledge of the art of drawing and an ability to represent outlines by simple lines are among the accomplishments a novice should possess before proceeding with practical engraving, we will illustrate and describe such as are deemed advisable.

CHAPTER II.

MECHANICAL DRAWING.

At Fig. 1 is illustrated an instrument known as a protractor, which is used for measuring or laying off angles, or for dividing circles into a number of equal parts. The outer edge of the protractor

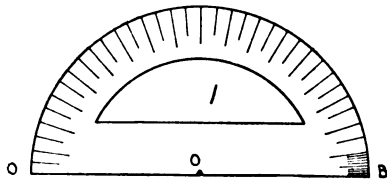


Fig. 1

is a semi-circle whose center is O and is divided into 360 parts, each therefore being equal to half a degree. There are also protractors which are divided into 180 parts, one-half of a circle, in which case each part would represent a degree.

Should we wish to use a protractor to measure or lay off an angle, we must place it so that the edge OB will coincide with the line that forms one side of the angle to be laid off or measured, and the center O will form the vertex of the angle. For example, suppose we desire to lay off on an angle of 45° with a line CD at the point M , Fig. 2, we would in such case lay the protractor on the paper with the edge OB , to coincide with the line at the point M ; then we would make a mark with a sharp pencil at the 45° division on the

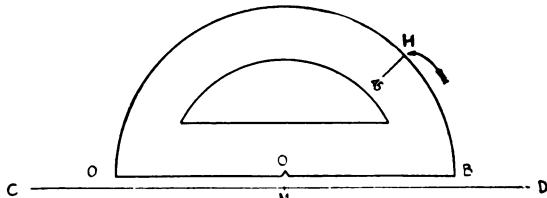


Fig. 2

outer edge of the protractor, as indicated at H , as that we wish to lay off. Now a line drawn from such a point through to the center M will make the required angle.

One of the first instruments aside from the protractor that the beginner in drawing should have, is a square known as a carpenter's square. For engravers' use one three inches horizontally and two inches perpendicularly would answer very nicely. Such a square could be made of celluloid by the aid of mechanical drawing or by

the use of a steel square. The object of suggesting celluloid is that it is pliable and would conform to some of the uneven surfaces which the engravers have to deal with with some degree of accuracy; but it must be remembered that a metal square is far more accurate, as it is perfectly solid and firm.

The beginner should also possess a parallel rule, shown at Fig. 3. These rules could be easily made, or can be purchased at any book store. He should also have a 6-H pencil, or one equally

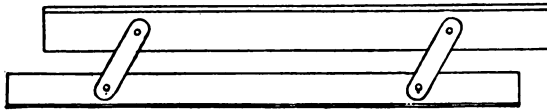


Fig. 3

hard, and two pencils of a softer lead. A pair of compasses of good quality is also one of the instruments with which a beginner should familiarize himself and have in his stock of tools. Triangles, such as shown at Fig. 4, are made in celluloid and can be purchased at book stores. All beginners should have such an instrument, which, if it cannot be conveniently purchased, can be easily made.

Mechanical drawings are usually made by the aid of a drawing-board, which will simplify and facilitate the work. I would advise

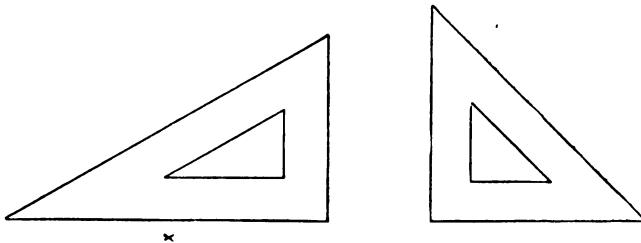
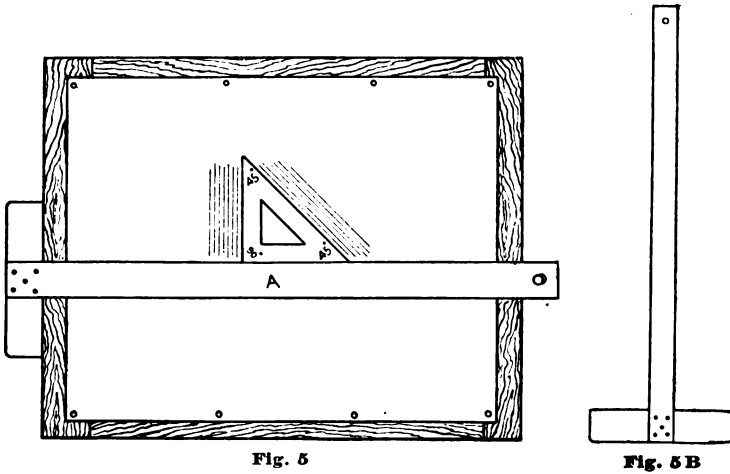


Fig. 4

the beginner, in learning to make accurate drawings, to use a drawing-board, a diagram of which is shown at Fig. 5. Drawing-boards are usually made of some soft wood. Well-seasoned white pine of straight grain is considered good. The grain should run lengthwise of the board and should be free from knots, so that it will easily receive the thumb tacks used to fasten down the corners of the paper. The surface should be flat and smooth, in order that

the paper will lie smoothly and close to the board. The edges should be smooth and must form right angles one with the other. To prevent warping, strips should be tongued into the ends, as shown at Fig. 6. This board should be about 12 x 18 inches.



The T-square, shown at *A*, is used for drawing horizontal straight lines. In using it the short piece of square is placed against the left edge of the drawing-board, as shown at Fig. 5, and the upper edge of the blade is brought over near to the point through which the line is to be drawn, so that a straight edge of the blade can be used as a guide for the pencil in making such lines. If the edge of the drawing-board is constructed as it should be, all lines drawn in this manner must of necessity be parallel. Now we will suppose that it is desired to make lines parallel or at right angles with these parallel horizontal lines. In this case the triangle illustrated at Fig. 4 and shown also at Fig. 5, resting against the T-square, is used. The edge of the triangle slides freely along the edge of the blade of the T-square and, by virtue of

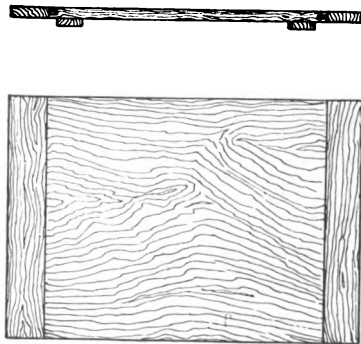


Fig. 6

the high degree of accuracy of its shape, the lines drawn along the left side of it must necessarily be perfectly perpendicular. The object of making these lines in this way is that, if equi-distant, they can be used for increasing or decreasing the size of an object by the process which is often used in enlarging and diminishing large paintings, such as the paintings on the curtains of a theater or others of like character.

The process thus described is as follows: Draw across the original picture a number of equi-distant and horizontal lines forming perfect squares and number the two sets of lines in succession, as shown at Fig. 7; then draw a simple series of lines on a clean sheet of paper, setting the lines an equal, a greater or a less distance apart and copy in succession the parts of the figure that are enclosed within the several squares. At Fig. 7 such drawings

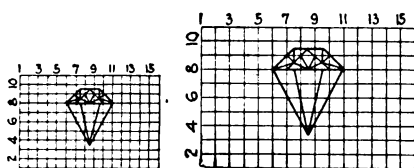


Fig. 7

are illustrated in the two sizes, which will explain this method. As it is not always possible to draw lines across a figure, they may be replaced by a frame carrying fine threads or wires stretched in the two

directions. The frame can be laid over the original drawing, which can then be copied, as we have explained, on a sheet of paper divided into squares. Having placed the frame above or in front of the object and in contact with it, copy on to the sectional paper the contents of each corresponding square, taking care to look at each perpendicularly. With a little practice and by placing in a correct position with and always at the same distance from the frame, a distance which may be regulated by a glass, a sketch may, in fair proportions, be obtained. This method of enlarging or diminishing the size of objects may not be of much value to most engravers, but cases will arise in which a knowledge of such a method will be useful.

The T-square is made of hard wood, rubber or steel and should be of a simple pattern, as shown at Fig. 5 B. The T-square should be provided with a hole at the end for hanging up when not in use, and should always be suspended by the blade, through which the hole is made, as shown. Great care should be exercised with all drawing instruments.

MECHANICAL DRAWING EXERCISES.

One of the first things for a beginner to draw is a square, which is made as follows : First draw a horizontal line measuring 3 inches long, then erect perpendiculars 3 inches long at *A* and *B*, using the triangle shown at Fig. 4 ; then draw *CD* at extremities of the perpendiculars, which completes the square, Fig. 8.

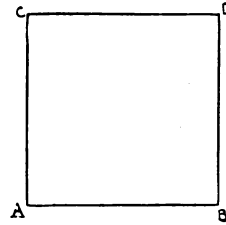


Fig. 8

The next exercise would be drawing circles, which can be done with great accuracy with the compasses of their various sizes. The student should bear in mind that in drawing circles with the compasses that the hand should incline the compasses solely in the direction in which they are moved.

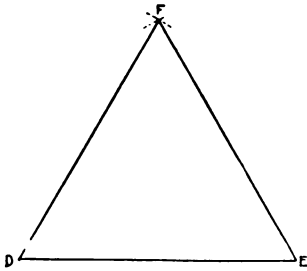


Fig. 9

In making equi-lateral triangle, as shown at Fig. 9, draw a horizontal line *DE* of any desired length ; then take *E* as a center and *DE* as a radius and describe an arc ; then take *D* as a center and *DE* as a radius and describe an arc. Now from the point *F*, where the two arcs intersect, draw lines to the points *D* and *E*. To find the center of a

circle, mark on the circumference or on the arc three points, *ABC* ; next join *A* to *B*, *B* to *C* ; at the middle points of these lines erect perpendiculars. (The middle points are determined in the manner explained for erecting a perpendicular, Fig. 12, excepting that the intersecting arcs are described on both sides of the

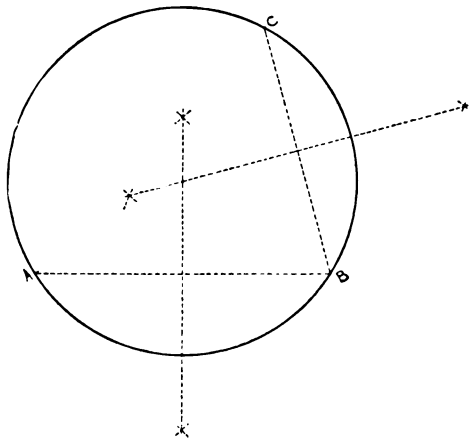


Fig. 10

line, the perpendicular being a line joining these points at the intersection.) The point of intersection of these perpendiculars will be the center. A like method can be used when desired to describe a circle passing through any three given points, shown at Fig. 10.

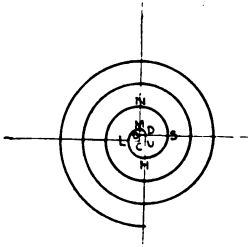


Fig. 11

This method produces a volute in which the coils are at a considerable distance apart.

To erect a perpendicular on a straight line, either compasses or a straight square can be employed. The use of the latter is so simple that no further reference need be made to it. Let us assume *E*, Fig. 12,

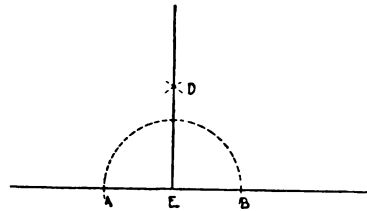


Fig. 12

to be the point in the line *AB* at which a perpendicular is to be drawn: on either side of *E* measure off equal distances *EA*, *EB*, from *A* and *B*; with any radius greater than *EB* or *EA* draw

two arcs intersecting at *D*. If their point of intersection, *D*, be joined to *E*, the line *DE* will be the required perpendicular.

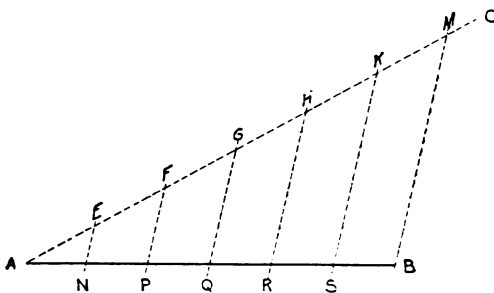


Fig. 13

any convenient angle to *AB* draw *AC* of indefinite length. On *AC* lay off the required number of equal parts. From the last

point of division, as M (the angle MBA can be any magnitude), draw MB through the extremity of AB as B . Then through points K, H, G, F and E , respectively, draw lines parallel to MB and cutting AB at S, R, Q, P and N respectively. Then $AN = NP = PQ = RS = SB$; therefore, AB is divided into the required number of equal parts (Fig. 13).

This problem can also be used to divide AB into parts proportional to given lines or parts by laying off on AC the required lengths and passing a line through the extreme division and the extremity of AB ; then draw parallels as in the foregoing problem.

How to describe and engrave circles is the next point for consideration. At Fig. 14 is shown a series of circles which should be drawn with the compasses by scratching on the metal. After they have been scratched in this way they are engraved with a square graver, making a fine hair line all the way around. After some practice in cutting them from the previously-made design, they should be engraved without any design. This class of work will come under the head of beginning exercises. It is good practice for the beginner to draw a series of such circles as these, of various diameters, in order to accustom himself to the use of compasses, which, though accomplished by a simple movement of the hand, yet requires some skill to execute dexterously.

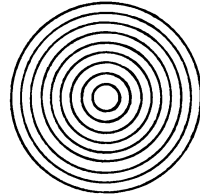


Fig. 14

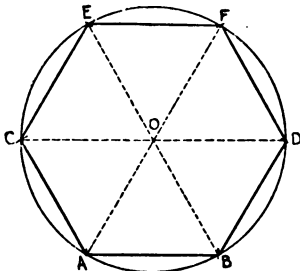


Fig. 15

To inscribe a hexagon (Fig. 15), first describe a circle with any radius; then draw a horizontal diameter CD ; with C as center and a radius equal to that of the circle describe arcs, cutting the circle at the points A and E . Now with D as center and with the same radius describe arcs, cutting the circle at the points B and F .

Lines drawn from AB, BD, DF, FE, EC and CA will make chords forming the hexagon, $ABDFECA$. It will be seen that the side of a hexagon is equal to the radius of the circumscribed circle, thus forming six

equilateral triangles, as $C O A C$, any of which can be subdivided into any number of equal parts.

To divide an angle into any number of equal parts, we proceed as follows (Fig. 16):

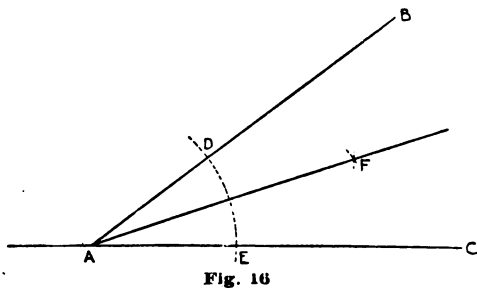


Fig. 16

Let $B A C$ be any angle; with A as center and any radius as $A D$ draw arc $D E$; with D and E as centers and a radius greater than one-half of angle $B A C$, draw arcs intersecting at F ; a line drawn from the

point A through the point F will bisect the angle. Similarly the angle $B A F$ can be bisected, and so on.

To erect a perpendicular at an extremity of a given straight line (Fig. 17), let $A B$ be any given line. Then, with any radius as $C B$ describe an arc which cuts $A B$ and passes through the point B and continue the arc;

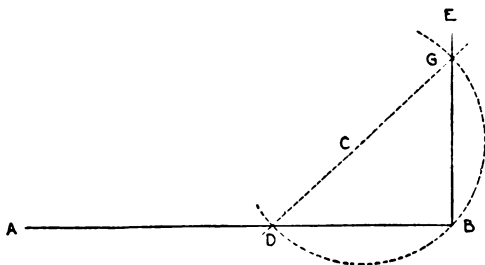


Fig. 17

draw $D C$ and prolong to intersect arc at G ; a line drawn through $G B$, as $E B$, is the required perpendicular.

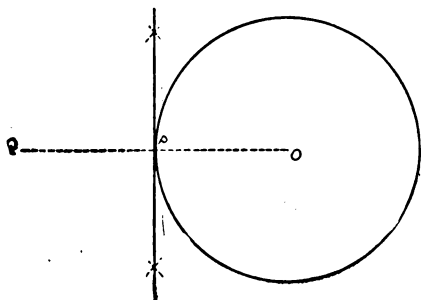


Fig. 18

To draw a tangent to a circle at a given point in the circumference, we proceed thus (Fig. 18): A tangent to a circle or other curve is a line which touches the curve at the point without crossing it. Supposing O to be the center of a circle 3 inches in diameter, and P the

point at which it is required to draw the tangent ; through O and P draw a dotted line and prolong this line outside the circle a distance PQ equal to the radius of the circle. This bisector will pass through P and be a tangent to the circle at that point. This problem may be constructed by making OQ a definite length and then drawing a perpendicular to it at the point P .

To inscribe a square in a given circle (Fig. 19), draw a circle 3 inches in diameter ; with a T-square and 45° triangle, draw the diameters AC , BD at right angles to each other and each at 45° to the horizontal ; join the ends of these diameters, and the inscribed figure will be the required square.

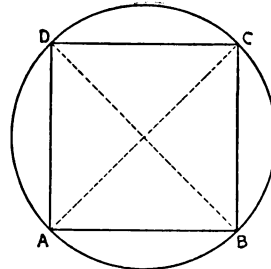


Fig. 19

To draw an ellipse should also be part of the knowledge of the beginner (Fig. 20). An ellipse is a curved plane figure, the shape of which is often used in engraving.

Such articles as pin trays, bread trays and servers are often made in this shape, and especially for die cutting the outline of an ellipse is often used

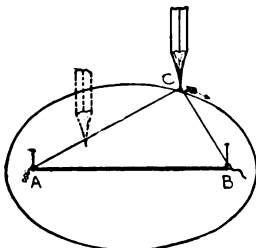


Fig. 20

for circumscribing a monogram. To draw a perfect ellipse 3 inches long, draw AB 2 inches long and place a pin upright in the drawing-board at each end of AB ; now double a strong thread, silk is preferred, and tie a knot in the double thread so that the loop will be exactly $2\frac{1}{2}$ inches long. (This may require a few trials to do nicely.) Place the looped thread over the pins and with a pencil-point draw the string

straight, as at C ; then pass the pencil around as is shown by the arrow, keeping the thread always taught ; the curve traced by the pencil point will be a perfect ellipse.

It is said that if we draw a circle on a card-board and then cut it out and hold it squarely before the face, it will appear circular ; but if we tip it in any direction, so that one edge approaches the eye, it will no longer appear circular, but elliptical. We learn from this that an ellipse may be any shape between a true circle and a straight line. The method shown in Fig. 20 is not a convenient

one and is here given only because it traces a perfect ellipse and shows the correct proportion. There are several methods of drawing an ellipse nearly accurate, but the most convenient is that where the curve is made up of arcs smoothly joined. The method above described for drawing an ellipse is very useful for drawing such outlines for die cutting as will be referred to later on.

To draw an ellipse by means of circular arcs (Fig. 21), draw AB , the major axis, 3 inches long, and CD , the minor axis, 2 inches long, and at right angles to AB at its center O ; from B lay off BI equal to CD , and divide IA into three equal parts.

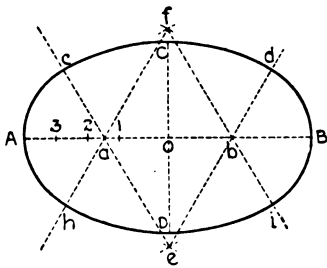


Fig. 21

This can be most conveniently done by trial with the dividers; from O lay off ob and oa , each equal to two of the three parts just found; from a and b , with ab as a radius, draw arcs intersecting at e and f ; next, from e and f are drawn dotted lines through a and b , which are prolonged some distance to cdh and i ; now from e , with the radius eC , draw the arc cCd , and from f in like manner the arc hDi ; from B , with a radius Bd , strike a short arc across AB , which will intersect very near b ; from this last intersection as a center draw the arc $dB i$; in a similar way find the center for and draw the arc cAh . These four arcs complete a regular ellipse.

Sufficient has been said of the advisability of these few exercises in mechanical drawings to make further mention unnecessary, but in the course of his studies the student will observe that a knowledge of right angles, perpendiculars, arcs and circles will be of much value to him.

CHAPTER III.

TOOLS AND MATERIALS FOR THE BEGINNER.

In beginning the exercises in engraving, the student should first supply himself with a small bottle or brick of Chinese white, which can be obtained at any art store. This Chinese white is used by wetting the finger and rubbing on the white and thus transferring it to the metal upon which he desires to engrave, by rubbing a thin coating over the same. This white dries almost instantaneously and leaves a pure white surface, upon which any design can be drawn with a pencil, after which it can be scratched on with a stylus or engraved directly through the Chinese white and then washed off. This method of designing is very useful for protecting the surfaces of some metals. Chinese white is most desirable as a means of designing on satin-finished surfaces. The student should also provide himself with a box of transfer wax, for the making of which there are many different formulas. The writer has found the following to be the best :

3 parts beeswax.
3 parts tallow.
1 part Canada balsam.
1 part olive oil.

This wax is not only used for transferring engraved designs from one piece to another, but is also used to protect the surface of polished articles to design through with a rubber-pointed stylus.

Two pencils, one hard and one medium, should also be among the outfit of the beginner, together with a stylus and a straight-edge. The stylus is made of hard rubber, one end of which is steel and pointed, used in scratching on designs where such method is required. An alcohol lamp for heating wax should also be on the engraver's table. A cake of engraver's cement, a block of hard wood, into which the point of the graver has to be jabbed to remove the burr after rubbing on the oilstone; a fine-grained Arkansas oilstone free from spots, a sheet of 0000 French emery paper, and one sand-bag pad of the style shown at Fig. 21 A. The emery paper is cut up into slips about 1 inch wide and 2 inches

long, and for convenience can be cemented to a block of wood the same size or can be used on the work bench direct.



Fig. 21 A

The time was when engravers found it necessary to make their own engraving tools. At the present time, however, it is not considered advisable, as they are made in such quantities by manufacturers as cheapens their production to such an extent that it is

practically a waste of time for the individual artificer to manufacture his own. Moreover, he may not be able to select a good quality of steel nor properly temper it.

The first graver for the novice's use is a square graver of a No. 6 or No. 7 size, or a taper graver if preferred. The graters are sold separate from the handles. The pointed end of the graver is driven into the handle, leaving the graver the original length. The blade is inserted in the handle, so as to appear as shown at Fig. 23; *A* and *B* are the cutting edges. After placing the graver in the handle in this manner the next step is to find the exact length for the graver. This is a point which has been discussed by a great many writers on the subject, and is also a very weak

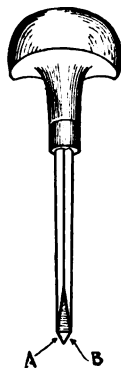


Fig. 23

point with some beginners, they not knowing the exact length. On seriously considering the question and arranging a means of measuring which will adapt itself to any sized person, we have found that if the graver is placed in the end as shown at Fig. 22, with the handle in the palm of the hand, the oval part being next to the hand, the flat part downward;



Fig. 22

then the thumb be slid down on the blade of the graver in the direction of the arrow as far as possible, stretching the thumb to its limit, and the graver broken off at that point, the length of the graver

thus shown is positively correct for the hand which was used as a means of measuring. This is true from the fact that the point of the graver should be as near the end of the thumb as is convenient.

not protruding more than a few inches beyond the thumb when the thumb is used as a fulcrum, guide or brake in actual execution. It would, in this case, protrude about one-half inch beyond the thumb if the measurement were made as above described, because, in making these measurements, the thumb was stretched down to the blade further than the natural position of holding it would require.

Having thus measured the length of the graver and broken it off in a vise, we now grind it on the front on an angle of 45° . A carborundum wheel used on a small lathe about the size of a foot polishing lathe used by jewelers, is a very convenient means of grinding a graver and is much preferred to the old method of the

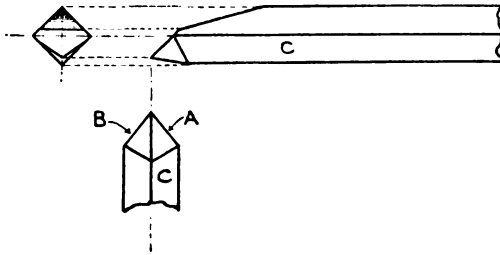


Fig. 24

grinding stone. The latter, of course, will suffice in the absence of the former. Inasmuch as the carborundum wheel is used without water, a glass of water can be used for keeping the graver cool. Great care should be taken, however, not to heat the point of the graver to any extent, as such heating would have a tendency to deteriorate the quality of the steel for the purpose for which it would be used. After the graver has been ground off on the front as above described, it is next ground off on the under side, *B* and *A*, Fig. 24, the left side of which is shown at *C*, Fig. 24. The object in grinding the graver off on the under side in this manner is obvious to those who have practiced the art. For the benefit of the beginner, however, it may be stated that if the graver were used without cutting it off on the under side in this manner, the graver, not heeled up and held on sufficient angle to cut a reasonable depth nicely, would appear on the angle as shown at Fig. 25. It is plain to the novice that a graver on this angle would not leave sufficient room between the article being engraved (if it were an

article the size of a coffin plate or any article where the handle would come over such article) to grasp the handle of the tool, which, if properly grasped, requires that the fingers go around and on the under side of the handle. It will be seen, therefore, that an angle such as is shown at Fig. 26, will be required, and to gain this angle the graver must be heeled up as described.

A graver for the various irregularly-shaped articles that come to the hands of an engraver or jeweler can be heeled up to enable the operator to easily cut into any such irregularly-shaped pieces. For illustration, in letters cut in the bottom of a bon-bon dish, say,

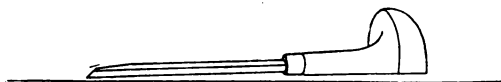


Fig. 25

two inches depth, a graver should be heeled up still higher than shown at Fig. 25. In fact, some gravers are used for cutting any depth bon-bon dishes where the top of the graver is used as the front angle. This, of course, would necessitate the graver being cut on the under side at an angle of about 60° , using the under side of the graver as the horizontal plane for finding such angles. Gravurers are cut out in this way for engraving the bowls of tea spoons. The graver should be so ground on the under side that the angles of the under side would taper back from the point of the graver, as shown at Fig. 26. The object of this is to make the

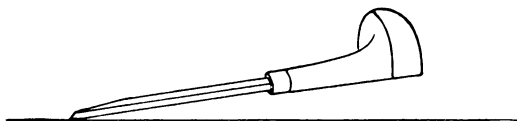


Fig. 26

angles of the cutting side acute, thus making it easier to cut shade strokes. The angle of the cutting sides of the square graver can be ground to form either a square or a lozenge-shaped graver. Some prefer to grind the under side so as to make the graver perfectly square. There is no objection to this shape; in fact, it is probably preferred by a majority of engravers.

After the graver has been thus ground it is next sharpened on the front on the oil stone by holding in the hand as shown at

Fig. 27, moving the hand in the direction of the arrows—right and left. It is then pushed backward and forward on the under sides that have been cut off to smoothen down the rough surfaces left by the grinding process. The under side of the graver should be kept perfectly flat at all times. This is one of the great errors made by the majority of inexperienced engravers ; they are careless

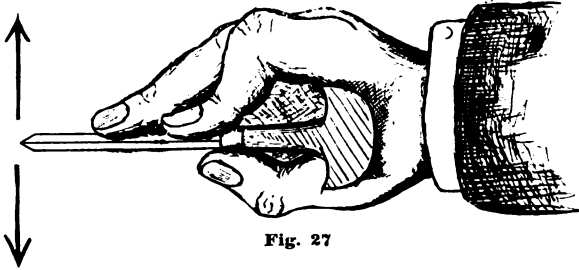


Fig. 27

as to the condition of the under side of the graver, which, in a majority of cases, is the cause of the graver slipping. In the process of whetting the graver on the oilstone, great care should be exercised to avoid rounding the under side of the front of the graver. These angles should be sharp and clean and there should be only one angle. We often see gravers that have three or four angles instead of one. Technical students should appreciate the fact that this condition of the graver will cause no end of trouble. After pushing the graver backward and forward as described, if we turn the bottom side up and look at the cutting edges of it, as shown at Fig. 24, it is to be observed that the edge of the graver is very rough, a magnified view of which is shown at Fig. 28.

Many beginners in engraving are cognizant of the fact that it is necessary to polish a graver in order to make it cut bright, but the author's experience has been that while they are aware of this necessity they are also unaware of the exact cause of the graver cutting rough before being polished. In other words, they do not understand or have not given consideration to the theoretical reason, which I believe all engravers should know. There have been articles written and published



Fig. 28

in the magazines from time to time in which microscopic views of the edge of a razor in perfect order have been illustrated, showing the great roughness of the extreme edge, which one who has not

given some thought to such details would consider almost unreasonable ; yet it is a fact that the surface of such cutting instruments are very rough when revealed to the eye under a microscope. This is the condition of the cutting edge of the graver and is the condition which causes the ragged cutting on metals. The reason that these rough edges exist is that the particles or molecules of stone, being harder than the metal, cut, grind or groove the same and scratch a line across the surface of the graver which is being ground as far as the cutting edge of the same, where the line thus cut terminates and causes a notch in the extreme cutting edge, as shown in Fig. 28. Now, in order to make the graver cut perfectly bright, it will be seen that we must put the graver in such condition that these lines will not exist. The most common way of polishing a graver is that of using diamontine and a boxwood block, as follows : Place a small quantity of diamontine on the surface of the boxwood block and draw the graver backward directly parallel with the blade.

This, however, is not the best method, and we will endeavor to demonstrate the error in using it ; at the same time there are some very fine engravers who do use it, but a majority of the best engravers acknowledge the error. Some engravers use the diamontine and boxwood block, the same as described for the method we recommend, which, of course, gives better results. However, the old method in question being adopted, let us first see what the condition of the graver would be after being subjected to this treatment. First, as the graver comes from the oilstone it is in a condition as shown at Fig. 28. If it has been polished with the diamontine, the particles of the diamontine being finer than the particles of the oilstone, we have simply decreased to a certain extent the grooves made by the wetting on the oilstone, and have rounded them as shown at Fig. 29. Now, it is obvious that by the



Fig. 29

time sufficient polishing has been done to remove these grooves naturally by polishing them in the direction in which they were originally made, the point of the graver would be rounding, a matter which should be obviated. A graver will not cut perfectly bright if polished in this way. It will cut what many would consider bright, but if the incision is looked at through a magnifying glass the fact will be revealed that there are scratched lines visible. Also the particles of the

diamontine, especially those ugly particles that exist therein, will, as the graver is drawn backward, roll out from under the cutting edge and drag over the same, which will make the edge of the cutting angle rounding.

Having thus explained the errors of this method, let us briefly consider how the graver can be put in a more satisfactory condition. To prove the fact that it is only necessary to change the angles of the scratched lines shown at Fig. 29, caused by the oilstone in the direction of the angle of the cutting edge of the graver, let the reader take his graver and move it in the direction of the arrow on his oilstone, as shown at Fig. 30, which will be moving the graver parallel with the cutting angle, thus making the scratches parallel with said angle and because of the fact of their running thus and not crossing the cutting edge of the graver the notches, as shown at Fig. 29, will not exist. Consequently, the graver will cut bright. We must not, however, be understood as recommending the use of the oil-

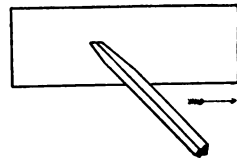


Fig. 30

stone for polishing the graver, but mention the fact simply to prove that the theory explained is correct. The best method is to draw it on a piece of 0000 French emery paper, after the graver has been sharpened on the oilstone as previously described, in the direction that the arrow at Fig. 30 indicates, so that the line on the under side of the cutting angle, in this case the right under side, scratched by the emery paper will cross the original line scratched and run parallel with the cutting edge of the graver, thus obliterating the former and leaving only fine scratch lines, so smooth and in such a direction that the cutting edge will be perfectly free from sufficient roughness to cause the graver to cut a rough line. In preparing the 0000 emery paper it can be smoothed down somewhat by rubbing two pieces together. Some engravers cement or glue the paper to pieces of plate glass or a block of hard wood. The size of emery paper should be about 1 by 2 inches. Now that the graver is in perfect order we are prepared with our knowledge of mechanical drawing to commence cutting.

CHAPTER IV.

FIRST EXERCISES IN ENGRAVING.

First get some pieces of copper zined on one side, sized about 2" x 3" or 3" x 4", using the zined or tinned side of the copper for engraving, as the zined or tinned surface prevents the copper from tarnishing, and as a line cut through it to the copper makes a greater contrast than would be shown if the surface was copper.

The graver is held in the hand as described and illustrated at Fig. 22. With the parallel rule or a straight edge draw parallel lines, as shown at *A*, Fig. 31. These lines can be any desired

distance apart. A piece of zinc of the size mentioned is cemented on to a block of the same size and about one inch in thickness, the surface of the block being first covered with engraver's wax. The wax is then heated with an alcohol lamp and the plate is heated at the same time and laid on to the block. The designing of these lines can be done on the surface of the plates by the use of the Chinese white and a lead

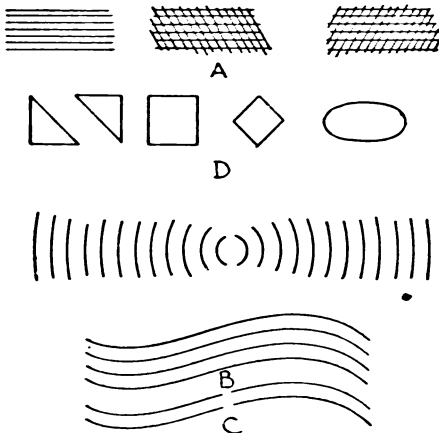


Fig. 31

pencil, or they can be scratched directly on to the metal.

After drawing these straight lines, the graver being held in the hand as directed, allowing the thumb to act as a guide and sliding it gently over the surface of the metal, the lines are cut out, care being taken to begin the lines on the same line perpendicularly and to end them up in the same way, cutting all the lines the same depth and same width. The widths of lines in engraving are made by turning the graver over to the right. In making these lines the beginner should hold the graver so that it cuts a V-shaped

incision. A graver in the position shown at Fig. 23 will cut a line of this shape. The natural tendency of all beginners is to turn the graver away from them, which would be to the right. This tendency is universal and is natural, as the convenient position of holding one's hand is such the graver held in it would cut with a wide incision. Therefore, in cutting a hair line (in engravers' parlance, a fine line), the engraver must exert the muscles of the forearm so as to hold it firmly to the left more than is natural. Such little details may seem to the novice unnecessary, but too much stress cannot be laid upon this particular point, as the author is personally acquainted with a number of engravers who, after a few years of experience, are troubled with this common difficulty of cutting their hair lines a shaded incision instead of V-shaped. After practicing these perpendicular and horizontal lines, as above described, the next exercise is to make the lines in crescent shape, both to the right and to the left, increasing in their length as they protrude in those directions.

The eye of the beginner should be educated to distinguish what angles and straight lines are, and he should practice cutting these crescent-shaped lines to begin them and end them the same depth and width and parallel with the other, each one being a little longer than the former and the graduations increasing uniformly. It may be well for the beginner to draw angle lines at (*A*), Fig. 31, and then cut the crescent lines instead of the lines thus made, after which he should practice it without the guide lines.

The next exercise would be to engrave without drawing scroll lines horizontally as shown at *B*, Fig. 31. These scroll lines are one of the most difficult in cutting which the engraver has to execute, and yet, strange as it may seem, they are the lines which the beginner has to learn first. The author's experience has been that many engravers do not thoroughly appreciate from a technical standpoint just what a scroll is. These scroll lines we will have occasion to mention in connection with lettering later on, and a thorough knowledge of their formation gained at this point will be of great value to the methodic student. A scroll line is merely two arcs joined together, the arcs being drawn with the center of one above the line and the other below. The lines have exactly the same curve and are exactly the same length from end to center and center to end. To illustrate this point we show at *C*, Fig. 31, a scroll thus made but not connected.

We will now take upon ourselves the responsibility of shading, the first exercise of which is to make crescent lines, as shown at Fig. 32. In starting these lines the graver is held so as to cut a V-shaped incision, and as it is pushed forward it is gradually turned to the right from the operator, which changes the angle of the incision, decreasing it on the left and increasing it on the right,

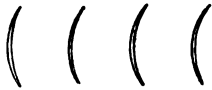


Fig. 32

thus making a wide stroke. It is gradually moved and turned thus until the center of the crescent is reached, from which point to the end the same graduation of movement in the opposite direction is observed. This work of cutting these crescent cuts or arcs shaded in this manner should be practiced a great deal by the beginner. The experience of the author has been that the average student is so anxious to advance in his work that he is not willing to practice the preliminaries sufficiently to warrant great accuracy in cutting before he advances to the desired stages.

It would seem as if triangles and squares, as shown at *D*, Fig. 31, would be easily engraved, and many beginners imagine that engraving such designs is unnecessary, yet the older engravers know that it is not an easy matter to engrave lines and have them meet or intersect at a given point without showing such point of meeting or intersection. The great trouble is that the graver will do what is called backing up, or, in other words, when the graver is inserted into the metal and pushed forward, a little cut is made back of where the graver started in. This can be avoided, as will be explained further on, but the tendency to this error will exist. An explanation of avoiding this is not necessary at this stage, as the point to be gained by the practice here outlined is to enable the beginner to so form these exercises that when he engraves one line up to the point of another that he can stop at that particular point. In other words, so that he can stop when he so desires. It should be borne in mind that these lines should be exactly the same width and same depth from beginning to end, and that they should meet accurately. It is often seen that engravers, even of some experience, will disconnect lines in forming figures and letters where the same should be connected, which makes a very inelegant appearance. After the exercises above illustrated have been thoroughly practiced the student is ready to engrave letters.

It is not unusual to start a student engraving on script letters, but a number of years of experience has convinced the author that an easier style of letter should be used for the beginner in a series of graded exercises, and while it is a fact that block letters or Gothic are in some classes of work considered more difficult than others, I think, however, that in bright cut engraving they are easier than the script. It is the script engraving that is mostly desired, and jewelers that are engaging engravers will usually ask for and insist on first-class script lettering; and in many cases we find artists in mechanical engraving who cannot do creditable script engraving. We will, therefore, begin our lettering with Gothic or block letters, and will now lay aside the graver that we have been practicing these preliminaries with and take up another graver.

THE FLAT-FACED GRAVER.

As we lay aside this graver temporarily it must be borne in mind that we are not to leave it entirely, that it should be taken up and practiced with in conjunction with the work that we are about to take up, because the use of the square graver and the flat-face graver are radically different in detail of operation. We will take a flat-face graver, shown at Fig. 33, ground on an angle of 45° , ground off at the top so as to decrease the width of same perpendicularly and to enable the engraver to sharpen it with more rapidity on the front. This graver is also heeled up on the under side sufficient to raise the graver so as to allow the fingers to grasp the handle firmly. The

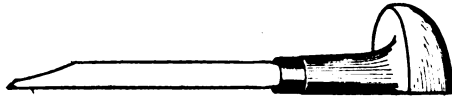


Fig. 33

graver should be heeled up on the under side so as to raise the handle when it is on the proper angle to cut not less than one inch from a horizontal plane. The method of sharpening and polishing this graver, and the theories for the same, are practically as outlined for the square graver. In polishing the graver on the emery paper, it should be moved on same in the direction of the cutting angle which, in this case, is the extreme front of the graver. The flat-face graver is an awkward and difficult graver for a beginner to use—one that most beginners dislike; but after they have used it and become familiar with its good qualities and the broad scope of its usefulness, they are very much in

favor of it. In polishing a flat graver the tendency is to round off the corners or cutting points. Great care should be exercised to avoid this common difficulty. In sharpening the graver on the oilstone it is pushed backwards and forwards the same as the square graver, and for sharpening on the front it is held in the same position and moved to the right and left on the oilstone as described for the square graver. The question may be asked, why is it that it is not recommended to sharpen the graver or flatten it on the under side by moving it to the right and left side or backward and forward, thus avoiding the lines or grooves crossing the cutting edge and making the saw teeth that have been described. The reason is that the tendency would be, in moving to the right and left, to make the under side of the graver rounding, and it is for this reason that both the flat-bottom graver and the square graver are flattened by pushing backward and forward. The length of this graver is determined as described for determining the length of the square graver. All beginners, as they mount new graters, should make them the same length as the square graver they are using, taking it for granted that the same is correct, as it will be if the length is determined as described.

CHAPTER V.

BLOCK LETTERS.

The sides of flat-face gravers are, when purchased, usually rough, which causes additional friction when being forced through the metal. It is, therefore, advisable for the engraver to whet the sides down flat and smooth, thereby reducing the friction to a minimum. Having our graver in perfect condition we will now proceed with some of the exercises necessary to properly begin cutting block letters.

At Fig. 34 are shown perpendicular, horizontal and angular bars from which block letters are made. In cutting these bars the

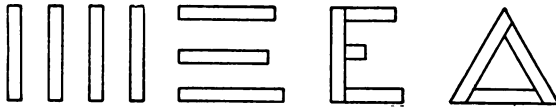


Fig. 34

graver should be pushed downward on an angle of about 45° and then lowered to the proper angle at which it will slide forward. This angle measured would be about 20° . The object of inserting the graver at about 45° and then dropping it down to 20° is that by so doing the end or the beginning of the bar or, more properly speaking, the incision, would be nearer straight down into the metal (which is the angle of the sides) and the end of the bar where the graver is thrown out. To illustrate this point see Fig. 35, where *A* represents a cross section of the plate being engraved and *B* repre-



Fig. 35

sents the incision properly commenced and properly ended. *C* is the beginning of a line made by inserting the graver on a less angle than 45° , which shows to the beginner that a line cut in this way would produce a very undesirable appearance if the work was to be enameled; or, in the case of die cutting, if the ink would rub out.

Moreover, the bars of these lines should, for general appearance in bright cut work, begin and end as nearly as possible on the same incline. Of course, it is impossible to end a stroke on an incline. As the graver is thrown out it would naturally be raised upward to break the chip off, and this would leave it about perpendicular. Therefore, the beginning of the incision should be as nearly perpendicular as is practical. If an effort is made to make the incision begin on an angle greater than about 45° , it would then be necessary in lowering the angle of the graver in order to slide it forward to back up against the extreme edge of the surface of the plate and the incline of the incision. This would mar and deface that portion of the plate and produce a very ugly appearance. These little details in reference to the beginning strokes in engraving should be strictly followed in practicing, as they are the cardinal points of correct work, as will be shown later on in the higher classes of engraving.

After sufficient practice in cutting these lines perpendicularly they should then be cut horizontally, changing the length of them gradually. Start at the top with a short line and gradually increase the length until it is more than double. The depth of these incisions is a hard matter for an instructor to tell a student. Of course, it would largely depend upon the article that is being engraved. Articles such as are engraved with these letters are usually engraved just deep enough to look well. The engraver can tell very easily when he is cutting too deep, as his work will be very rough. It might be well to advise the beginner to cut as shallow an incision as he can, and keep both points of his graver into the metal. This advice is given in view of the fact that most beginners cut too deep. Students who try to cut very shallow will find that they cut sufficiently deep.

At the right of the horizontal bars in Fig. 34 are shown the horizontal and perpendicular bars placed together, forming the letter E, and at the right of the letter E is a triangle formed of these same bars. In cutting this letter E there are some points which will be taken up under the head of cutting the alphabet and also in cutting the triangle.

At Fig. 36 we illustrate the first letter of the block or Gothic alphabet. There is some little difference of opinion as to the name of this style of letters. They are known to the jewelry engravers as block letters, and are generally so understood by the public.

They are also designated as Gothic letters on account of their Gothic form ; but the name "block letters," being the name by which they are generally known in the jewelry trade, we will use



Fig. 36

that name. Technically, however, the letter should be called the Gothic or Octic letter ; the general formation of which can be converted into a block letter by blocking it out, as shown at Fig. 37, where we illustrate the Octic letter plain. At the right we have the same letter blocked out by shading. This letter would technically be called a block letter, for the reason that the letter has the appearance of being made from a block of wood. Our definition, therefore, would be that a Gothic or Octic letter is the foundation of a block letter. Referring again to Fig. 36, we show the two bars forming the angles of the first letter of the alphabet. The angle of these bars should be about 65° . The



Fig. 37

cross bar should cross midway between the extreme point of the letter and the base. We show this letter with the bars lapping and crossing one another as they would be cut with the flat-face graver. This illustration shows that they are not on a line with the base guide line and that the top is neither pointed nor flat, while it should be one of the two ; which one, depending upon the style the artist prefers. This is a difficult letter to cut properly and equally difficult to explain in a comprehensive manner. It matters little whether the bars are cut up or down. Some insist that one is right and others that the opposite is correct. It seems, indeed, to matter little whether we cut up or down. The condition of the bars on the base line can easily be remedied by making an extra cut with the right corner of the flat-face graver, which is shown at Fig. 36. In correcting the right bar of this letter, the cut in question is made in the direction of the arrow. And when correcting the left bar it is made in the direction of the arrow there shown. Now, if it is desired to make the top of the letter flat on top, a triangular-shaped incision is made with the flat-face graver by

cutting in the direction of the arrow shown at the top of the letter ; the right corner of the graver being the one inserted in the metal. There are two methods of correcting this condition. If the letter is a very small one, it would be done by cutting directly downward with a square graver which would make a different shaped incision, the general outlines of which would represent a pyramid. If the letter is a large one, either the right or left bar of the letter can be pointed by rolling or turning the graver to the right or to the left, the direction depending upon which bar is being cut. For the sake of explicitness we will assume that the last bar to be cut is the bar at the right which, being cut up in the direction of the arrow, is manipulated as follows : when the engraver arrives at that point indicated by the letter *B*, the graver is gradually rolled over on to the right of the point, which will gradually lift the left point of the graver out of the metal, thereby diminishing the width of the incision. Of course, from the point indicated by the initial *B* to the extreme point of the letter the bar will be an angular incision, being deeper on the right than on the left ; yet, unless the letter is a very large one, this would be scarcely noticeable.

In cutting the cross bar shown at Fig. 36 it matters not in which direction the graver is pushed, as the obstacles are equal on both sides. If the graver is carelessly inserted, assuming that we are cutting in the direction of the arrow, the bar would be badly marred, said cross bar cutting into it as indicated by the dotted lines, and if the graver is carelessly pushed into the bar on the left side of the letter, a like ragged and haggled appearance will be caused by the graver cutting in as outlined by the dotted lines. These things are remedied by starting the graver tilted up on one corner, as shown at Fig. 36, and as it is pushed forward it is gradually turned over, which will increase the width of the incision. This increase must be such that the angle of the same will be equal to the angle of the right bar of the letter, so that the line of the beginning of this bar will be apparently with the inner line of the letter. When arriving at that point where the bar should be the maximum width, the graver should be flat and is held in this position until the original point of the graver arrives at the left bar of the letter. It is then gradually raised up or, in other words, the graver is turned to the left or toward the operator, which will gradually lift the right corner of the graver out of the metal, and this graduation of decrease of width of the incision should be equal

to the angle of the bar of the letter at the left, so that the cutting edge of the graver will cease its operations as the surface of the metal in front of it is cut away up to the inside line of said bar, and when the left point of the graver arrives at the bar the point only is in the metal and it is gracefully thrown out. Thus the graver does not either enter the right or the left bar of the letter. This operation, thus explained, will appear to be difficult ; but it is an easy matter to cut a letter in this way very accurately. There are other bars in the block or Gothic alphabet and other cuts which are handled in this manner and which will not need further mention.

In drawing block letters it is advisable, in order to give each letter its correct proportions, to divide the height of the letters into five equal parts and make the width as follows : All the letters and figures except I, M and W, and the figure 1, should be four such

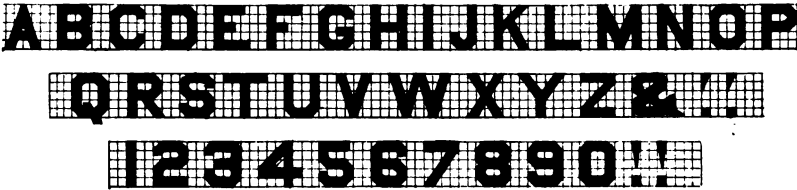


Fig. 38

parts in width ; M being five parts, W seven parts, I and 1 one part. These parts referred to are the little squares indicated in the background of the alphabet shown at Fig. 38. The thickness of all the lines should be one part. The distance between any two lines should be one space, except when A follows P or F ; when V, W or Y follow L ; when J follows F, P, T, V, W or Y ; when T and A or A and V, W or Y are side by side. In these cases the bottom of the A, J or L and the top of the other letter should be on the same vertical line. In practicing drawing these letters on a large scale, the lines being made up of straight lines, they can be drawn with a T-square and a triangle. First, draw six equal-spaced horizontal pencil lines to outline the height of the letters and then, using the triangle, draw the letters their correct width, spacing with a lead pencil. The main point to be considered is to make the letters exactly uniform in height and slant, and this will require some practice, but with the aid of mechanical or geometric drawings the work should be made easy.

CHAPTER VI.

METHODS OF CUTTING BLOCK LETTERS.

There are many different methods of cutting block and Gothic letters, which we will briefly enumerate. One is to cut the letters bright-cut, as before described ; another is to cut the letters in the same manner with the graver as it comes from the Arkansas stone. A graver in this condition should be used on metals which will make a ragged cut and produce a contrast between the surface and the lines so cut. Another method is to wriggle the letters.

One of the most difficult problems in cutting the block or Gothic letters is the lapping of the bars. We have thoroughly described the bars of the letters and how they should be cut, and must ask the reader to strictly bear in mind what has been said in reference thereto in order to enable us to advance as rapidly as possible.

At Fig. 39 we illustrate the block or Gothic letter B which, with the exception of the letter S, has more octagonal corners than any other letter of the alphabet, and the letter S is perhaps the most difficult one to cut. In cutting this letter there are a number of methods of procedure which are equally efficacious, and few engravers will agree which is the best to commend to the beginner. We will give the reader the methods that are most in use, and he then can use either or all, in cutting the same letter, if he so desires.

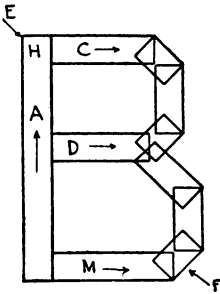


Fig. 39

First cut the bar *A* in the direction of the arrow ; next cut the bar *C* in the direction of the arrow. It will be noted at the point of this letter indicated by the *E* that the two bars of the letter meet and lap over one another. Great care should be exercised in such a case that all of the metal is cut out and that the *C* bar should begin exactly on the left side of the bar *A*, and should not protrude above or lack of coming up to the end of said bar, so that all of the metal in the square indicated by the letter *H* should be cut out entirely and that the depth should be the same as either of the bars separately. Next cut the

bar *D* in the direction of the arrow. Next the bar *M* in the direction of the arrow. It will now be seen that we have a perfect *E*, and to convert the letter into a *B* all we have to do is to cut the remaining portion of the letter as shown in the figure. Now begin at the bar indicated by the letter *F* and cut up to the next turn, where the graver is thrown out ; then the next bar up to the next turn where the graver is thrown out and the angle changed, and the next bar cut up. The top of the letter is cut the same as the bottom. It will be noticed here that each bar laps over the bar of the letter formerly cut, and it is advisable that great care should be exercised in lapping such bars as, in case of neglect to do so, the corner where the angle of the letter changes would be open instead

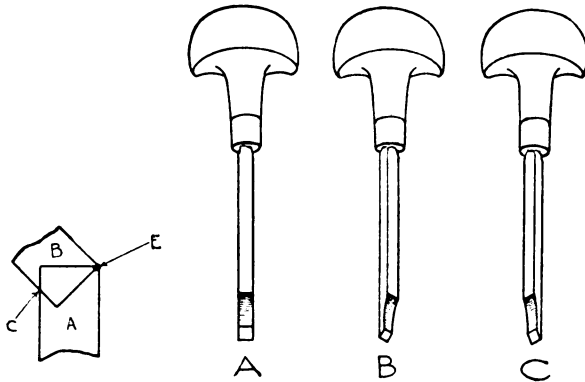


Fig. 40

of being pointed. The lapping is illustrated on a large scale at Fig. 40. The dot *E* on the bar *A* indicates the point where the point of the graver should be placed in cutting the bar *B*. The dot *C* indicates the point where both bars meet. It will therefore be seen that it is always necessary to place the left corner of the graver to the left of the bar last cut, and to let its cutting edge and right point start exactly on the upper left-hand corner of said stroke. By so doing the corners are sharp and accurately made.

Another great difficulty in this work is to cut various bars the exact depth, and also to avoid backing up the graver as described in inserting the graver in the first instructions given in reference to the use of the flat-face graver. It is difficult to lap a letter in this manner, or in fact in any other and not cut one angle a little deeper, or apparently a little deeper than the other ; but great care will

enable one to cut the letters with such accuracy that they will appear to be and, in fact, will be the same depth. In this method of cutting it is therefore seen that this letter is cut in the form of the E first, and then a portion of the E added at the right. Another method of cutting is to first cut the bar *A*, and then begin at the bottom and cut around up to the top. Some begin at the bottom and cut the letter right around to the top and cut the bar *A* down.

The method of squaring up the top of a W or of a V, the bottom of an R, of a 7, top and bottom of an X or a Y, are the same as described for such work on the first letter of the alphabet.

Referring to Fig. 38, it will be seen that the letters are drawn on strictly mechanical lines, and these strict rules governing the general formation of these letters are given so that the student may thoroughly familiarize himself with their formation, and that the letters will be perfectly spaced when placed side by side in a word. In actual work it would not be practical for the engraver to use these exact drawings of horizontal and perpendicular guide lines to form the little squares mentioned, but a knowledge of them in his practice work and some actual practice in drawing them on paper with the aid of these accurate mechanical forms would be conducive to a high degree of accuracy. After he has educated his eye by the use of them, it would be only necessary to use the top and base guide lines. In die cutting, where extreme accuracy in spacing and forming the letters is required, artists use the perpendicular guide lines—not scratched on the die equidistant apart, they using them merely to get the perpendicular of the letter. The mechanical form of the letters given above will enable the student to know the exact distance between letters according to their height and width. The question has often been asked by students what the difference should be between the widths of certain letters, and for this reason we have made this accurate means of giving the correct mechanical forms of the letters.

We have now gone through the mechanical forms and method of cutting the block or Gothic alphabet, and we will next take up another style of letter formed on the same general principles.

Wriggling block letters is done with the flat-face graver previously described, as shown at Fig. 40, which is there shown in three different positions. Position *A* represents the graver flat position *B*, with the graver turned on the left corner; position *C* with the graver turned on the right corner. The graver is thus

rocked from one corner to another and gently pushed forward in the process of wriggling. The angle on which the graver is held and the amount of pressure forward determines the degree of fineness of the wriggling. For illustration, in starting a wriggle the graver can be held on an angle of 30° and gradually raised up to 75° , and between these degrees the graver would be capable of wriggling five or six degrees of wriggled cuts. The use of block letters, wriggled, is very common, especially in cheap work; a great many engravers using this class of lettering for engraving coffin plates, because it makes a showy letter and yet is easily executed. These letters can be wriggled by making the horizontal bars wriggled fine and the perpendicular bars wriggled coarse, which produces a very desirable appearance.

METHOD OF SHADING BLOCK LETTERS.

The method of shading letters with a flat-face graver is one of the greatest errors in engraving that has come to the author's attention and one that it seems to be easy to see the error of. No better illustration can be given for the correction of this error in one's mind than to observe the panels of a door in which we will see that when the panel is raised the incline is toward the center; when the panel is sunken the incline is from the center to the outer part of the door. This supplies two panels in wood work and is also applicable to the art of shading letters. When a letter is to be shaded the incline of the incision or, in other words, the side of the incision that is the most inclined, should be over against the letter. The point under consideration is illustrated at Fig. 41, where *B* represents the plate; *C*, the wriggled bar of the letter; *D*, the incision, and *A*, the graver cutting the same. Here it will be seen that the graver is cutting the incision so that it inclines toward the letter. This point should be remembered in all classes of shading letters of whatsoever style or size. We often see fine monograms well cut, yet from the fact that the shade is shaded away from the letter instead of being shaded on the letter, some portions being apparently raised and others lowered, the effect from an artistic stand-

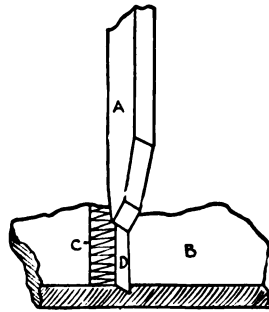


Fig. 41

point is lost. For this reason the student is cautioned in such shading to always shade a letter on to the bar of the letter. It matters not whether the curve is outward or inward, top or bottom, the shade is the same. The rule is invariably true that the shading should be done as above outlined.

We have previously mentioned the error of beginning and ending a cut which we also illustrate at Figs. 42 and 43, Fig. 42



Fig. 42



Fig. 43

showing the cut properly commenced; and Fig. 43 showing it commenced on a less angle than 45° . This caution is especially needed at this time, as in inserting a graver at the extreme corners of a letter like the wriggled E, illustrated at Fig. 46, great care must be exercised to start the incision by inserting the graver the maximum depth so that it will be the same depth at the beginning as at the end. The F at Fig. 44, where the main bar of the letter is outlined, will represent a letter cut bright cut. Where the

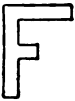


Fig. 44

main bars of the letter are shown black at Fig. 45, the black portion of the letter represents an incision cut with a flat-face graver as it comes from the oil-stone, thus making a ragged incision; and the little line along the right-hand side of said bars represents a single stroke cut with a square graver making a shadow which is merely on the surface of the metal from the fine line to the main bar of the letter. In other words the shading is made by running a fine hair line along the under side of the bars of the letter.



Fig. 45

Referring to Fig. 46 we have the block or Gothic letters E and H, the latter represented by being cut by a line graver and the former wriggled and bright cut shade.

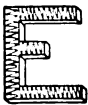


Fig. 46

Line graters when purchased are grooved on the under side. After they have been sharpened as described for sharpening a flat-faced graver, they are used for cutting block letters the same as a flat-face graver, the only difference being that in a flat-face graver it can be either bright cut or represent a ragged incision. In the case of the liner a number of fine lines are cut equi-distant apart. At the same time, each perpendicular to the horizontal bar of the H as

here represented is cut with one stroke of the flat-face liner. These line gravers cost more than double the price of regular gravers, but only a few of them are required. Some engravers do not use them at all, as the work done by a line graver can also be done on a more costly scale by cutting each line separately with the square graver. The line graver should be ground on an angle on the front somewhat less than the regular angle for a graver, as the extreme points of the grooves in the end side of the graver, which produce the incision lines, are so delicate and pointed that a blunted point on the front of the graver is required in order to insure the points not breaking off. The fine line shaded on the right and under side of the letter H, shown at Fig. 46, is done by cutting in towards the letter with the liner, or this work can be done on a more expensive scale by each line being made separately with a square graver.

GOTHIC LETTERS.

This style of letter, known also as the block or Gothic letter, is cut principally with the round-face graver. It will be noticed that the circular portions of the letters, as in C or in O or in D, the corners are not octagonal shape, and for this reason they can be cut with a round-face graver with one steady cut from the begin-

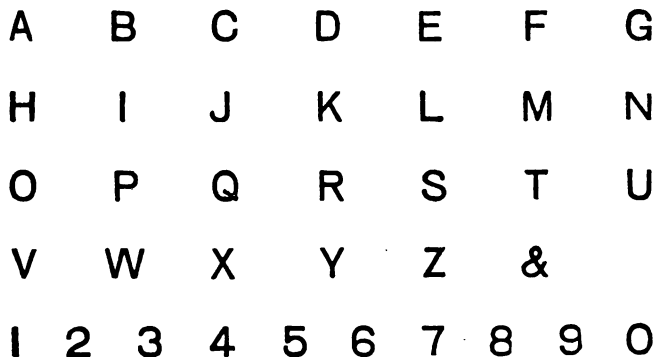


Fig. 47

ning of the letter to the end or from the beginning to the end of an arc of a letter. These letters are useful where the Gothic-formed letters previously mentioned are not, for the reason that these letters can be cut with more rapidity, which is due to the fact that it is not necessary to start and stop in cutting a letter such as C, it not

being necessary to stop at the corners and throw the graver out and pick it up again. These letters can be made very attractive by polishing the round-face graver and cutting the letters bright cut on satin or in Roman rose gold surface. Cutting the letters bright cut through such surface makes the letters appear very attractive. Another method practiced by some engravers is to wriggle a very small portion of the letter in the center on all the perpendicular bars, leaving the remaining portion of the letter bright cut, which effect is very attractive for certain classes of work. These Gothic letters will be found very prominently used on medals where the bar of the letter is to be lettered in a conspicuous yet inexpensive lettering. The general proportions of these Gothic letters, shown at Fig. 47, being the same as the alphabet previously mentioned, it will not be necessary to illustrate guide lines here.

CHAPTER VII.

SCRIPT LETTERS.

We will now proceed to the consideration of that most useful and yet quite difficult alphabet known as the script. The script alphabet is the most popular style of engraving known, either to card engravers or jewelry engravers. It being a style of letter that is necessary for the engraver to know, we must consider each and every letter of the alphabet as to its correct formation and method of cutting.

We have previously given instructions as to the correct method of cutting a scroll, mentioning at that time that it was a valuable cut for the engraver to be master of. This will be readily seen and appreciated in the instructions to follow.

The scroll cut previously referred to is no more nor less than the so-called capital stem or line of beauty of the script letters. This scroll-shaped stem or line of beauty is used in making eighteen or twenty of the capital letters of the script alphabet, some of which are shaded and others not. The first thing to be considered in reference to the script alphabet is the exact proportion. As the script alphabet is known among printers as an imitation of handwriting, one would naturally suppose that in engraving the scroll letters the engravers would proceed as they would write, only perfecting the letters. This is true, yet the style of lettering is somewhat different from that in which one would write, and even though a person is a good penman he must not think for a moment that his style of lettering would suffice for the engraver. The style of script letters preferred by the author is that style known as bank-note script, and also a style which is the shade style used among card engravers, and which we will here give. We must first learn the correct angle and correct proportions of one bar or line of a letter to another. This will seem to some to be too technical to be of value, but it is necessary that the student in engraving should know above all other things the correct formation of the script alphabet, it being the style that he will be generally called on to engrave, and with rapidity.

The angle of the script alphabet is usually about 52° , and the relative proportion of the lower case, or small letters, to the capitals is ordinarily about one-third the height of the capitals. We will use this scale as a nucleus, it being understood that this is a strictly mechanical letter, and such variances from the style here outlined can be made as will please the artistic eye of the advanced student, but the beginner must remember that he must strictly follow the general form of the letters in order to reach any degree of satisfaction. We have previously mentioned and illustrated the protractor, and such mention has there been made of mechanical drawing, that when we say the letters should be made on an angle of 52° , no further explanation is needed. There are three styles of script that can be used by the engraver to advantage. One style is the style where only such loops as are necessary are used. Another is where loops are made at all available ends or beginnings, and the other the back-hand script. The style of handwriting at the present time being perpendicular, it is receiving popular favor with some engravers, but it is generally conceded that a style of script on an angle of 50° or 52° is the best.

SKETCHING LETTERS.

At Fig. 48 we show the first letter of the alphabet (the capital) which represents the method of sketching. Sketching or "marking out" is one of the points in engraving that is overlooked or ignored by many engravers, as they consider it necessary to design a letter accurately in detail.

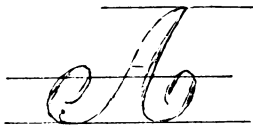


Fig. 48

This is an erroneous idea. The letters should be simply sketched, as shown at Fig. 48, it only being necessary to convey to the engraver's eye by such sketch the general form of the letter. The exact detail of the letter can be carried out with the graver with much more accuracy than the pencil.

To further prove this common error among engravers we will ask the reader, if occasion ever arises, to examine a plate which a card engraver is about to cut, and he will observe that he simply uses the guide line and scratches lines representing the main bars of his letters on the plate on the correct angle. To one who is not familiar with this class of engraving, the sketch is so incomplete as to the exact formation of the letter that it would not be intelligible

to one not familiar with engraving sketches. To illustrate this point the word "and" being easy to sketch, we show same at Fig. 49, sketched as it should be to be engraved. A student in engraving with any experience will readily agree that from this sketch he can more accurately make the letters than he could if he endeavored to sketch the hair lines and all the details of the letter. Sketches

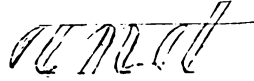


Fig. 49

for engraving are sometimes seen where the designer sketched each line representing hair lines, the width of which was four or five times as great as the hair lines should be, and when the question is asked, "How do you know from that sketch whether to follow the center of your sketch line on the right side or the left side?" the designer's reply is that he would cut the line so as to properly connect up, and all on the right angle with the next letter. Then if asked the reason why he made the hair line at all if it was not used, he will admit that it was not necessary. At the same time there are hundreds and hundreds of engravers making these errors every day. The student in engraving must first learn that accuracy and rapidity are required. Rapidity in this case is gained by minimizing the amount of sketching. Accuracy is gained by making lines straight down on the angle of a correct degree for the letters to be engraved. It will be seen from what we have mentioned, that the sketches for all engravings should be made by broken lines and free from hand drawing. The pencil or stylus is held in the hand as one would hold a pen or pencil in regular writing, and the weight of the hand rests on the fourth finger or fourth and third fingers, as the artist prefers. It is the same in designing for engraving as in writing. It is not necessary that when learning to do the work the artist should hold his pencil or stylus in any particular way, it being natural for one person to hold it in an entirely different way from another. The method mentioned above is the common way, and one which should be followed if habit is not formed in other ways.

CUTTING THE SCRIPT ALPHABET.

We will now proceed to the consideration of the correct method of cutting the letters, and in doing this we will give the correct formation in detail in each and every letter and figure of the script alphabet that requires special attention. The letters, as shown,

while not models of perfection, yet in general formation are mechanically correct. The attention of the reader is directed to the fact that these letters and all illustrations in this work are etchings made from sketches by the author and are not specimens of engraving, but the degree of mechanical accuracy is correct. As to the proper method of cutting the capital stem or line of beauty, which is shown at Figs. 50 and 51, many good engravers differ.

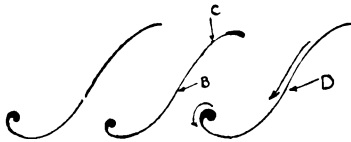


Fig. 50

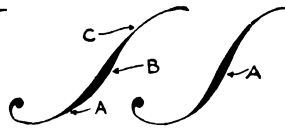


Fig. 51

The line of beauty shown here is not shaded. In some cases these lines are shaded and in some they are not, the shading depending upon the letter. The author generally finds it best to cut a hair line capital stem down instead of up, and all that are to be shaded cut up instead of down, the reasons advanced for this being that in those letters where the line of beauty is a hair line, such top should be pointed, and it is more natural to begin a line pointed than it is to end it up pointed.

At Fig. 50 we show at *B* a hair line of beauty cut up, illustrating the common error of shading it at the top. When the graver arrives at the point marked *C* the natural tendency of the hand, as it curves around to the left at that point, would be to turn over to the right, thereby forming the shade. Should the reader cut this line both ways he will observe the error, and his attention having been called to it he would probably follow the former method of cutting such lines downward. Of course, the line of beauty that is shaded should end up pointed the same as one that is not shaded, but it being more natural to shade the letter to the right than to the left of the capital stem, it is preferred to cut it up, and when arriving at the point *C*, Fig. 51, the line of beauty being a shade line, great care should be exercised to hold the graver in such a position as to cut a perfect V-shaped incision.

At *D*, Fig. 50, we illustrate the capital stem or line of beauty, which we will use as a means of explaining the exact method of finishing the end of same. It will be noticed that the said line of beauty is severed at the extreme end, which is done as a means of

illustrating the point where the two ends should connect. The line of beauty, if a hair line, as before stated, would be cut down in the direction of the arrow, the incision being a perfect V-shape, which would make a hair line, care being taken not to cut too deep, and when curving to the left the student will observe that the graver will grind or cut away and not round as steady as when curving to the right or going perfectly straight. The cause of this is rather difficult to explain, but it seems to be due to the fact that the under edge of the graver being directly downward, and the line being curved on a sufficient arc to necessitate the sharp under side of the graver to curve around over the extreme edge of the incision and the surface of the plate, thereby peeling off the said edge, the graver is thus made to run hard, and in some cases makes the left side of the incision appear irregular. Now, the question is often asked by students why it is that in turning to the right we do not experience the same difficulty. If we turn the graver to the left, holding it in exactly the same position, which in this case would be perfectly erect in the correct position to cut a V-shaped incision, and the graver be turned around to the right, the same position being retained, the same difficulties would be encountered if the hand was not moved with more dexterity in that direction than in the opposite one. The fact that it is more natural for one to cut around to the right is the reason why even though cutting a hair line, the cut is found to be smoother than when made to the left. But the principal reason, we believe, is that a great many of our engravers, who do not follow strict rules as to their method of cutting, simply turn the graver to the right, thereby cutting an incision with a greater angle on one side than on the other, in which case the angle of the graver on the right side would be on sufficient angle to slide over the edge of the incision to the surface of the plate parallel with said angle, thereby avoiding the extreme cutting edge coming in contact with the edge of incision and the plate. If the graver is held in exactly the opposite way to the left and moved with the same degree of steadiness and accuracy, it would cut just as smoothly.

Again referring to *D*, Fig. 50, the end of the line of beauty is finished by throwing the graver out at the point where it is here represented as being severed, which in practice it should not be. It is so thrown out in this case merely for illustration sake, showing the article which the engraver is working on being held in the same

position. As the graver is thrown out it is again inserted at the right point of the stroke shown at the end of the line of beauty. In order to make this cut, the graver is turned over to the right as it is inserted, and as the hand is turned over to the right the graver and the article in hand are automatically turned, the former to the right and the latter to the left.

At Fig. 51 we illustrate the line of beauty shaded, and all the time that we mention the line of beauty or capital stem, which is the same, the student is requested to remember that a line of beauty or capital stem is, in general formation, the exact form of a scroll, which was mentioned in our beginning exercises. The shading of the line of beauty is one of the very important things for an engraver to remember, the great trouble with a majority of engravers being that they do not end the line up very fine at the top. This point having been mentioned in a previous section, description is not necessary here. In shading this line of beauty it must be remembered that the line is a hair line from the beginning around to *A*, at which point it begins gradually to increase in width, and continues to increase until the graver arrives at *B*, which is midway between the top and bottom guide line. From *B* to *C* the line is gradually decreased, and at *C* is brought to a perfect hair line or V-shaped incision. The beginner will, by observing work of unskilled engravers, find that a great many begin shading the capital letters down too low, and for this reason the location of this shading is here given.

Another error is illustrated at *A*, Fig. 51, where the left side of the line of beauty is shown in perfect formation. Before adding the shade stroke on the left the right side of the line is shown to curve more than the left, which is not correct. The curve on the left side of the line should be exactly the same on the left as on the right. Referring to Fig. 51, it is obviously plain to the beginner that in order to counterbalance the decrease in width of the incision by turning the graver over to the right, the graver point, when arriving at the point *A*, instead of traversing the exact form of the line of beauty should be turned so as to curve to the left of the same, inasmuch as the turning of the graver to the right causes the extreme edge of the right side of the incision to curve to the right, and as the incision is decreased by turning the graver upward, the point of the graver from *B* to *C* is gradually turned to the right so as to arrive on the line of beauty at *C*.

CORRECT FORMS OF OVALS AND LOOPS FOR SCRIPT.

One of the most neglected portions of script letters is the connecting. The unskilled or careless engraver will manifest his inability more prominently in his formation of ovals and loops than in any other way. At *A*, Fig. 52, we illustrate a loop or oval, which is the general form of a loop used in script letters, showing a line drawn through the center of the loop. The curve on the right and the left, using the inside as a guide line, are exactly the same, the swell forming the shade being all on the outside of the line at the left. This is the foundation of the error made by most of students who try to cut correctly, their theory being that the point of the graver, where a shade is made, should traverse the same arc in an oval or a loop as the opposite side, which is a hair line. This is obviously wrong, as is shown at the drawing *A*, Fig. 52. In this case the loop looks flat on the right side, yet the curve on the right side is exactly the same as on the left, using the inside of the left as a guide, showing that the loop is out of true just as much as the width of the shade, and this will be true when applied to loops or ovals of whatsoever character.



Fig. 52

The student should make it a point to so engrave the letters that the loops will be concentrically formed, and he should never end up a loop, other than the end of the line opening on an arc, concentrically with the outer portion of the loop. At *B*, Fig. 52, we illustrate the oval, cut and formed correctly. Here it will be seen that the shade is on the inside of the arc, which arc is the same on the left side as on the right side. The appearance of this is correct, which proves the theory that the shade forming the oval should be on the inside of the arc. A student in the art of engraving should practice diligently on loops and other preliminary practice work previously mentioned. An engraver who is capable of engraving perfectly-formed ovals and loops will be able to engrave very accurate script. To further demonstrate the theory of a correctly-formed loop and show the student how the shade comes on the inside of the loop, we illustrate at Fig. 53 the left side of the oval partially shaded, which shows that the lower half is exactly the same curvature at the right and left, and that the shade comes on the inside of the arc at the left, which will make a perfectly-formed loop.



Fig 53.

CHAPTER VIII.

CUTTING SMALL OR LOWER-CASE SCRIPT LETTERS.

Having instructed the student in the line of beauty and loops, theoretically, we will now take up the engraving of lower-case script letters and leave the cutting of the capitals until after we have thoroughly gone through the lower-case. The object of doing this is that the lower-case letters are easier to master. At Fig. 54 we



Fig. 54

illustrate the first letter of the alphabet. Each stroke as there indicated is cut with the square graver in the direction of the arrows. Letters are commenced and ended at each cross line. With the thorough instruction which we have passed through in reference to the exact formation of letters, scrolls, lines of beauty, ovals, etc., it will not be necessary to consider each letter in the alphabet, but we will consider the principal bars or limbs of such letters, which will enable the student (with an accurate copy which is to follow) to engrave the letters with an assurance of accuracy.

At Fig. 55 we show the point of the graver in position to cut the left shade stroke of the lower-case A, with said stroke directly in front of the graver. As the graver is pushed forward it is gradually turned over to effect the proper width shade until the graver point is nearly two-thirds of the way down from the top of the lower-case letter to the bottom. The lower-case letters are engraved by cutting all the shade strokes that should be cut down first. Then the article being engraved is reversed, and all the strokes cut up as will be shown later.

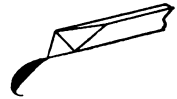


Fig. 55

The second stroke of the lower-case A is the same stroke used in a great many other letters in the script alphabet which will not be mentioned, as the instructions given for this stroke will suffice. At Fig. 56 we illustrate the second stroke, or right-hand shade stroke, of the A with the graver above same in position for cutting it. At this point the graver is inserted by turning it over in the hand to the right to such an extent that when it is

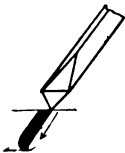


Fig. 56

inserted in the metal it will cut a stroke the width desired. Great care should be exercised when the graver is thus inserted to hold it on the same angle and same distance to the right from the body to make a shade the same depth and same width from the extreme beginning nearly to the end. When nearing the base guide line the graver is gradually turned up in position to cut a V-shaped incision, and at the same time it is thus turned up it is also turned around to the right to effect the proper curve at the bottom.

At Fig. 57 we illustrate the principal shade stroke of a C and E, also of an O, which is the same as the first down stroke of the A, and is cut in a like manner.

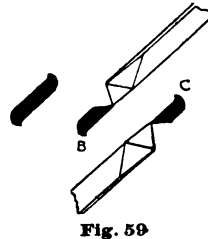


At Fig. 58 we illustrate the first shade stroke of an M or N. This stroke is cut up instead of down. This stroke is often cut down by engravers who have been thoroughly instructed in the art. It will be obviously plain to any who will try both methods that the method of cutting up is correct.



The reason that it is correct is, that the stroke should be squared at the bottom and should end up at the top the same as the first down strokes of the A end up at the bottom, which is a gradual decrease of the shade stroke as it approaches the guide line until it reaches a fine hair line, at which point the graver is thrown out. It will be plainly seen that it would be impossible to cut this stroke down and produce the same effect. Therefore, the first half of the lower-case N is cut up, also the first two strokes of the M.

At B, Fig. 59, we show the second or last shade stroke of an M or N. This stroke is what is called a double cut, it being necessary to curve it to the left at the top and to the right at the bottom. It will be seen that a graver could not be wielded in such a manner as to cut the letter with any degree of accuracy with one stroke. A stroke of this form could be cut with a flat-face graver by using it in the way necessary to cut what is known in old English as a roll cut, but it would not be practicable to do so in this case for many reasons. The lower half of the bar is cut down and the upper half cut up. At B we show the graver ready to insert in the metal to cut the lower half, and at C in like position to cut the upper half. It will be seen here that when the graver is cutting the upper half it is inserted at the extreme



left of the top of the first cut made. It is quite impossible to cut a bar of a letter with a square graver so that it will begin exactly even with the guide line. It is an easy matter to start the point of the graver so that it will be on the point of the guide line, but it is quite difficult to cut the opposite side of the shade stroke so that it will coincide absolutely with the point of beginning.

A very skillful engraver can cut a letter like the top of an A, I, U or W, which begins parallel with the top guide line, so that it will appear to be parallel with said line, but it must be conceded that a bar cut in this manner would not be so sharp and deep at the point of beginning as it ought to be, as the said beginning would necessarily be from the surface of the metal down to the bottom of the incision on very much of an angle, and the slightest buffing or wearing would reduce the length of the letter so that it would be very noticeable. There are a great many skilled engravers who never square up the top of a letter. In fact, they do not think it necessary, and say that a good engraver ought to make the cut in such a way that it would not be necessary to make an extra cut to square it up on the line. While this may be true, we must admit that if an extra cut is made to square the top of these letters up, that portion of the bar will be deeper than it otherwise would, and it will be sharper and clearer and would produce the appearance that is required in correctly and thoroughly engraved script. In view of the various opinions on the subject the author would advise the student to square up the letters if they need to be squared, and if in his estimation it is not necessary to square them not to do so. It will be found that the work can be done with a better appearance if they are squared up and the original appearance will last longer when subjected to wear.

At Fig. 60 we illustrate the top of script letters that should end up parallel with the top guide line, which, as here shown, indicates that there is a little space at the left of the extreme point of the beginning of the incision between the top of the bar and the guide line. This is the condition a cut is ordinarily in when cut with a square graver. In a case of this kind it is obviously plain to the mind of one who cares to do the work with a high degree of perfection that if such a condition exists some remedy should be applied to correct it. The remedy is to insert

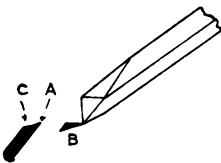


Fig. 60

the graver at that point where it was originally inserted and cut a little cut by pushing the graver forward in the direction as indicated at *B*. The point of the graver in cutting this little cut is inserted at the point of the bar marked *A*, and is pushed forward in the same direction as indicated by the graver shown at *B*, and it is pushed forward until the right cutting edge of the graver arrives at the point of the *B* indicated by the arrow *C*. Thus, by cutting this little extra cut, the bar of the letter will be sharp and clean cut at the top, and as deep as the remaining portion of the bar and, as before stated, will maintain its original appearance a longer period.

The top of *A*, *D*, *I*, *J*, *P*, *Q*, *T* and *U* are thus squared up, also the bottom of *K*, *H*, *F* and *P*. Another very important point for the student to learn in cutting script letters is the curving of letters forming loops below the base guide line. If the rules herein set down are strictly followed for cutting these loops a perfect loop will be made each time. If one does not follow such rules one is apt to make the loop incorrect and not know wherein such inaccuracy exists. At Fig. 61 we illustrate the lower-case *G* which is cut the same as the *A*, except that the second stroke is continued below the base guide line forming a loop instead of turning when said line is reached as the *A* does. This letter is squared up in the manner previously mentioned for squaring such letters. The dot on the base guide line shows the point where the hair line forming the left half of the loop crosses the main stroke of the letter. It will be seen that the base guide line and the two strokes forming the loop cross at exactly the same point, as all letters should that are formed with a loop below the base guide line. The lower-case *R* and *S* are two letters that give students some trouble in cutting, which is due to the fact that they do not cut the top of the hair line correctly.



Fig. 61

At Fig. 62 we illustrate an *R* and an *S*. The hair line which terminates in the shade line at the top of the top guide line of the lower-case letters is cut up in the direction of the arrow. The right stroke of the letter is cut down in the manner described for cutting such strokes. The difficult part, however, in cutting this letter is the hair line, which would seem to the student to be very easy, but the average student finds it difficult to insert the graver as it crosses the top guide line in such a way as to make this cut as it



Fig. 62

should be made. It must be borne in mind in making this cut that it imitates a loop, and if it imitates a loop it should be oval in shape; hence the necessity of holding the graver in the hand so as to cut a V-shaped incision when making the cut. When the graver point arrives at the top guide line, the graver being held in the position necessary to cut the hair line as above mentioned, the graver is simply dipped in it and pushed quickly directly downward without turning over to the right or the left. This swells the line as much to the left as to the right, and then, instead of breaking the cut off by lifting the graver directly up when the proper length has been reached, it is thrown out by throwing it more to the front thus ending the stroke oval shaped instead of the shape shown at *B*. The latter shape is the shape of ending in which this cut is practiced by some beginners. They think that when a heavier stroke is desired the proper thing to do is to turn the graver to the right, which in almost all cases is true, but not in this case for the reasons above mentioned. Therefore, the student is requested to give special attention to these two cuts in cutting the lower-case letters.

At *C*, Fig. 63, we show the *S* where the dotted line represents the hair line and the graver in position to cut the shade stroke at the right.

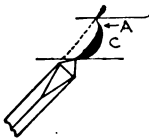


Fig. 63

it will be seen that the stroke is not a curved stroke all the way to the top. When arriving at the point marked *A* the shade stroke is converted into a hair line, and from that point to the top guide line the line should be made a perfect hair line, and from that point of the letter indicated by the point of the graver around to the beginning of the letter it should also be a hair line. It might be well to here state to the student that almost invariably when a beginner cuts script letters for the first time he does not sufficiently discriminate between the hair lines and the shade strokes. As has been mentioned previously the natural tendency of the beginner is to turn the hand over in holding the graver so that it will make a shade stroke, and this tendency follows the beginner through his preliminary work if he is not extremely cautious, and it will give him trouble when he arrives at the stage of cutting the most beautiful letters, the script alphabet. A hair line should be a hair line from beginning to end. Hair lines in script letters never vary in

their width. The shade strokes should increase and decrease in their widths uniformly and a shade stroke should never be continued past a point where a hair line begins, and as to where such point of beginning and ending exists we will show the complete script alphabet so that the student will have an accurate guide. Another letter that gives the student some trouble is the lower-case E, the trouble being that he does not start to cut the loop at the top correctly. Some will begin too far down and some will begin too high. All these things should be governed by set rules. The rule in this case is to begin to cut the loop at the top at a point midway between the top and the base guide line, as shown in our illustration at Fig. 64.



Fig. 64

At Fig. 65 we illustrate the down stroke of an H, K or F with the graver in position at the bottom to cut the little extra cut indicated by the dotted line *B* at the bottom of said stroke. That

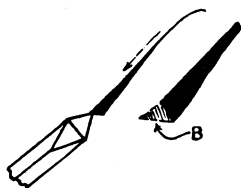


Fig. 65

portion of the stroke *C*, which is the termination of the three letters mentioned as here outlined, is in the form that it would end up by cutting downward. In other words, it is impossible to cut it so that it will end square on the lower guide line. It is therefore necessary to cut the little extra cut indicated by the dotted lines in order to

square it up. The graver in cutting this extra cut is inserted at the base of the stroke as here indicated.

The strokes that we have here mentioned constitute all of the strokes in lower-case script letters that would need special attention. All the other strokes being easy to cut, or of such simple character that the student would be able to cut them with the instructions he has received in regard to other cuts, further reference to the lower-case letters is deemed unnecessary.

We would say, however, in concluding the lower-case script letters that in cutting them the down strokes are all cut first; then the plate or article in hand being engraved is reversed and all the shade strokes cut up; then all the hair lines are cut, which finishes the letter.

The word "Ethelind," shown at Fig. 66, is here shown as it would appear after the engraver has cut all of the down strokes and is ready to cut the up strokes, which are the half of the stroke of

the M at the left and the first shade stroke of the N and the upper half of the shade stroke of the H at the right.

The graver is usually, if not always, thrown out in script letters at the center of a curve at the top or at the bottom. As shown by the method of cutting the word "Ethelind," it is plain to be seen that the object in throwing the graver out at the termination of a curve at the top or at bottom is to avoid the necessity of turning



Fig. 66

the article completely around in one's hand. This method of engraving is more rapid than any other, and enables the student to quickly terminate a shade stroke and as dexterously begin a hair line. If letters are cut in this manner, it is not necessary to turn the graver and the article in hand so much, which, by the way, are both turned automatically when engraving. In this case it would not be necessary to turn, in making a curve, more than 45° of a circle, which enables us to do the work by cutting the strokes up and out and down and out with much more rapidity and a higher degree of accuracy.

CHAPTER IX.

THE FORMATION OF THE SCRIPT CAPITALS.

At Fig. 67 we illustrate the complete script alphabet. We here show the lower-case letters, previously described, simply to illustrate their respective relation in size as compared with the capitals. It will be seen that the lower-case letters are one-third the height of the capitals. In the first letter of the alphabet, the capital A, it will be seen that the loop at the lower right side of the letter should come up half way or nearly half way to the top of the

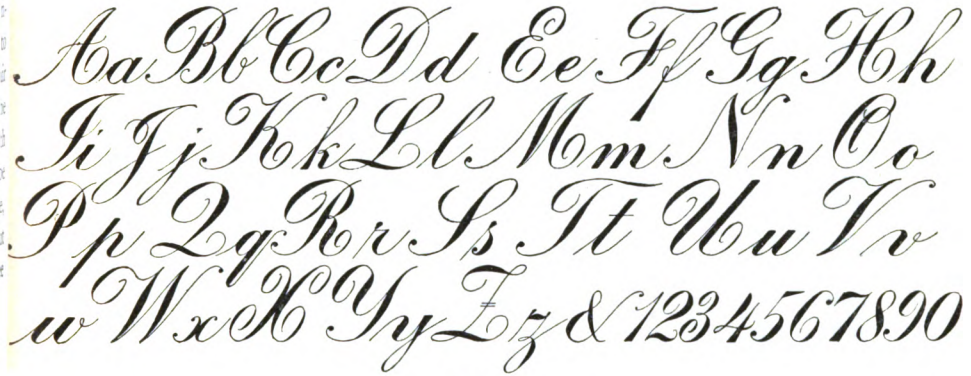


Fig. 67

letter, and that the hair line should be a plain scroll, curving from the center down to the left. The shade stroke at the top should start in a very fine hair line and the shade should be gradually increased until nearly two-thirds down, at which point it should be gradually diminished until the stroke nearly reaches the base line, at which point it is thrown out. The student will remember that we have formerly mentioned the fact that all loops should be cut by throwing the graver out in the center of the loop; in other words, at the bottom and the top of the loop.

In the formation of the capital B the loop at the upper left corner should come down nearly to the top lower-case guide line. The loop at the right of the center of the line of beauty should be

on the line half way between the top and the bottom of the letter, and the upper curve at the right of the line of beauty should be closer to the line of beauty than the lower one, and should be as here shown, and as the dimensions would indicate, shorter than the lower one.

In the capital C the loop comes up nearly to the center line, the same as the loop of the A. The loop, as shown in our illustration, is shaded both at the right and the left. This is done to show the student that it can be shaded in either place or in some cases in both. The writer prefers shading the loop at the right in cutting the stroke up. The main stroke of this letter is cut down, and the stroke at the right of the main stroke is cut down on less angle than the main stroke. Said stroke should cross the main stroke half way between the base and the top guide line.

The line crossing the line of beauty in the D should first be cut from the line of beauty to the end of the loop. Then from the beginning of said line around up to the top of the loop. The main loop of the capital D should be cut down to the top of the lower-case guide line the same as the similar loop in the capital B.

In the capital E the loop in the center should be on the center line, drawn half way between the top of the letter and the base, which would make the top loop of the letter smaller than the bottom one, this being the correct form of the loop. This loop, as here shown, is shaded both at the left and the right to show the student that it can be shaded in both places a little or shaded more on either side as the artist prefers. The author's opinion of this loop is the same as that of the C, viz., that the lower loop presents a better appearance if shaded on the right side in cutting up instead of being shaded in cutting down. Of course, the main stroke of the letter is always cut down.

The capital F is simply a line of beauty crossed in the center, as illustrated. In cutting the top stroke the loop should come down nearly to the center guide line. In practice it will be found very convenient to cut this top of the F by beginning in the center of the top and cutting around to the bottom of the loop and then cutting the remaining portion of the top from that beginning to the end in the opposite direction.

The capital G is considered by many beginners a difficult letter to cut, due largely, we believe, to the fact that strictly mechanical lines in its formation are hardly practicable. It will be seen, however, that the upper right loop protrudes slightly over the end of

the line of beauty, and that the main stroke of the top is cut down to the lower-case guide line, and the stroke at the left of the upper main stroke down to the center guide line. The line of beauty is cut and formed exactly the same as any line of beauty, excepting that it is shorter, coming slightly above the center guide line.

The capital H is engraved in many different styles. The style here shown is, in the author's opinion, the easiest cut, and it is preferred because of such ease in cutting and the fact that it is as artistic as the other styles. The portion changing the style, to which we refer particularly, is the top of the line of beauty, the one here shown, and in our opinion the most simple, being cut in two strokes. This loop will come down nearly to the center guide line. It will be seen that the shade stroke at the right of the line of beauty is nearly parallel with the latter, and if a letter is made in this way it is quite sure to be correct, the great trouble with most beginners being that they form the line of beauty in too much of a scroll shape, thereby making it impossible to cut the stroke at the right parallel with it. And a point may be given here to the beginner, if he does not exaggerate the suggestion, that will be of benefit to him in cutting this letter. That is, to make the line of beauty of an H straighter than any other line of beauty in the script capitals. Great care should be exercised not to make the line too straight. The loop at the right at the top is formed by the hair line crossing the two main strokes of the H midway between the top and bottom of the letter. The loop at the right, the same as all other small loops in the script capitals, is cut up nearly to the lower-case guide line.

The capital I is formed simply by a line of beauty on the correct angle of 50° to 52° with the stroke at the left, which is cut down and crosses the line of beauty on the center guide line.

The capital J is, in general formation, the same as the I, excepting that a loop is formed at the base of the letter and that this loop protrudes below the line one and a half times the height of the lower-case letters. The loop at the left of the line of beauty forming the top stroke should come down to the top of the lower-case guide line.

The first half of the capital K is formed the same as the capital H. The upper half of the right portion of the letter is a hair line only. In some cases it is shaded slightly and a loop is formed at the end, but the style here given is used mostly. The lower half

of the right portion of the letter is a double cut which was thoroughly described in a previous chapter as applied to the lower-case N and M. The little loop at the right center of the capital stem is formed midway between the top and bottom of the letter. The loop at the lower right of the letter is not made quite as high as like loops in other letters. The reason for this will be plainly seen if the student will try cutting it in both ways. Some engravers cut this loop nearly to the center guide line the same as a like loop in the capital H, but, generally speaking, it is made smaller than such loops in other letters.

The capital L is formed by a line of beauty, the stroke at the left being cut down and crossing the capital stem in the center, and the base line is cut by cutting from the line of beauty to the left and the end of the loop beginning again on the line of beauty and cutting to the right. If this beginning of cutting both ways is made midway between where the line crosses the line of beauty and the end of the loop, it will not matter. In fact, it is safe to say that such a position is adopted more universally than beginning directly on the line of beauty. This base line of the capital L is rather difficult to cut without making the line appear to curve downward too much. This is avoided by carrying the point of the graver upward to counterbalance the curving downward of the stroke by the graver being turned over to the right to make the shade.

Engravers do not agree as to the method of cutting the capital M, but the author believes that the best way to cut the letter is to cut all the strokes excepting the right stroke of the loop down. The object of cutting them down is that the top of the letter should be pointed, and, as previously stated, it is easier to make an artistic point of such a letter by cutting down than by cutting up, as the tendency to shading the top of such letters at the curve just before reaching the point is such that it is deemed advisable to cut this stroke down. The tendency to making this line heavier at the top was described in a previous chapter. The perfect mechanical capital M would be so outlined as to make the first hair line and the first shade stroke, and the second hair line and the second shade stroke nearly an equal distance apart on the graduating scale. Of course, there will be a variance in cutting these lines, but if the student will bear in mind that he should get them equal distances apart he will have a gage to go by which will assist him in cutting the letter, and be conducive to great accuracy.

In cutting the capital N it will be seen that the two hair lines, which are nearly the form of lines of beauty, are made almost parallel with each other, and the main shade stroke is nearly perpendicular. In the case of the one shown in our cut at Fig. 67 we have purposely made this stroke exactly perpendicular, showing the student that if he aims to get it perpendicular he will avoid the tendency to running the hair line at the right of the main stroke into the main stroke at the bottom of the line or just before reaching the bottom guide line. While we here illustrate this stroke perfectly perpendicular, the student while practicing should bear in mind that if it should be or can be on an angle of five or ten degrees to the right it will be more artistic than if made perfectly perpendicular.

In forming the capital O it will be seen that we have changed the style of the O somewhat from the old style of Spencerian O, in which case the inner line at the left was cut nearer parallel with the outer one. In this case we have shortened the length of the loop forming the middle or right portion of the letter, and have thrown the highest point of the letter over to the right to counterbalance the diminishing of said loop.

Capital P is formed the same as like portions of a capital B, excepting that the loop at the right of the line of beauty crosses the capital stem. Even this is not true in some cases. Some artists prefer to have the loop slightly curve around upward at the right of the line of beauty. This is a matter that the artist should decide for himself. The point of meeting of such loop and line of beauty should be nearly midway between the top and bottom of the letter.

Forming capital Q, the loop at the top comes down to the middle guide line. The stroke at the base of the letter is cut over where it crosses the main stroke of the letter to the end of the loop at the left, and from the beginning of such cut to the right at the end of the loop at the right, which terminates a hair line. This loop, in other words, is cut the same as the base line of the capital L, excepting that the loop at the left of the main line is fuller than the loop of the L. It matters not if this loop is begun where the shade commences to appear to the right, making it all one stroke, and then finishing it up from such beginning to the end of the loop by cutting in the opposite direction.

The student may wonder why it is necessary to cut this loop to the left. He may think that it should be cut by beginning in the center of the loop and cutting this stroke all the way over to the

right, but a trial will convince him that the end of the loop would appear very ragged if cut in this way. In other words, we must return to our original instructions with reference to forming loops and the use of the square graver, which taught us that we must cut all curves to the right, and if the student will bear in mind this valuable point all through his engraving he will find that he will never be troubled to know in which direction to cut a loop.

The first half of the R is formed the same as the B, and the lower right half of the letter is formed the same as the K.

The capital S is a difficult letter to cut, yet a very simple letter in its formation. The loop at the top protruding over to the right without any loop at the base to counterbalance it, confuses the student in designing or even in cutting it. A good practice to assure getting this line of beauty on the correct angle is to design the loop on an angle of about 10° higher than any other line of beauty, which will be sufficient to counterbalance the optical illusion referred to.

The capital T is formed the same as the capital F, excepting that it is not crossed.

The first main stroke of the capital U is a double cut, the upper half being cut upward and the lower half downward. The loop at the left of this stroke is cut the same as the like loop in the capitals R, P or B. The second main stroke of the capital U is cut downward, and is the same width from beginning to end, and is squared up at the top when necessary.

The capital V is formed by cutting a small shaded line with a hair line at the right, increasing in its distance from the main stroke gradually as it is engraved upward. The upper left portion of the letter is cut the same as a like portion of the capital K.

The W is formed the same as two Vs placed together, with the absence of the upper left portion of the letter in the case of the second V. Great care should be exercised to make the hair lines of the W parallel with one another, the same as the main shade strokes.

The capital X is simply a series of loops, all of which are cut by curving to the right, remembering to throw the graver out at the top and bottom of all loops.

The capital Y is made by cutting the stroke at the left down to the center guide line. The first main stroke of the letter, which is a double cut, should come down to the lower-case guide line, and

the line of beauty protrude up to the top of the capital letters or slightly under said line.

Capital Z is made by forming the main stroke of the letter a hair line of beauty, the top and bottom shade strokes being cut and formed the same as a like stroke in the capital L.

The correct & and all figures belonging to the script alphabet are made two-thirds the height of the capitals.

The top loop of the 2 can be brought downward to the center of the line midway between the top and bottom.

The loop in the middle of the 3 can be formed directly above the center line.

The loop at the lower left of the figure 4 should be brought down nearly to the lower-case guide line. The line crossing the main stroke of the 4 crosses it one-fourth of the distance from the base to the top guide line.

The meeting of the first loop of the 5 and the hair line running from same to the top is made half way between the top and bottom of the line.

The lower loop of the 6 comes half way to the top of the letter. The widest part of the shade stroke should be midway between the top and bottom of the figure, as shown.

The top of the 9 should come down to the center guide line. Both the right and the left of the figure 0 should be shaded equally.

These suggestions as to the correct formation of the perfectly plain script alphabet should be followed accurately until the student has become familiar with the forms of the letters, and with a little practice he will be able to cut the letters on these strict mechanical lines without any particular reference to the rules here laid down. In other words, he will learn by rote to make the letters perfectly true, providing these strict rules are in his mind when practicing.

It would not be policy for the author to even intimate that this is the exact and only style of script letters. There are a great many styles of script letters and a great many different methods of cutting them, but the style here given, as before mentioned, is a perfectly plain one, and one that is used largely in the art of engraving, and forms the basis for a more elaborate letter, which we will have occasion to describe later. If the student will keep these correct forms in mind, and apply to these letters further instructions in reference to the formation of more elaborate letters, the formation and cutting of the script letters will not be difficult.

CHAPTER X.

LOOPED SCRIPT.

We have already learned the correct formation of the plain script letters, which is the foundation of script letters, no matter of what style or how elaborate. The general construction of script letters is the same in all the different styles of forming and engraving them. We will now take up the styles of looped script, and it will not be necessary for us to enter into a detailed course of instruction in reference to cutting the same, as previous instruction in cutting loops, bars, etc., will be applicable in this style of lettering. The angle of the looped script can be on the regular angle of 50° , perpendicular or back hand, and as the looped style of script is the kind that forms the basis for ciphers or script monograms, it is necessary that the student who desires to become skilled in cipher work should thoroughly master the plain looped script letters. In any fancy engraving the style of the letters can be changed to suit the artistic eye of the engraver or artist, but we must have some rules to govern the practice of the beginner.

There are a great many different styles of fancy script letters. We do not believe it advisable, from the standpoint of art or business, to engrave letters as fancy as one can. On the contrary, we advise a plain, accurate foundation of the letter gracefully and artistically elaborated by ornamental work, or by the elaborating of the loops and bars themselves, but discretion must be used in the matter of using loops. We often see in text-books looped or fancy script letters of a style that no self-respecting engraver would think of using. This fact is mentioned by way of warning the student who might be misled by text-books that contain alphabets that are not advisable for an engraver to adopt. There are a great many little cuts, scrolls and curves that might be used in connection with the script letters which will add to the beauty of the letter, and many of us will not agree possibly as to what constitutes the most artistic of such curves, yet it is our opinion that the alphabet which we will show will contain the most simple and artistic of this class of letters. Of course, any improvement that a student can make, knowing that he is correct, he may make, bearing in mind the fact that the

author is here suggesting what he deems to be the most practical in this style of letter.

At Fig. 68 we show the first six letters of the alphabet in the style of looped script. It will be noticed in the first letter of the alphabet that the first loop of the letter is on more of an angle than the second loop, which is due to the fact that in the first stroke of



Fig. 68

the letter the line of beauty is, as it should be, on more of an angle than in the second stroke, which is a shade stroke. This is made necessary as the letter is pointed at the top, and as the two bars gradually increase in distance apart as they near the base line, and it is for this reason that the second loop should be on a less angle than the first. Theoretically, the first loop should be on an angle with its line, *i. e.*, the line of beauty, and the second line should be on an angle with its line—the main shade stroke.

In the capital B the loop at the top should be shorter than in the regular alphabet to allow for the loop at the end of the line of beauty. The loop at the top of the line of beauty should be very delicate and very accurately made. The remaining portion of the letter in its general formation is the same as in the plain script alphabet.

It will be seen in the capital C that the general formation is the same as the regular C, excepting the smaller loop within the loop at the top, and that the loop at the base of the line curves a little more, thereby making it more artistic.

In the capital D the loop at the bottom can be, but not necessarily, fuller than in the plain alphabet, and the loop at the top can curve around a little farther, and also the line of beauty can curve around at the top the same as in the B.

The looped capital E is the same as the plain E, with the exception of the inner loop at the top, and also the little extra line that curves around over into the top loop, and the lower loop curves upward farther than in the plain script.

In the capital F it will be noticed that at the top the line of beauty connects with the stroke crossing the top and forms the loop,

and that the end of the line of beauty curves around and forms a loop and another loop within the loop, and thus continues around and crosses the line of beauty exactly in the center and forms still another loop.

Referring to, Fig. 69 the first letter at the left, the capital G, differs in formation from the plain letter only in the loop within the top loop, and in the line at the upper left portion of the letter curving over the main shade stroke at the top ; also in the loop at the bottom of the line of beauty, which differs from the ending of same in the plain script.



Fig. 69

Capital H can be made in a great many different ways. The style here shown is probably the most common. The first half of the letter varies only from the plain script letter in the loop being at the end of the line of beauty, the second half of the letter forming the loop terminating within itself at the top, and having an extra line to cross the two bars.

There can be no change in the capital I with the exception of the loop at the bottom, and a slight continuation of the loop forming the top of the latter. It must be remembered that the lines of beauty in this alphabet can be curved more than in plain script. This is also true of the capital J. The capital J, however, in back hand and perpendicular script, and ciphers, is made exactly the same as the I shown here.

The looped style of K varies from the regular style of script only in the loop at the end of the line of beauty and an extra loop at the top, and a slight continuation of the loop at the bottom.

The L is changed very little, simply having a loop within the loop at the top, and the line in the upper left portion of the letter continuing over the line of beauty instead of stopping slightly at the left of same.

Referring to Fig. 70 the first letter at the left, capital M, is the same in general construction as the plain M, with the exception of the loop, which in this case should come up to the line drawn half

way between the top and bottom guide lines. It will also be noticed that the top of this letter curves a little more than in the plain style of letters.

The looped N has a loop at the top and at the bottom, otherwise it is generally constructed the same with possibly the exception



Fig. 70

of a slight shade near the top and near the bottom of the two hair-lines to enhance the beauty of the letter and fill in or balance up the loops.

The general character of the capital O is such that it is difficult to make any change in it. The only change that can be made consistently is a continuation of the beginning and ending of the line forming it.

The capital P line of beauty continues around to the right and forms a very delicate loop, also the regular style of a loop at the end of the line of beauty at the bottom and a slight continuation of the loop at the top.

There is no change in the style of the Q except a slight increase in the loop.

The capital R loop at the top is slightly shorter than in the plain style and, with the addition of the loop at the bottom and top of the line of beauty, and a slight continuation of the loop in the lower right portions of the letter, it is the same as the plain style.

Referring to Fig. 71 the capital S is made the same as the plain style, with the exception of the inner loop at the top and the



Fig. 71

main loop at the bottom, and a slight curve in around to the right in the line and in the left portion of the letter.

The T differs in its construction the same as the F, with the exception of the crossing of the latter.

The capital U can be changed by making a loop at the top of the second main stroke of the letters, instead of beginning it square on top as the top of a D or T.

The capital V simply has an additional loop at the top on the right upper portion of the letter and a slight increase in the loop in the left portion of the letter.

The W, being practically the same in general construction as the V, has only the same changes. We would add, however, that these letters can be curved more than in the regular style of script.

There is no radical change that can be made in the X, with the exception of elaborating the loops if possible and advisable.



Fig. 72

Referring to Fig. 72, the looped Y is made the same as in the plain script alphabet, excepting the loop at the end of the line of beauty.

There is no change that can be made in the Z, except elaborating the loops.

The correct & is made the same in general construction, with the exception of a slight continuation of the loops.

At Fig. 73 you will notice that the curves run to the right at the bottom, and that the little hair line forming the top has a slight loop at the end.



Fig. 73

In the case of the 2 the loop is increased a little at the top and at the bottom. There is also an extra loop at the lower left portion of the figure at the bottom.

In the 3 there is a loop in the center and a full loop at the bottom and at the top.

The 4 is practically the same with the exception of the down stroke curving around to the right as in the figure 1.

The figure 5 has a loop in the center and a loop at the top. The remaining portion of the figure is the same as the plain figures.

Referring to Fig. 74, the 6 is practically the same as plain 6, except that there is more of a loop at the top.

The 7 differs only in its main stroke, the same as figures 1 and 4, with a loop at the top.



Fig. 74

It is equally difficult to make any change in the 8, unless the lines are broken or severed at the top and bottom, as here shown, in which case they can curve around as the case may require.

The 9 simply has an extra loop at the bottom.

The o cannot be changed, as the letter, by virtue of its shape, gives no opportunity for making loops.

FANCY SCRIPT WORDS FROM LOOPED SCRIPT.

In Fig. 75 we show the style of letters we have above described, forming the initials B, G, H, made back-hand. The student



Fig. 75

will observe that it will be impractical to make the plain script letters back-hand artistically. In Fig. 76 we show the word "Rose" engraved perpendicularly, using the style of capital R we have just described, it being necessary in this case to change the loop at the lower right portion of the letter, allowing it to drop below the guide line and gracefully loop into the base of the R.

we have just described, it being necessary in this case to change the loop at the lower right portion of the letter, allowing it to drop below the guide line and gracefully loop into the base of the R.

It will be noticed that there is no change in the lower-case letters, with possibly the exception that the letters are more the style of the round-hand script.



Fig. 76

At A, Fig. 77, we illustrate the word "Roseline," the capital of which is formed from the looped style of script. There are many pieces of silver that come to the engraver to be engraved where a word running up on an angle, after the manner of this word, is by far the best form of laying out the work. The pieces in question are too numerous to mention here, but the student will readily observe where a word of such a form can be used to best advantage.

At *B*, Fig. 77, we illustrate the word "Florence," running down on an angle, with a few scrolls above and below and at the end of the word. Of course, the scrolls are not necessary, but they very often fill in the space advantageously. This style of script is what is known as the round-hand style. The method of



Fig. 77

cutting the letter running down on an angle, as here illustrated, is exactly the same as for cutting the regular script, with the exception of squaring up the top of the I, T, U, D, etc., and the bottom of the M, N, H and K, in which case the squaring up is done from the opposite direction. In the case of the bottom of the N in the word "Florence," the graver would be inserted at the lower right corner of the base of the first down stroke of N, in order to square it up; whereas, in case of the regular script, it would be placed at the lower left corner.

At *C* we illustrate the word "Birmingham," the capital of which is formed after the style of the looped script and the lower-case letters after the style of the round-hand script. It will be noticed here that there is an inner loop in the lower-case G and an inner loop in the top of the H, which add to the artistic features of the letters. A few scrolls placed above and below the letter, as here illustrated, add to the artistic elements of the article to be engraved. In showing these words, we are very cautious to avoid any ornamental work other than loops and scrolls, which we have sufficiently described to make the method of cutting them intelligible to the student. Many will undoubtedly desire to ornament the letters in addition to ornamenting above and below the letters. The ornamenting of such letters will be taken up under the head of ciphers or script monograms, and the student who desires to ornament the letters can learn how to do so under that head.

At *A*, Fig. 78, we illustrate the figures "1902" in an appropriate style for the style of letters illustrated at Fig. 77. These figures should be engraved on an angle of about 10° back from a vertical line.



At *B*, same figure, is illustrated "1900," showing a style of drooping or running the letters down.

Figures engraved in this style are very appropriate for the back of teaspoons or small match or stamp boxes. The lines above and below the figures can be added or not, as the artist prefers.



Fig. 79

At *A*, Fig. 79, we illustrate the vertical script of the looped style and at *B* the back-hand script of the same style, showing the student that the looped style of script is appropriate for either vertical or back-hand style.

CHAPTER XI.

THE PRACTICAL USE OF SCRIPT LETTERS.

One of the most troublesome features connected with the art of engraving is the danger of the point of the graver breaking off. If the engraver selects a tool of the best quality and sharpens it correctly, he will experience little difficulty of this kind. How to obviate the point of the graver breaking off is a question which puzzles a great many beginners in the art of engraving. It should be stated in this connection that the angle on which the graver is sharpened on the front should be varied according to the condition of the metal to be cut. If we are cutting on very hard metal, such as plated teaspoons, the angle on the front of the graver should be more blunt than it would be if we were cutting Britannia metal. Fourteen karat gold will be found of such alloy as to make it difficult to cut it and not break the point of the graver, and this is especially true if the point of the graver is left rough, in the condition in which it comes from the oilstone, which is the condition of the graver when used on a polished surface.

The engraver should remember that in cutting satin finish, Roman gold finish, French gray finish, or oxidized silver, that he should use a polished graver. In nearly all other finishes the graver should be left in the condition in which it comes from the oilstone, in which condition it will cut a ragged line. The term "ragged line," as here used, does not mean that the extreme edges of the letter will be rough or irregular, but the incision will appear to be composed of a series of fine lines, due to the condition of the cutting edge of the graver, which has been thoroughly described in instructing the student how to grind and polish a graver. It will be found more difficult to cut with the graver in this condition possibly than it would if it were polished a very little. If the oilstone, which the engraver uses, is a very coarse one, then it would be necessary to polish the graver a very little in order to reduce the roughness to a minimum, but not enough to make it cut bright. If in cutting with a rough graver it is found that it grinds and grates as it is pushed forward, and the operator is sure that the angles are exactly flat, he will be able to wield the graver easier if

he lubricates it with saliva by putting the point of the graver between his lips at each insertion. This is a bad habit to form and should be resorted to only in cases where it is necessary.

At Fig. 80 we illustrate four hearts, showing the different ways

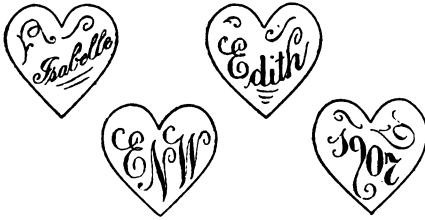


Fig. 80

in which initials, names and figures can be engraved. Of course, it would be practical, and possibly easier, to engrave the letters straight across or straight up on an angle. It will be seen that a few little scrolls above or below the letters will add to the artistic effect.

At Fig. 81 we illustrate a locket with the word "Laura" engraved thereon, showing how the looped style of script, with a little ornamental work above and below a word, adds to its beauty. It is not more difficult to engrave a word in this way than it would be to engrave it perfectly plain, and the artistic effect gained by doing it in this way is such that it is advisable for the student to make the attempt.



Fig. 81

At Fig. 82 we illustrate two different styles of engraving teaspoon handles. At A we illustrate the word "Ethelind," designed ready for engraving. The most difficult feature in designing a word on a spoon handle is to sketch

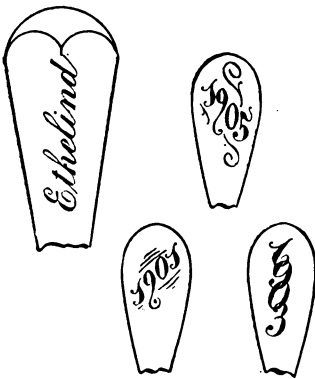


Fig. 82

it so that the general effect of the word will be in the center of the space allotted to the word. This is accomplished in designing a spoon handle, as here illustrated, by first drawing a line from the center of the end of the handle to the center of a point on the handle just at the right of the beginning of the word. The central point at the end of the handle engraved "Ethelind" shows where such a line may begin. Now, as to whether or not this line should come exactly at the top of the lower-case

letters or slightly below depends altogether upon the number of letters coming above the lower-case guide line.

In the case of the word in question we have five letters coming above the lower-case guide line. It is, therefore, necessary that this center guide line should be the top guide line of the lower-case letters. While, on the other hand, if we had some letters coming above the line and some letters coming below the line, these conditions would be changed to such an extent that it would be necessary for the center line to pass through the top of the letters about one-

fourth the distance down from the top of the lower-case guide line. A beautifully engraved word on a spoon or fork handle not properly placed, is more irritating to an artistic eye than one properly located of the right size if not so well engraved. Therefore, the student is especially cautioned in regard to this, and advised to practice this particular point diligently. There are too many ways of using script letters to illustrate all. We therefore present for the consideration of the student only a few, which will suffice to give him an idea of how the work



Fig. 83

should be accomplished.

At Fig. 83 we illustrate an ornamental handle of a spoon or fork with initials B. C. S. designed thereon, showing how the letters could be designed in such a space. The student should endeavor to so educate his eye as to arrange the style of letters and shape of same to as far as possible correspond with the style of the article to be engraved.

At Fig. 84 we illustrate a match box, showing how it can be engraved in plain script on a straight line, yet on an angle, diagonally across the box, which is far better than engraving it straight across or perpendicularly. The location of the date is also preferable to having it directly under the name, unless the customer should request otherwise.



Fig. 84

At Fig. 85 we illustrate a pin tray with the word "Florence" engraved thereon. In a case of this kind the engraver must first find the center of the dish and then the same instructions apply as in the case of a spoon handle, shown at Fig. 82. Great care should be exercised in a case of this kind in reference to the size of the letters. If the letters are engraved too

large and are not appropriately shaded for the size, or too small and too heavily shaded, they will look wrong. The student should carefully study a design after he has placed it on the article and see if it is the right size. Very often students will first sketch the design on the article and then study only the accuracy of the letters. As previously stated, while the accuracy of the letters is

the principal point, yet we must give due consideration to the size and proportion of the letters and the relation of the same to the space allotted to the word.



Fig. 85

At Fig. 86 we illustrate a few scrolls, which can be used to advantage with script words and initials in engraving ornamental

script. As has been previously mentioned, the author is not in favor of engraving words or initials very fancy. Simplicity

and accuracy should be the aim of all artists in engraving. Great care should be exercised to avoid so elaborating the letters or elaborating the space around the letters as to detract the attention from the word or initials, bearing in mind at all times that the initial or word should stand out boldly and that whatever ornamental work is done should be executed so delicately, that it will appear to be in the background.

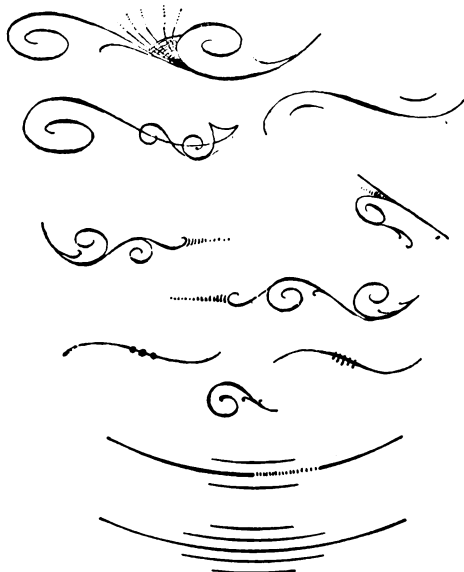


Fig. 86

CHAPTER XII.

ENGRAVING COFFIN PLATES IN SCRIPT.

Engraving coffin plates in script is one of the puzzling features of the art of engraving for a beginner. Students in the art will sometimes see an engraver engrave a coffin plate in very heavy script, or see a plate that has been engraved in very heavy script, and wonder how the artist succeeded in cutting such heavy strokes. We would say that this work is done with a flat-faced graver, ground as has been described. All the shade strokes are cut with a flat graver. The object of using the flat graver for such heavy shade strokes is that the angle on the front of the graver is at right angles to the blade, which enables the operator to cut a wide stroke with less depth than he would be able to with a square graver, because, in the latter case the square graver front is ground back on an angle, thereby making it necessary to turn the graver over to the right farther to make a shade than in the case of the flat-face graver. Some engravers cannot use a flat-faced graver for cutting the hair lines. For the benefit of those who are troubled in this way, we would state that there would be no objection to their using the square graver for the hair lines. Cutting bright cut on the metals of which coffin plates are made is usually difficult, unless one knows the secret, if it is a secret. The method of polishing the graver for any bright cutting is the same. In cutting bright cut on Britannia metal, after the graver has been carefully polished it should be lubricated by wetting it between the lips at each insertion, which will be sufficient to cause the graver to cut bright cut, while, if such lubricating were not resorted to, it matters not how well the graver might be polished, it would not cut bright, owing to the fact that the metal is so soft that the molecules will pull apart and adhere to the cutting edge of the graver. This method of lubricating is sufficient to produce the effect and is the most expeditious. It is, therefore, recommended instead of dipping the point of the graver in turpentine or any other lubricant.

In laying out the work on coffin plates, the designing wax or transfer wax, previously mentioned, is used by pressing the finger on the wax and then transferring it from the finger to the plate,

which will deaden the surface of the coffin plate so that a mark with a hard-rubber marker or even a piece of pegwood properly sharpened will show very plainly. This is the most expeditious manner of sketching letters on a polished plate. Some, however, use Chinese white or gamboge and design it with a soft pencil. This method requires more time in preparation and the results are more hazardous to the polished surface than by using wax and being cautious in reference to scratching the plate by roughly handling it. There will be little trouble experienced in scratching a plate, providing the engraver uses all the precautions necessary, the principal one being, in sketching through transfer wax, to see that the thumb nail of the right hand, which answers as a fulcrum or a guide for the graver, is reasonably short and also that the end of the thumb is free from any grit or dirt that would scratch a highly-polished surface. The thumb acting as a guide, is the one part of the hand that comes in contact with the surface of the plate, and if that member is free from grit and the nail is short enough not to come in contact with the plate, we are quite sure to avoid scratching the same.

As to the style of rule to use for guide lines, a celluloid rule 6" or 8" long is best. Celluloid can be purchased at drug stores in strips of any desired length, and can be cut as wanted. The advantage of a celluloid rule is that it is flexible and can be bent to correspond with the surface of the plate. This rule is also useful in designing on a child's drinking cup or any round surface like a napkin ring. Of course, the rule for these small pieces would necessarily have to be smaller, but the flexibility of the rule makes it valuable for such work and the engraver should supply himself with several different lengths and widths.

The style of engraving coffin plates in script used by a great many undertakers is to engrave the date of birth above the name and the date of death below. In this case both dates should be the same height and style. A rapid means of sketching such a date and avoiding the necessity of making guide lines, but with a guide to make sure it is in the center of the plate, is to use a celluloid rule, previously described, with a hole cut in the center of it, as shown at Fig. 87. If the rule should be exactly the same length as the coffin plate, then the ends of the rule should be even with the ends of the coffin plate. If the plate is a little longer, the rule should by an equal amount fall short of coming to the

end of the plate on each side. Or if the plate is shorter than the rule the opposite principle should apply. In each case we would be sure that the little hole cut in the center would be in the center of the plate. Now, the figures are sketched in this hole on to the plate, using the top and bottom of said hole for guide lines, which will insure great accuracy as to each letter and the date at the top and at the bottom.

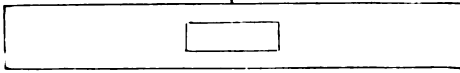


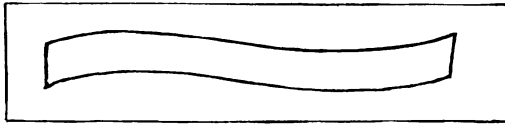
Fig. 87

After the student has practiced coffin-plate engraving to some extent, he will find that he can, by placing this celluloid rule on the plate so that the top of it would suffice for the lower-case guide line of the script, sketch the line without the aid of the top guide lines, and with sufficient accuracy. Of course, it would be impossible to add the loop at the bottom of the lower-case guide line, such as is necessary for a G or a Y, but the top of the letter could be made and then when the rule is lifted from the plate such loops could be added. In sketching in this way the writer has found it advantageous to dispense with the designing wax, using simply the steel-pointed stylus and scratching on the shade strokes only. Of course, great care must be observed in forming the letters, as when once sketched on, the cutting must be such as to cut said scratches entirely out, but they are sketched on very delicately, not the full width of the stroke, but nearly so, in order that if a slight variation should be made it could be corrected. We wouldn't recommend this method of designing to a beginner. He can look forward to it after he has become sufficiently skilled in designing.

A great many beginners experience some difficulty in spacing their words so as to make them begin and end an equal distance from the right and the left ends of the plate. In other words, they find it difficult to begin the first letter of a word so that they will have ample room and not too much for the last letter. This can be obviated by spacing before the letters are sketched on. By spacing, as here referred to, we mean making little dots with the stylus on the plate, leaving a space between each two dots for the letter or the space between words, and going across the lower-case guide line in this way spelling the word out, and then if the last letter comes at the right point this spacing can be used, but if it should be found to run short, allowance can be made in the sketching to make

the lines far enough apart or larger so as to take up the space left short. Or if the word should be found to run over, the letters should be set closer together or made smaller. A little experience in spacing in this way will enable the student to space in a short time without the aid of such preparatory exercises. The engraver should be sufficiently skilled in this class of work to space by words. By making three dots on the plate he would not vary much from the space allotted to each word. While to the beginner it might seem difficult to space by words, yet the experienced engraver knows that it can be done with great accuracy, and in practice must be done in order to accomplish the amount of work in one day that the engraver is expected to do.

Some engravers prefer to make their script on coffin plates in scroll shape. A rapid method of doing this is to make of celluloid a rule, as shown at Fig. 88, with a hole cut through the center of

**Fig. 88**

it in scroll shape, as here illustrated. In this case it would be necessary to dispense with the guide line for the top of the lower-case letters, having simply the top guide line of the capitals, and the base guide line which, as previously stated, would be sufficient to one with some experience. By using this scroll, most coffin plates being nearly the same size, it would be found possible to do the work with greater accuracy and rapidity than if one should attempt to make the scroll on each plate from the original sketch. Of course, if this scroll should be a little too long, it would not matter, as the first part of the name could begin at the right of the hole in the celluloid rule and end at the left of it. Any different forms, like crescent shapes or ovals, that the engraver might deem advisable to use, could be arranged in this way. However, the names in script should either be straight or on a slight curve or scroll shape as here mentioned.

After a plate has been engraved, either by scratching the name on as above described, or by the use of the wax or even the Chinese white, and after washing the same off with a brush, water and soap,

it is dried by patting it with a towel, not rubbing. After being thoroughly dried with a soft towel in this way, any scratches that may appear on the surface can be obliterated quickly, and the original polish restored to the plate by the use of a pad, illustrated at Fig. 89, which is made of cotton flannel with the flannel side out,



Fig. 89

being filled with cotton or any other soft material. It is held in the hand by taking hold of the top where it is tied together and rubbed vigorously across the surface of the plate, rouge having previously been applied to the under side.

The rubbing should all be done lengthwise of the plate, and the amount of pressure downward on the pad should be uniform, as the slightest variation of the pressure would change the appearance of the polish, in other words, would make it appear wavy. Of course, those who have access to high-speed lathes could use the lathe for this purpose, but the ordinary foot lathe we do not consider as practical as the hand buff, as the operator finds it almost impossible to hold the plate against the buff with the hand and operate the speed by foot power and maintain equal pressure under the plate, which is necessary in order to secure a high polish, especially on soft metal.

TURNTABLE FOR HOLDING COFFIN PLATES, TRAYS, ETC.

A coffin plate, owing to it being irregular, hollow on the back and thin, is difficult to hold on a regular sand-bag pad. A very useful device for engraving coffin plates, shown at Fig. 90, is a table about 6" in diameter on the top, and a base of suitable size with a screw passing down through the center of the top to the base to hold them together. The top of the table being perfectly flat is

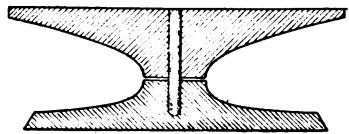
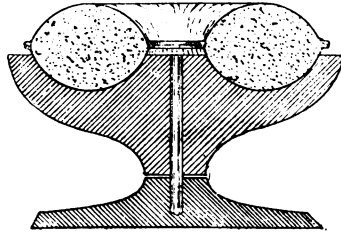


Fig. 90

covered with a piece of chamois. The object of using the chamois is to make it soft for pieces of silver other than coffin plates, and in the case of coffin plates to cause sufficient friction to hold the plate firmly in place. The turning of the article in hand quickly is one of the necessities in order to do work with rapidity. If a coffin plate is held on an ordinary pad (as a trial will prove), it will be difficult to turn the plate around in making loops and curvatures, also

to reverse the plate when necessary to cut the up and down strokes. A cross section of another style of turntable, very useful for a great many pieces of silver, is shown at Fig. 91. This turntable should be made with brass bearings, as the articles used on it would be of such weight that a wood-bearing table would hardly be of sufficient durability. The top of the turntable is grooved out, as shown at Fig. 91, to receive a ring pad, such as is furnished with some blocks. Then the pad is placed into these grooves

**Fig. 91**

which hold it firmly in place, and then with a chamois laid over the top of it, such articles as a water pitcher, ice or cream pitcher, or any large piece of silver can be placed thereon and held very firmly, even though they are rounding in form. The chamois will also prevent the piece from being scratched, while if it was held on the regular pad, even though it was covered with the chamois or any soft material, the pressure downward necessary to do the cutting would, when it was turned, mar or scratch the highly-polished surface to some extent. When the turntable, as shown at Fig. 91, is used, the article being engraved does not turn separately, as the top of the turntable turns with it, there being sufficient friction between the article and the top of the table to cause the latter to revolve on its bearings.

CHAPTER XIII.

ENGRAVING ON THIMBLES AND INSIDE OF RINGS.

Thimbles are difficult things for a beginner to engrave, owing to the fact that they are small and round, and the surface upon which the engraving is being cut is oval. Thimbles are not only hard to hold in the hand, but hard to hold the graver into on account of the oval surfaces. If the engraver will hold the thimble on the pad when cutting the down strokes by sliding it over the end of his index finger of the left hand, he will find he can hold it very securely. Then, of course, the thumb and second finger are held against the sides. When cutting the up strokes, the hold is reversed, the thimble being held between the index finger and thumb of the left hand, pressing it down well on the sandbag pad, the friction of which is sufficient to hold it without sliding.

ENGRAVING INSIDE OF RINGS.

Of all work that comes to the engraver it is safe to say that engraving inside of rings is considered the most difficult. Especially is this class of work uninteresting to the beginner in the art. It is a kind of work that must be plain in all cases, and for this reason it has not the fascination that other kinds of engraving have, and it is consequently neglected by the average engraver. Engraving inside of rings is not a difficult or unpleasant work, however, if we

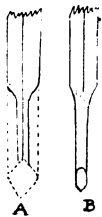


Fig. 92

have the correct tool, properly sharpened, and go about the work in a proper way. The author has found best the square graver sharpened as shown at Fig. 92, where *A* represents the original square graver and *B* represents it after it has been ground off. It will be seen here that the graver is rounding on top and on the sides, and on the under side nearly up to the point, from which point to the extreme point the cutting angles are at right angles with one another, making that portion of the graver equivalent to the square graver. The object of grinding a graver off and in this shape is, that when the graver is thrown out, or when it is curved around to the right or to the left to complete a

loop, coming in contact with the edge of the ring will not mar it ; and also so that it can get just as much nearer the completion of a loop in making the curve to the right or the left as the amount we have cut off from the sides. This is easily understood, as we are just so much nearer the point of the graver. A graver ground in this shape can be used inside the average width of oval wedding rings to make any loop or even to cross a T or make the bottom of an L, yet some engravers use a graver which is bent around to the right. We believe, however, the use of such a graver is not necessary, but may be found useful to those who do not do enough ring engraving to become skilled in the use of the graver.

Students in the art of engraving often practice inside-of-ring work by placing the ring in a holder, which is furnished with some makes of engraving blocks. We would advise beginners in the art to dispense with all such devices as they are not practical for reasons too numerous to mention here. You will find very few, if any, good engravers holding a ring in any other way than in their hand and on the sandbag pad when cutting it.

At Fig. 93 we illustrate the pad *A*, graver *B*, ring *C* and block *D*. The little block shown at *D*, a side view of which is shown at *E*, is made of soft wood about 1" long, and other proportions accordingly, with a little groove cut in it as illustrated, through which one can see when engraving. The arrow shown at Fig. 93 is pointing in the direction in which one would

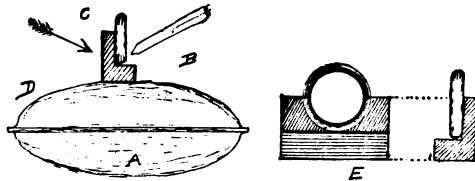


Fig. 93

look when engraving inside a ring with the aid of this block. The little block of wood is so near the size of the ring that the thumb and finger pressing down against the edge of it will also strike against the ring. The object of using this little block is to hold the ring more securely by increasing the amount of friction on the pad which adds to the stability of the ring during the operation. The graver is shown at *B* which, of course, works in the opposite direction from the point of vision, as illustrated by the arrow. A little block of this description will suffice for holding any size ring, and a great many engravers find it very helpful to them, but we believe that with a little practice little or no trouble will be experienced in cutting

the ring directly on the pad, holding it between the thumb and index finger of the left hand.

The style of lettering used inside of rings is usually script and perfectly plain. The engraver will find it easier to engrave script more nearly perpendicular than the regular angle of script inside of rings. By making the letters more nearly perpendicular by possibly 10° , the difference would not be noticed and the appearance would be better than if the letters were made on the regular angle of 50° , because the curve of the ring inside makes the letters appear to be on more of an angle than they really are, and if it was a very small ring a letter might begin on the downward slope at the left and end on the upward curve at the right, and in this way would have a rolling or curved appearance, which would be very detrimental to its artistic appearance. Students should try both angles, the regular angle and an angle of 60° , and they will readily observe that the more perpendicular style of script is, by far, better in appearance than the regular.

Just how to arrange a word or words inside of rings is not an easy matter to determine for a beginner. In our description of how to correctly form script letters we said that the lower-case script letters should be about one-third the height of capitals, and also that there were cases where a variation from these mechanical forms would be made necessary by virtue of the shape or size of the article to be engraved. We have now arrived at a class of work where such variations are necessary. In engraving inside of a ring, and especially in a narrow oval ring, it will be found that the lower-case letters should be half the height of the capitals. This is because capitals engraved to nearly fill the ring crosswise would be almost invisible to the naked eye, and if we should reduce the lower-case letters to one-third the height, the lettering would be of no value without the aid of a glass and would be so small that it could be engraved only by the most skilled artist and would of necessity be nearer the bottom than the top of the ring, which would not look correct. We, therefore, find that it is necessary to engrave the lower-case letters half or, in some cases, more than half the height of the capitals, and that the angle of the letters should be about 60° , and that the letters should be so designed that the general effect will appear to be in the center of the ring, as shown at Fig. 94, where we show a section of an interior of a narrow oval ring with the words engraved

thereon, "Sadie to Rose." It will be seen that the capitals are about an equal distance from the top and bottom, possibly a little closer to the top, and that the lower-case letters are a little closer to the bottom than the top, and the difference between



Fig. 94

the distances to the top of the capital, to the top of the lower-case letters and to the top of the ring is such as to equalize and make the words appear to be in the center of the ring. There are no set rules by which we can go ahead in this work other than the way just described. We cannot commend drawing a line from the center of the ring and using the center line so drawn as a guide line to the lower-case letters, as the width of the ring would change such a rule. There are some widths where the method would apply, but it is not safe to advise a student to adopt it as a guide to follow in all classes of work, but if he will place the capitals, as above described, a little closer to the top than the bottom, he will find then that the lower-case letters are farther from the top than the bottom, and that the spaces thus varied will be sufficient to equalize one another and cause the letters to appear to be in the center of the ring. We have devoted more attention to this subject than at first thought seems necessary, but it is a class of work that is somewhat neglected, and yet even a jeweler in a small city has much of it to do. Old English, Roman or block letters are so seldom cut inside of rings that instruction in reference to them is here deemed inexpedient. It would, indeed, be little more than a waste of time and space.

CARE OF GRAVERS.

The manner in which some engravers, especially those who do both engraving and watch work, care for their gravers does not reflect much credit upon their care of tools. We often find gravers in jewelry stores that are thrown promiscuously in the drawers of a watchmaker's bench, one on top of another, the end of the gravers coming together, etc. After a graver has been put in order it should be kept in that condition, and if it is not convenient to lay it in a drawer in such a manner that it will not come in contact with any other graver, especially the point, the gravers can be placed on the top of the bench by making a little holder for them composed of two pieces of wood and a nail or a screw. Such a

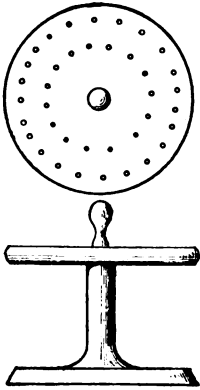


Fig. 95

holder is shown at Fig. 95. There can be two rows of holes drilled in the top of the holder, which revolves on a base, the two pieces being held together by means of a screw or nail, with as many holes in the top as is necessary. Usually, about fifteen or eighteen graters can be held in a fair-sized holder. The graters are stuck down into the top of the holder, which should be about $\frac{1}{2}$ " thick. When an engraver has finished using a tool it is very easy to put it back in its place, and then he will be sure it will be in the same condition as he left it when next he wants to use it. The graters can be marked by numbers or letters on the extreme edge of the top of the table if the engraver so desires. It would not, however, be necessary to do this, because the points of the grater would be visible and the tool wanted could be quickly selected.

TABLE FOR ENGRAVERS.

For those who do engraving, or those who do engraving and watch work, and have room enough for a table for each, a table as shown at Fig. 96 is the best shape for engraving. The graters can be laid along the top with the points toward the operator as here shown. Small shelves can be placed under the table at the right and left for oilstones, oil can, etc. A table of this description can be made very cheaply, and would well repay the watchmaker who has sufficient room, and for the engraver who does engraving only it is almost a necessity. A table of this description should be 3 feet long by $2\frac{1}{2}$ feet wide, and should be about 6" higher than an ordinary table. It should be made strong and secure, not necessarily of hard wood; however, the hard wood would be better. It can be made of soft wood, providing it is well braced.

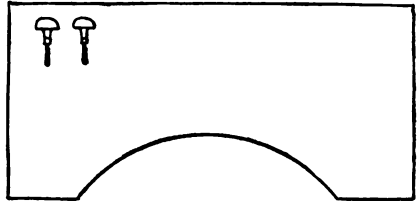


Fig. 96

CHAPTER XIV.

ENGRAVING INSCRIPTIONS IN SCRIPT.

In inscription work there is a greater opportunity for an engraver to show his ability than in any other class of engraving. He, however, may demonstrate his ability as an artist better in ornamental work than in any other class of work, but inscriptions, even though they be composed entirely of script letters, will require more ability and judgment on the part of the artist than any other class of work. There are certain rules that can be laid down for inscription work that will be here applied to script only, but the same principles can be applied to more ornamental work when we reach that stage. The great difficulty in engraving script inscriptions is not only in laying the work out in such a way as to have it begin and end correctly, and the right number of words on each line with the proper prominence given to each word, but the necessity of maintaining perfect harmony throughout the entire inscription, allowing no one line to appear heavier or closer to the preceding or following line than any other line or lines. Of course, some words would of necessity have to be made larger than others, but they should in such cases be given sufficient space to appear correctly. It is often found that where an engraver has engraved one line a little heavier than others, and has allowed the same space between the top of said line and the bottom of the preceding line, and the bottom of said line and the top of the following line, it will make that particular portion of the inscription appear heavier than the remainder. This would be especially noticeable if it were an inscription to be printed in black ink on white paper. Of course, it would not be as noticeable if cut on the metal to read from the metal. An engraver may be very clever in cutting with a tool, and be able to cut out several styles of letters, and yet he will find when he comes to bring all those styles together in one combination of words or sentences, and give due prominence to each, that there are elements of skill to be brought into action that have not or will not be necessary in any other class of work. In other words, a man may be able to engrave any piece of gold or silver in a jewelry store, including cipher monograms, with remarkable skill and

rapidity, but when he comes to bring several lines together in one combination of sentences, giving the proper prominence to each word, the task will be more difficult than any work that he has previously experienced, yet the difficulty can be overcome if the advice here laid down is followed strictly. The great trouble with most beginners is that they do not guard sufficiently against errors, or are not as accurate in the detail of their work as they should be. If the details of the work or the preliminaries are properly carried out, and with a mind properly concentrated on the work in hand, little difficulty will be experienced. As a rule, those who suffer most from difficulties in any class of work are those who are negligent in other duties, especially in technical work, not giving proper consideration and thought to the technicalities necessary to lay the foundation for the beginning of the work. This will be found true by those who have followed this work from the beginning in reference to putting a graver in order. They know at the present time how to put a graver in order as it should be, but if they had not had the technical instructions to start with it would be impossible for them to do as good work as they are or should now be doing. Great care should be exercised in inscription work to so write the inscription that the right word begins each line. If the engraver should not be sufficiently educated himself to know just how to form the inscription, it is an easy matter for him to have the customer or some other person advise him as to the correct manner of laying out the inscription. Great care should be exercised with reference to the beginning of words with capitals or not. Sometimes it is found advisable to begin other than proper nouns or beginning of sentences with capitals. For illustration, the words "father" and "mother" in an inscription very often appear better if the words begin with capitals. There are a great many instances where a common noun, beginning with a capital in an inscription, appears far better than it would if it were commenced with a small letter, but the engraver should be very cautious, because if he should make an error of this kind the article would probably not be accepted by the customer, but as previously stated, there are cases where variations from the grammatical correctness can be made and be far more pleasing to the customer. We have previously learned how to engrave script back hand, perpendicularly, on scrolls, and in fact, in almost all conceivable manners, and in inscription work we will find it advantageous to use more than the one angle. For illustra-

tion, the principal word in an inscription, the recipient's name, for instance, in case of a watch being presented, could be very nicely engraved scroll shape, and sometimes the words "presented to" can be put on a slight curve at the top, and the date ending the inscription can often be put on in an inverted oval or crescent shape to correspond with the top, which will also conform to the shape of the watch cap, if the inscription be engraved on a watch.

We have learned in our mechanical drawings how to find the center, erect perpendiculars, etc. In engraving an inscription on a watch case, the first thing to do is to find the center of the case, which, in this particular piece of work, is done thus: Draw a line from the hinge to a point opposite the pendant; then find the center of said line, upon which erect a perpendicular through the center; or, in other words, draw a line across the cap horizontally and one perpendicularly. Now, in case we have five or six lines to engrave on the watch case, they having previously been written out on a piece of paper with the proper words on each line, and the engraver knowing the size that he proposes to or ought to give to each line, he should then find the center of the inscription vertically on the piece of paper. If he finds this to be midway between any two lines, the bottom of one line, or even the middle of one line, he should then begin to space from the horizontal line upward, allowing the upper half of the inscription to be placed between said line and the top of the cap, and proceeding likewise with the lower portion. Most engravers, in doing inscription work, seem to labor under the impression that the inscription ought to fill the watch cap, it mattering not how large the cap or how small the inscription. This is an erroneous idea. The inscription should be made with the center of the inscription as above mentioned directly in the center of the watch cap, and should protrude above and below said line as far as is necessary to get the lines all on. If it should only be one line above, it should be placed close enough to the middle line to look well. If two or three lines the same rule should apply, but an inscription should never be put on to the case or cap unless there are a sufficient number of lines to do so by making them the proper size and as close together as they ought to be, according to the strict rules laid down for that class of work.

The scope for script letters is such that an entire book could be written on the subject of script engraving. There are hundreds and hundreds of pieces of gold and silver, all of which must be

treated to some extent in a different manner if they are all to be engraved in script, but the engraver who will studiously consider the suggestions here laid down, which are the result of practical experience, will have little trouble in mastering any work that he will have to do. He should bear in mind at all times that the letters should be made in a size and as far as possible in a shape not varying too much from the correct form to conform to the shape of the space allotted to the letter or letters.

ENGRAVING SCRIPT IN THE BOWL OF TEASPOONS.

Engraving script in the bowl of teaspoons is very little more difficult than engraving elsewhere. The only secret of this class of work is the style of graver used, and even expert engravers will not agree as to which is the best. The bayonet-shaped graver can be used, or a regular square graver heeled up on the under side sufficiently to raise the hand the proper height to enable one to get into the bowl of the teaspoon. The latter is the one preferred by the author. In engraving the names of cities in the bowl of teaspoons in script, it is a good plan to make the style of letter after the style of looped script, which we have described, and where the letter is of such a character that it has a loop at the lower right portion of it, said loop can curve down below the lower-case letters, and a few scrolls such as we have previously described cut around a word thus engraved in script, would enhance its beauty.

ENGRAVING SCRIPT ON IVORY, PEARL, ETC.

In engraving script on ivory and pearl a regular square graver can be used. However, in some cases the lozenge-shaped graver is advisable. Especially is this true if the work is to be very fine, as it is necessary to get the work a certain depth in order to hold the enamel. The method of cutting the script is practically the same. Of course, a graver cannot be thrown out exactly the same as it could in metal. A peculiar movement of the hand is necessary in order to turn and chip out the ivory, pearl or celluloid in order not to chip the ending of a letter.

However, the general turns are required and the little tricks, if we may use the term, to avoid any chipping, will be readily suggested by experience. The work should be cut deeper than the regular script, and it is not necessary that the lines be all exactly the same depth, but they should be as nearly so as is practicable.

The hair lines especially should be engraved of sufficient depth to insure the enamel remaining in, and it is advisable to use a lozenge-shaped graver for such hair lines. After the work has been carefully cut, it should be brushed off so as to remove any chips that may have fallen into the incisions therefrom, and then with a stick of heel ball, such as is used by shoemakers for polishing the heels of shoes, rub over the lines. This material being soft, as it is rubbed over the incisions will fill them up. It should be rubbed in vigorously. After a sufficient amount has been used to fill the incisions full, it can be rubbed with a burnish in order to press it in firmly and close up any of the little holes that may remain, after which it is wiped off with a piece of tissue paper or a soft rag. The effect of this heel ball is that the harder it is rubbed in the brighter it gets, and the more firmly it adheres to whatever it is on. Therefore, it makes a very good material for this purpose.

ENGRAVING SEALS IN SCRIPT.

Jewelers who sell letter seals and have to engrave them, find the engraving a difficult problem to contend with, as the profit is not sufficient to cut a monogram. Therefore, a large majority of small stores engrave seals in plain script letters, one letter on each seal. The method of engraving a seal is to first place the seal down on a piece of paper and draw a line along its outer edge with a pencil, allowing for the difference in size of the circle made by the point of the pencil protruding out slightly beyond the edge. Then the letter is sketched on to the paper inside of this circle, care being taken that it be placed in the center. This can be done by the use of the mechanical drawings previously described. In this case a perpendicular and horizontal line can be drawn, which gives us the center, and then a line above and below the horizontal line, which give us the top and bottom of the letter, and the center of the letter should be directly over the perpendicular line. The surface of the seal is covered with Chinese white or transfer wax, made especially for the purpose, and composed of Burgundy pitch one part, Canada balsam one part and white wax two parts. This is placed in a bottle with a large neck, and a tablespoonful of benzine put in on top, which will soften or dissolve the wax or amalgamate or mix with it in such a way as to soften it. Then a small quantity of the wax thus softened is taken from the bottle on the point of a knife or graver and placed on the seal and rubbed

over the surface, leaving a thin coating. The benzine will almost instantly evaporate and leave the wax on the surface as hard as it originally was, and at the same time it will be sufficiently sticky to hold the paper down after it has been once brushed. Having designed the letter in the center, as above described, it is cut out with a pair of scissors, care being taken to follow the line made by the pencil ; then mark on to the piece of paper which is the top and bottom of the letter. Then place it properly, according to the handle, on to the seal and press it down thoroughly with the thumb or index finger. Then hold it down very firmly with the thumb and index finger and burnish it very carefully, not necessarily very hard. Then with the point of a knife take hold on one side of the paper and peel it off and you will find a very distinct impression from the paper, the wax being sufficiently hard to tear the carbon made by the pencil from the paper. The reason this method is preferred to the Chinese white is that the paper will stick to the wax, while with the Chinese white it is liable to move during the operation of transferring.

CHAPTER XV.

OLD ENGLISH.

Old English is a style of lettering that dates back as far probably as any ornamental lettering. We are inclined to believe that it is the first of the ornamental class of letters. The beginner in engraving never feels satisfied with his ability until he has engraved old English letters. There is a peculiar fascination about this class of lettering that appeals to the novice, and it is safe to say that it is used by jewelers for ornamental engraving more extensively than any other class of so-called fancy or ornamental lettering. There are a great many styles of old English, and various ways of cutting these styles, and even the proportions of the letters are found to vary extensively. Our text books confine us to certain rules for the relative proportion of the lower-case and capitals, yet such rules must vary as the practical work would require, which variation must be made judiciously. When a beginner in engraving has first learned the correct formation of the letters (and this is especially true in old English) he must exercise due judgment in any modifications or variations from those rules to suit the practical work that he may have in hand, and this is more true in old English probably than any other class of lettering. It is possible to vary the heights and widths of letters, and the angles of the bars and the space between the letters. This can be done so as to produce a very desirable effect, and if the space allotted to the name be irregular, or large or small in size, the change necessitated by such irregularity or variations of sizes and space must be made with a great deal of care, as it is an easy matter to make a letter too large or too small and thereby spoil the effect of the work, though it be done with a great deal of skill otherwise. It is impossible to outline any mechanical or geometrical system by which old English letters can be laid out. It would be an easy matter to show the student personally how he could take advantage of some little points, but to give written advice as to a system which can be followed in all cases would be impossible. It is the custom of all beginners to draw the letters free hand, using a text book as a copy.

At Fig. 97 is a print from an engraved plate of old English, showing a very neat style, with the proportions of the lower-case, capitals and figures as they should be if an unlimited amount of space were given the letters. Now, in case the space is very small



Fig. 97

in which the letters are to be engraved, the lower-case letters should be at least two-thirds the height of the capitals, but we find that where old English is engraved by our most skilled engravers on card plates that the lower-case letters are not more than one-half the height of the capitals, and this proportion looks very neat. While on a card plate this proportion is correct, and would be correct on a great many pieces of silver, yet there are spaces on pieces of silver and jewelry that the engraver has to letter, where, if the lower-case letters were made only one-half the height of the capitals, they would be almost invisible, while the capitals would be easily read. In a space of this description the lower-case letters should be at least two-thirds the height of the capitals, and there are spaces, such as inside of rings, where the lower-case letters could be made even higher still than two-thirds the height of the capitals. We seldom, however, have occasion to engrave a ring in old English. Old English letters are composed largely of perpendicular and angular bars with hair lines making proper connections, there being very few loops in the letters; and while the student, as before intimated, has a great desire to do this class of work, owing to it being ornamental and thereby fascinating, he will agree with

the author as he advances in the art, that old English letters are easy to cut. They may, however, be difficult to design in the beginning, and may appeal to the beginner as difficult to cut, yet if he will stop to think for a moment and observe closely he will learn that old English is composed largely of angular and perpendicular bars, which, being cut in one style of cutting with a flat-bottom graver and one stroke, must be easier than script letters which are composed of curvatures and loops. We have passed through the most difficult class of lettering when we have accomplished script lettering, and those who have followed our instructions thus far, and have mastered the work according to instructions given, will find that old English is easy to master.

In designing old English letters the engraver should hold the work to be designed firmly and in front of him, not bearing to the right or to the left at all, as a slight variation in either direction will cause a tendency to make the letters lean backward or forward. Any letter that is engraved vertically is more difficult to make exactly right than those on an angle, either backward or forward. This is owing to the fact that a slight variation from vertical would be very noticeable, but if the beginner will hold the work directly in front of him, and as he advances to the right with the letters slide the paper or the article in hand on which he is designing to the left, so as to keep that particular letter which he is designing directly in front of him, the work will be found easy.

The spacing between old English letters is considered by many quite difficult. This is due to the fact that they do not begin the letter to the right of the one just finished accurately. The author has found that if the hair line protruding downward or upward from the main bar of a lower-case letter is designed first, setting it as close to the preceding similar line as is advisable, then making the particular bar according to the location of this hair line, allowing a slight change as the case may require, the work is very easy to do. The student should remember that the vertical lines should be sketched first, or one vertical line sketched first, then an angular bar on that particular vertical line. The next vertical bar, if the letter is of the class that has two vertical bars, can be engraved next, or the angular bar at the top or bottom of it as the operator prefers. The most valuable advice to be given to a beginner in reference to sketching old English, apart from keeping the work

directly in front of him, is to remember to make the perpendicular main bars of the letter first, and the angular bars next, and then add on the hair lines connecting, unless it be in a case where the little hair lines connecting or protruding from the bar of the letter are made first as a guide for spacing.

We have given instructions how to grind flat-face gravers for cutting block letters, etc., which class of gravers will be the class that we now have to use in old English lettering.

CHAPTER XVI.

METHOD OF CUTTING OLD ENGLISH.

At Fig. 98 we illustrate the proportion of old English in lower-case letters by giving the capital twice the space of the lower-case letter, a proportion that can be used in a great many places, but in

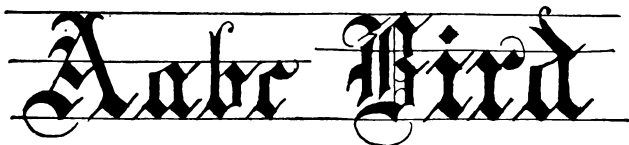


Fig. 98

Fig. 99

a case where the space is limited it is preferable to make the lower-case letter two-thirds the height of the capitals, as shown at Fig. 99.

It will not be necessary to show by illustration, or to give instructions how to cut all the different bars of the old English alphabet, as there are only a limited number of bars in the entire alphabet, many of them being exactly the same. Therefore, a mention of a few of the principal bars will suffice for the beginner to cut the entire alphabet.

The main bar of a great many of the capital letters, shown at Fig. 100, is cut by placing a flat-bottom graver in the position shown in the illustration, and as the graver is pushed forward on the angle there indicated, it is gradually turned over to the right. When at the point where it should go forward directly vertical, it is turned and held flat, both corners of the graver being in the metal an equal distance from the surface until the graver arrives at the point at the top of the bar where said bar commences to diminish in its width, at which point the graver is rolled over on its right corner and turned to the left, thereby throwing the graver out, leaving the bar pointed at the top and slightly curving to the right in a direction opposite to that at the start.

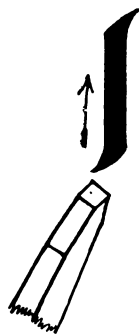


Fig. 100

At Fig. 101 we show the graver in position to cut the little bar protruding from the main bar of a number of the letters. It would be easier to make this little cut by beginning at the pointed end and cutting in, but that is not done in this case because if we begin at the end and cut in when the graver arrives at the point of the main bar of the letter where the connection is made, the tendency would be for the graver to slide into the incision of the main bar, thereby making an ugly cut in the center of the same. For this reason the graver is placed in position as shown at Fig. 101, and is pushed forward in the direction of the arrow, and as it is pushed forward it is gradually turned up on the left corner and around to the right from the operator, thereby diminishing the width of the cut and curving it so as to point downward.

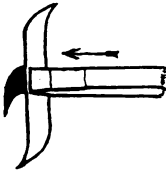


Fig. 101.

At Fig. 102 we illustrate a similar bar of a letter used in most of the capital letters either at the top or the bottom. This style of a cut is used at the bottom of the A, as shown at Fig. 98, and of the B, as shown at Fig. 99. This style of cutting that we are now considering is known as bright cutting, where the bars of a letter are cut with a flat-bottom graver, polished. To cut this bar of the letter the flat-face graver is placed in position, as shown at Fig. 102, and pushed forward in the direction of the arrow. When the graver arrives at the end of the line the left point of the graver should just come even with the surface of the metal, thereby making the ending of the bar exactly the same width as the graver.

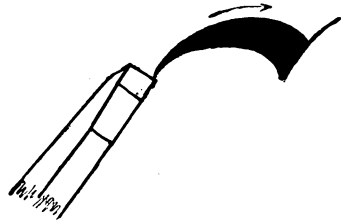


Fig. 102



Fig. 103

At Fig. 103 we illustrate the principle of lapping angular and vertical bars of the lower-case old English letters. It will be seen here that the angular bar of the letter is wider by about one-third than the vertical bar, which proportion makes a most artistic letter. It will be seen by this illustration that the left point of the graver cutting the angular bar upward should be placed directly in the center of the vertical bar and the cutting edge of the graver just crossing the upper left corner of the vertical bar, thereby

allowing the graver to protrude upward to the right from the vertical bar. This bar of the letter should be cut on an angle of 45° , and a graver should always be placed at this point, that is, with the left corner of the graver directly in the center of the vertical bar and with the cutting edge of the graver crossing the upper right corner of the vertical bar.

The angular bars of the old English letters should be on an angle of 45° , as illustrated at Fig. 104. We here show by a diagram what an angle of 45° is. The line *o* represents a horizontal line, and the angular line is 45° upward from same, as indicated by the direction of the arrow. It will, therefore, be seen that the angle of these bars is 45° , and is also the angle that looks best. The

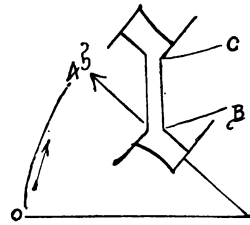


Fig. 104

length of the vertical portion of the lower-case letters, shown at Fig. 104, is twice the length of the angular portion. By this length we do not mean from the beginning of the bar to the ending of the bar, but the space occupied by the angular bar horizontally is one-half the space occupied by the vertical bar.

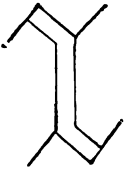


Fig. 105

To illustrate the difference between angular and vertical bars of the same and different widths, we illustrate at Fig. 105 a bar like the one shown at Fig. 104, with the angular bars the same width as the vertical

bars. This proves conclusively that the slight increase of width of the angular bars looks much better.

At Fig. 106 we show a similar portion of the lower-case letters with the vertical portion of the letter reduced from that shown at Fig. 104. The space here occupied by the vertical portion of the bar is the same as that occupied by the angular portion of the bar from the beginning to the ending of the vertical bar.



Fig. 106

These illustrations are given and suggestions made owing to the fact that there are in text books and in some classes of engraving that come to the attention of beginners, letters that vary in the points here mentioned. They are given to show to the student the advisability of using certain portions of letters and the disadvantage of using others. We cannot say just where the portions of letters shown at Fig. 106, should be used in preference to that at

Fig. 104, but cases will come to the attention of the student when he will find it to his advantage to use a long slim letter or a full letter.

At Fig. 107 we illustrate a cut used extensively in capital old English letters, which is known as the roll cut. The term roll cut is applied to it because the bar is made by beginning on the right

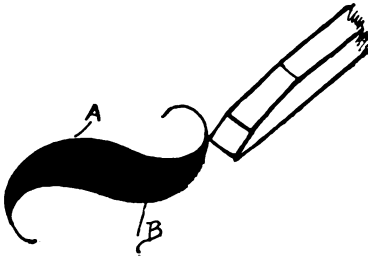


Fig. 107

corner of the flat-face graver, as shown at Fig. 107, the graver pushed forward and gradually turned down so as to increase the width of the incision until the graver arrives at the point indicated by *B*, at which point the graver should be flat and both corners held into the metal, thereby making

a flat incision. It is then pushed forward in this position until the point of the graver arrives at *A*, where it is gradually turned to the right and tipped up on the opposite corner from the one inserted at the other end of the cut. It is for this reason, as above stated, that the stroke is called a roll cut, as we begin on one corner of the graver and roll the graver over and throw it out on the opposite corner, thereby making the stroke shorter, as shown here in one stroke. The old style of making this cut was to make a straight bar with a flat-face graver and then a pointed cut into each end. This method necessitated three strokes, while in this case it can be done complete with one, and much more rapidly.

At Fig. 108 we illustrate the capital *C*, as here shown, to represent a bright-cut letter. In cutting a letter of this kind the graver is inserted at the extreme point of the main bar of the letter indicated by the letter *A*. As it is pushed forward and curved around sufficiently to make a proper curve, it is gradually turned over to the right from the operator, which would increase the width of the bar. It is thus curved and turned over until the point on the bar indicated by *B*

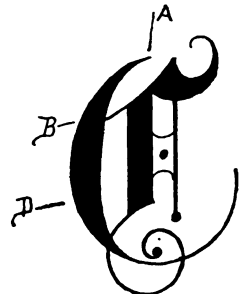


Fig. 108

is reached, at which point the graver is nearly flat, and it is held in such position until it is pushed forward to the letter *D*, at which point it is gradually tipped back toward the operator from the right

to the left, thereby decreasing the width of the incision until the same is reduced to a hair line at the base of the curve, and it is continued a hair line until the end. The main center bar of the letter is cut the same as shown in illustration at Fig. 100, with the exception that the beginning and ending of the letter is not as pointed, but how to increase and decrease the point of the bar at the top or bottom was illustrated and explained at Fig. 100.

The top of the C, it will be observed, is an inverted stroke, as shown at Fig. 102, and the method of cutting it is the same. These cuts, above described and illustrated, are the principal ones embodied in bright-cut old English letters, and one familiar with block letters and such cuts as we have here mentioned, will find little trouble in cutting any letter in the alphabet. One reason for beginners being discouraged when they first commence old English, is that the letters are so complicated in appearance that they fear they will not be able to cut them properly, while if they study the letter in detail, as previously intimated, they will find the letters are simple, being composed of vertical and angular bars connected with straight lines, which must of necessity be an easy letter to master. The beginner should not attempt to grasp the entire letter at one time, but simply study and work on one bar of the letter at one time, keeping in mind the other bars sufficiently to give the proper location of the one he is at work on, and he will soon become so familiar with the letters that he will be able to design them with rapidity.

Old English letters, bright cut, are used usually on Roman gold finish or cheap goods, such as aluminum or Britannia goods, satin finish or even sterling silver satin finish. The higher class of old English is usually fine-line English. The method of cutting what is known in card engraving as solid old English (an apt name for the style above described) is used extensively on watch caps for inscriptions. In cutting this class of letter the method is exactly the same as above described, except that the graver is left in the condition that it comes from the oilstone—not polished—thereby making a bar of a letter in such condition as to cause it to appear to be composed of a series of fine lines due to the ragged condition of the extreme cutting edge of the graver. This style of cutting old English is used on polished surfaces. The student should remember that he should never cut bright cut with a flat-face graver on a polished surface. On a deadened finish, such as satin finish, we cut bright cut, and on polished surfaces the effect of the

incisions should be a deadened or dull one, which is obtained by a series of fine lines cut with a square graver, or with the ragged cutting edge of a flat-face graver.

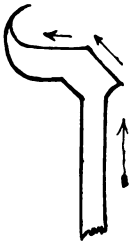


Fig. 109

At Fig. 109 we illustrate a bar of several of the old English capital letters, which is cut in the direction of the arrows. We do this because of the fact that a great many beginners cut this bar directly in the opposite direction, while the bar should be cut as indicated by the arrows illustrated at Fig. 109.

At Fig. 110 we illustrate the word "Roe" in old English. We have previously mentioned some facts in reference to the exact proportions of old English, but to show the proportions by means of a drawing the student is referred to Fig. 110, where he will observe that the letters are divided into eight equal spaces, the capital occupying eight and the lower-case letters four; the angular bars of the lower-case letters one space and the perpendicular bars two spaces. This gives to the student with mechanical accuracy the proportions of old English letters when the lower-case letters are to be one-half the height of the capitals. If it is desired to increase the height of the lower-case letters five spaces should be used, and if still higher, six. It is, however, preferred, where proper space is given, to make the lower-case letters either one-half or five-eighths the height of the capitals.



Fig. 110

One of the styles of cutting old English letters used by jewelers more extensively than any other on plated ware, is that of wriggled old English. The method of wriggling has been previously described by an illustration showing the position of the graver rocking to the right and the left, and the student should refer back to such description. In wriggling, a flat-face graver is used and held in the hand on a proper angle to keep the point of the graver in the metal so as to enable the engraver to rock the tool to the right and the left, and as the graver is thus rocked it is gradually turned in the hand, which causes the point of the graver that is out of the metal to slightly protrude out beyond the point that it left when it was raised from the metal, thereby taking a little forward movement as it is rocked backwards and forwards.

At Fig. 111 we illustrate one of the principal bars of the lower-case letters, showing how the vertical bars are wriggled coarse with one width of the graver and the angular bars wriggled finer with another, the latter bars being one-third wider than the vertical bars. The width of the wriggling is increased and diminished by the angle on which the graver is held. The higher up the graver is held and the less rocking to the right and the left the finer the wriggling will be. The finer the wriggling, if accurate, the more beautiful is the work, but in a case where the vertical bars of the work are wriggled coarse and the angular bars wriggled as fine as possible, the best effect is produced.

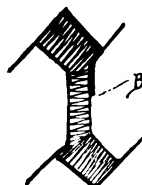


Fig. 111

Again, referring to Fig. 111, we illustrate from the top of the bar down to the point indicated by the letter *B*, how the wriggled old English letters can be shaded with a flat-face graver. The method of shading, allowing the angle of the incision to incline toward the bar of the letter, has been previously described, but attention is again called to it. These letters could be shaded even wider than here illustrated, but a width such as is shown, is advisable for the beginner. After one is skilled in the use of a flat-face graver for shading, a shade made one-third the width of the bar should be used, but it requires great deftness in the use of the tool to make a shade stroke this width.

Wriggling can be used in conjunction with bright-cut letters by making the vertical bar of the letters, both capitals and lower-case, bright cut, and having all angular and horizontal bars wriggled very fine. A letter cut in this way would produce a very beautiful effect, providing, however, that it is on an unpolished surface. If on a polished surface the bright-cut strokes should be cut with a graver unpolished, when the effect will be found to be equally as artistic. This method can be reversed by bright cutting the angular and horizontal bars and wriggling the vertical bars.



Fig. 112

At Fig. 112 we illustrate one of the bars of the old English letters wriggled. The method of wriggling such a bar is a very difficult thing for a writer to describe. It would be an easy matter to show a student how this class of work is done, but

if he were told that it was possible to take a flat-face graver and wriggle from an incision equal to the width of the graver itself and

gradually tapering down to a fine line he would not believe it, yet this is a very easy thing to do, and it is very useful to the engraver. Indeed, if it were not for our ability to make such a cut wiggled we would not be able to wriggle certain old English letters, and this would cause a great deal of additional work when engraving cheap articles by making it necessary to engrave shaded old English letters instead of wiggled letters, as it would be quite impossible for any but the most skilled engravers to cut with a flat-face graver a bar on to hard metal such as plated spoons and forks.

The method of cutting the bar, shown at Fig. 112, is to place the graver in position for regular wriggling, and as the graver is pushed forward and gradually rocked, it is pulled upward toward the operator. Now, just how much to pull the graver toward the operator and just how much to push it forward, is the secret of doing this work with accuracy. It will be plainly seen that in order to make the letter curve around with any degree of accuracy, the pressure forward and the pull toward the operator must be in harmony or in unison. If we push the graver forward with more power than we pull it toward the operator, the bar of the letter would be too long, while if we pulled it toward the operator with more power than we pushed it forward, it would be too short, and if the pressure forward and toward the operator should vary at different stages from the beginning to the end, we would have an irregular curve. It will, therefore, be readily seen that some thought and very careful practice is very necessary to do this work, remembering that the reduction of the width of the bar of the letter is caused by pulling the graver toward the operator, allowing its position forward to be exactly the same. The graver must not be turned or its position changed; it should be facing the same direction when it is thrown out at the bottom of the line as when it was first inserted in the metal.

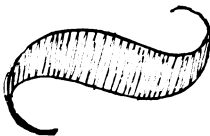


Fig. 113

At Fig. 113 we illustrate what has previously been described as the roll cut. In this case it will be observed that it is necessary to start the graver by wriggling a hair line, gradually increasing the same to the width of the graver and then diminishing again to a hair line. This to those not skilled in the art would seem to be a very difficult thing to do, yet it is not difficult. On the contrary, it is quite easy. When the graver is first inserted

at the upper right corner of this bar it is pulled toward the operator with more pressure than it is pushed forward, which makes it curve around on a sharp curve. After such curve is made the graver is pushed forward and not pulled toward the operator at all, until the point of the curve at the left is reached, at which point it is gradually again pulled toward the operator, thus reducing the bar to a hair line. The method of shading these bars of wriggled old English letters is the same as has been previously described for shading block letters, remembering that it is usually the custom to shade the bars of all letters on the lower right-hand side.

At Fig. 114 we illustrate the center bar of the capital S. This is a bar that bothers students to wriggle, it being difficult to start a hair line and end a hair line in this position. We therefore find it necessary to start at *A* and wriggle in the direction of the arrow, and as the graver is inserted it is pushed forward, and as the curve is reached it is gradually pushed away from the operator, it being necessary to push the graver away from the operator with more power than it is pushed forward, keeping in mind that the graver should not be turned around. The position of the graver is the same at all times in making these cuts. It is simply the pressure to the right or the left which reduces the width of the stroke. The right portion of this stroke is cut in the opposite direction as indicated by the arrow. The method of cutting is exactly the same as described for that portion at the left.

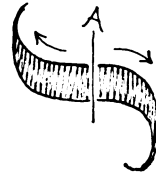


Fig. 114

At Fig. 115 we illustrate the capital O, which will be considered the most difficult letter of the old English alphabet to wriggle.

It is in this case practically impossible to begin at the top of the pointed portion of the old English O at the right and wriggle from that point down to the bottom, increasing and diminishing the width of the wriggled stroke. It cannot be done because the stroke does not curve sufficiently. It is, therefore, necessary to begin as shown here at that point where the bar of the letter is sufficiently wide to be made the same width from that point down to a corresponding point at the base of the letter, and at the extreme right the same rule prevails. The center of the bar of the letter is an

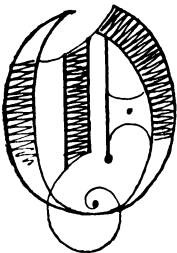


Fig. 115

the center of the bar of the letter is an

easy matter to wriggle. The vacant spaces left by the taper at the top and bottom of the letter are filled in if the letter is to be shaded by making the bright-cut stroke and then running a hair line along the upper edge of the same. If the lines are simply wriggled and not shaded then that portion of the letter not shaded is filled in with fine lines, making about three lines from the point of the letter at the top down to the wriggled bar and the same at the bottom.

This letter, as here shown, would convey the idea that the letter is outlined with the square graver and then filled in with a wriggled stroke. This is erroneous. The letter, as here illustrated, is to show a wriggled letter only with no lines cut on the outside. These lines here are used simply as a guide. Now, if it is desired, the letters could be shaded on the lower right hand side, as shown at Fig. 111, and then a fine hair line run around on the opposite side of the bar of the letter. This class of wriggled letters produces a very beautiful effect, but it should be borne in mind that on cheap work the old English letters are wriggled only, there being no cuts made before or after.

CHAPTER XVII.

SOME USES AND STYLES OF OLD ENGLISH.

Wriggled old English shaded on the lower right-hand side about one-third the width of the bars of the letters, or even less, is a very suitable style of English for coffin plate engraving. The student will find it very necessary in designing old English letters to first use the wax or Chinese white, reference to which has been previously made. The letters should be designed on quite accurately and then wriggled, after which the little hair lines connecting the different bars of the letters and protruding therefrom, should be made. This will complete the work and leave a wriggled letter only, and be the cheapest class of fancy old English work. If it is desired to shade the old English strokes, the wriggling is done first, then the shading, then the hair lines connecting the different bars of each letter. Old English cut in this way produces a very desirable effect and answers the purpose just as well as old English outlined and filled in with cross lines, which would require nearly double the time to execute. The letters can be shaded with the same graver that the bars of the letter are wriggled with. Old English letters are usually engraved perfectly vertical. They can, however, be engraved on an angle of about 15° to the right from vertical.

Some engravers engrave old English back hand about 10° from vertical, but the vertical or angle to the front is preferable. It is much easier to engrave old English letters on an angle about 15° from vertical than to engrave them vertical, because on the angle a very slight error would not be observed, while if they were vertical it would be. For this reason a great many beginners in the art of engraving tilt all their old English letters, and the author's advice would be to the novice to avoid doing so. It is not the easy things in life that are always the most desirable or most beneficial from a business standpoint. The most difficult work at first may prove to be the most profitable in the end, and it is the kind of work we would enjoy most after we had experienced the early struggles of fully mastering it. All students, therefore, should make their old

English letters vertical at first, until they are masters of old English in that position, after which any variation from it can be made with perfect ease.

WRIGGLED OLD ENGLISH SHADED.

In shading old English, as previously described, the beginner should be very cautious before he commences to design his letters, and before he decides on the width of graver to be used, to know whether he is to shade the wriggled strokes, in which case he must select a graver narrower than would be used if letters were to be wriggled only. This is necessary, as the shade stroke increases the width of the bars of the letters about one-third. A properly proportioned old English letter wriggled should not have the additional width by being shaded. Very often, after a letter is wriggled, the original intention being to leave it wriggled only, the engraver will decide to elaborate the letter by shading it. This should not be done for the reasons above stated, because if the letter was in the right proportion when wriggled, it is readily seen that it would be wrong if the shade stroke were added.

FINE LINE OLD ENGLISH

It is safe to say that fine line work, as applied to the art of engraving, is one of the most popular styles, because it is superior. We are inclined to believe that fine-line lettering originated in the beautiful effect observed on card plates and steel engravings by the letters being formed of a series of fine lines engraved very close together, this being done in this case to receive and hold the ink. This class of work is, of course, more expensive than bright cutting or wriggling, and requires more skill to execute. One of the common errors of beginners in this class of work is that they think it necessary in order that a line should be engraved very fine, to hold the graver so as to cut a V-shaped incision. This is not so. A fine-line letter should be engraved with very fine lines, it is true, and the lines should be left in V-shape, but it is not necessary to cut the lines in that way, and the effect is not obtained by cutting them V-shaped only.

At Fig. 116 we illustrate the correct method of cutting fine lines for jewelry and silver engraving. *A* represents the plate upon which the lines are engraved, and *B* the graver, which in actual operation is supposed to be pushed forward in the direction of the

arrow. It will be seen by the position of the graver that it is tilted apparently to the left, but if held in the engraver's hand it would be to the right, and by holding the graver in this position an incision is engraved, as shown at the end of the line, which proves that the angle on the left of the incision is less than the angle on the right. This is the form of the incision when used in connection with shaded letters. In cutting the fine lines, it matters not whether in lettering or monograms, the lines are always cut from the operator. In other words, the first line to be cut is the one nearest the operator, and as he cuts the lines he cuts from him. You will, therefore, see that the second stroke of this graver, if placed on the extreme edge of the incision and the surface of the plate, will split the line so as to leave the original stroke cut with the angles on the sides of the incision equal.

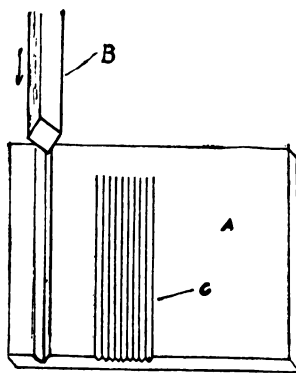


Fig. 116

Referring to the series of lines illustrated at *C*, on plate *A*, Fig. 116, it will be seen that the highest points of the lines are, when cut in this way, below the original surface of the plate as they should be. By so cutting the lines the work is not subjected to as much wear as it would be if they were cut just even with the surface. The method described here and illustrated by the position of the graver *B*, thoroughly explains how it is that we are able to lower the lines below the surface. Not only are we, by this method, enabled to lower the lines below the surface, but it will be found that a graver used in this position is much easier to operate, and also that while we are doing rather coarse work, the work left behind is fine. And it must be borne in mind that the last stroke of any bar should be engraved with the graver held in a position to cut a V-shaped incision, which is done by tilting the graver towards the operator from the position shown at *B*, so as to cut a stroke with the angles on each side of the incision equal. When cutting fine work on polished surfaces it will, of course, be necessary or advisable to use a graver in the condition that it comes from the oilstone, thereby producing a deadened surface, due to the roughness of the graver making apparently additional fine lines. The

effect of work when done in this way when the lines are cut with extreme accuracy, is most beautiful, and is by far superior to any other kind for richness and plainness.

It is the practice of some engravers, and it is preferred by some jewelers, to cut fine-line work on to a deadened finish by making the lines bright cut. It is difficult to say which is best. Of course, it is true that lines cut in this way are more effective than they would be if they were cut with a deadened finish. The author's experience has been, in observing the work of some of our most skilled artists, that they very seldom polish a graver for this work. It would not, however, be wrong to do so, and might in some cases be advisable. It is one of those cases in which the judgment of the engraver should be exercised. It is difficult to illustrate fine-line work as it should appear. As here shown the lines appear to be separated. This, from the illustration shown at Fig. 116, and the description given with reference thereto, will prove to the student that there is no surface showing between the two lines.

In Fig. 117 we have the main bar of the capital letters of the old English alphabet. It will be here seen that the first line starts down and does not come up as high as those that remain, and so on through the bars of the letter. Sometimes we find old English letters engraved where the operator has commenced all the lines and ended them all equal. This, of course, should not be. After the lines have been cut, as here described, a line should be cut along the edge of the lines at the top and bottom as here shown. In Fig. 118 that portion of the bar at *A* is cut by cutting the strokes out from the bar, all of which should be cut perfectly straight, excepting possibly at the extreme end, where a slight curve should be given. It would be better, however, to make no curve at all



Fig. 117

than to make too much of a one. Each line as it is cut upward is shorter, until the last line is reached, which line is short horizontally, but after starting from the main bar it turns and curves down and just touches the extreme end of the other lines, thus finishing the stroke. It is needless to say that the cut shown at Fig. 119 would be the most difficult in fine-line work. This, it will be remembered, is termed a roll cut. The correct way to cut this stroke would be to begin at



Fig. 118

one end with a very fine line and make the line increase as it is pushed forward, and as the opposite end is reached a gradual decrease in the width of the line should be made, thus allowing

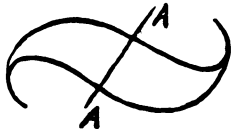


Fig. 119

each and every line to begin at the same point and end at the same point. This is quite an easy operation to describe, but very difficult to execute. It will be found difficult at the turning point at the beginning to cut the lines smooth and clean and not allow the second line to run into the first one and

so on. At the last curve also the natural tendency is to increase the width of the lines at the point where they should be diminished. Great care should be exercised in this matter.

The method above described is the correct one in which to cut this bar. However, we find that even our most expert engravers avail themselves of a variation from what might be described as the exact method as practice necessitates. The objection to cutting the line in the manner referred to, that is, by cutting the half of the stroke at the right of the line *AA* to the right and that at the left to the left, would be that the lines being turned in an opposite direction, an opposite effect of light would be produced, showing very plainly that the work had been done in this way. However, it will be found necessary in some cases to cut the lines in this manner. Of course, they can be cut with a higher degree of accuracy and much smoother around the curves, the only drawback being that above mentioned.

Now, the objection to the other method, as previously stated, would be the roughness and the tendency to run one line into another. In deciding which method to use the engraver should decide between the two evils, remembering that if he cannot so master the work as to cut the lines smoothly and accurately, the first method is the one he should use. Those bars of old English letters of the form of the one shown at Fig. 120, are very easy to cut and need no special mention. It should be borne in mind, however, that the lines should all begin at the same point and end exactly on the line designated for their termination. The width of the bar is increased and diminished as the case may be by the width of the lines.



Fig. 120

FINE LINE AND BRIGHT CUT OLD ENGLISH COMBINED

A very neat effect can be produced on polished surfaces by cutting the perpendicular bars fine line and the angular and horizontal bars with a flat-face graver unpolished, or vice versa. The old English fine-line method of cutting can also be combined with wriggled old English by cutting the perpendicular bars one style and the horizontal and angular bars another. By making these various changes it will be readily seen that a great variety of styles of old English can be easily made.

CUTTING OLD ENGLISH ON PEARL, IVORY, ETC.

Engravers are very often asked to engrave old English on pearl, ivory, celluloid, etc., where it is necessary to fill the same with enamel. The method of filling with enamel and the style of enamel to be used have been mentioned. The style of cutting old English for this purpose, it can be seen very readily, could not be the regular bright cut or solid old English style, as the graver cutting a flat, wide stroke would have a tendency to crumble or crack the edges of the incision. It is, therefore, necessary to outline the bars to be cut with a fine-line cut as deep as possible, and then to cut the surface between the lines thus outlined with a flat-face graver. This will obviate the danger above mentioned. Some find it convenient to engrave the old English much coarser with fine lines, not cutting the lines very close together and then digging it out with a flat-face graver. The former method would be more expensive. Of course, we could cut old English on any of the materials above mentioned by cutting it fine line according to the method described and illustrated at Fig. 116. This would, however, except in a very elaborate piece of work, be too expensive.

CHAPTER XVIII.

ROMAN LETTERS.

One of the most difficult styles of letters to engrave, either on card plate, steel die, silver or gold, is Roman letters. This style of letter becomes fashionable from time to time for calling cards, wedding announcements, invitations, etc. It is, therefore, the duty of a skilled engraver, and one who would do the work with credit to himself, to be master of this style of lettering, not only for the reason that it is sometimes the fashionable style, but also because it is a class of lettering that can be used in connection with general jewelry and silver engraving to the advantage of the operator and to the satisfaction of the owner of the article engraved.

The most useful place for Roman lettering in jewelry engraving is engraving inscriptions, in which case the words connecting lines, such as prepositions and conjunctions, should be cut in this style of letter, because if cut in script they would occupy too much space vertically, and if cut in Gothic or block letters would be too prominent for the space occupied, while the Roman letter occupies a small space and produces a delicate and neat appearance. These letters can be cut in all the various ways in which a flat-face graver can be used. In other words, they can be cut in all the different finishes that old English can be cut in. The first method we will mention will be the bright cut, and it must be borne in mind that when the words bright cut are mentioned we do not mean that the letters cut after this method cannot be cut in any other way than bright cut. Whenever we describe a method of bright cutting it must be borne in mind that such class of work applies to deadened finishes, and if the same class of work is desired on polished surfaces the method of cutting and the tool used are exactly the same except that in cutting on polished surfaces the graver is unpolished.

In Fig. 121 we have the upper portion of the letters R, P and complete B, the perpendicular bars or all bars of the letters, where they are the same from beginning to end, being cut with a flat-face graver. That portion of the bar shown at Fig. 121, indicated by the letter *A*, is cut either with a flat-face graver that cuts the

perpendicular strokes or it can be cut with a square graver. It is better, however, for the beginner to use the flat-face graver for this purpose, as he will then avoid cutting the stroke too wide or too narrow if he will permit the graver to cut the maximum width at the center of the curve indicated by the line *C*. In cutting this line the student will know, from what has been mentioned previously in reference to the use of the flat-face graver, that the lines should all be cut by curving around to the right, and that in starting the

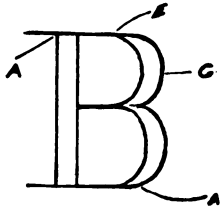


Fig. 121

line a hair line the left corner of the graver is used, and as it is pushed forward it is gradually thrown over to increase the width of the incision as is required, the diminishing being done by an opposite movement of the graver. When the graver is thrown out at the point indicated by the letter *E*, the flat-face graver can be exchanged for a square graver, and the line continued to the end with a square graver, or the flat-face graver can be used if the operator prefers.

Referring to Fig. 122 we have the same stroke with the bar swelled at the top, which is the style of these bars at the top and bottom. They can be left as shown at Fig. 121, in which case the

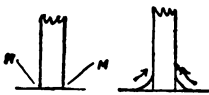


Fig. 121 A

work could be done quicker and easier. At Fig. 121A we illustrate the bar with and without the swell, the arrows showing the direction for



Fig. 122

cutting the swell cuts needed at *H H*. However, when it is required to swell the bars, as shown at Fig. 122, the little strokes indicated by the letters *C H* are cut with the square graver in the direction of the arrows, beginning the stroke on the lines directly back of them. The graver, in cutting this stroke, should be skillfully wielded so that the under side of the graver will not chip the top line. There is great danger of doing this and thereby widening the stroke in that particular place and producing a very ugly appearance. It will be seen that these little cuts, one only on each side, should curve very slightly. We sometimes see this class of work with the stroke swelling the bar simply chipped off on a straight line. If the engraver will observe the work in our text books or on our finished card plate, he will observe that these

lines are, as they should be, slightly curved. Another difficult part of this class of Roman letters is shown at Fig. 123. In cutting the letter S in bright cut, the main stroke is cut by making a roll cut with a flat-face graver. If fine line, it is cut in either of the two methods illustrated at Fig. 119, as previously described. The end of the bottom curve and the beginning of the top curve in the letter S are difficult to end satisfactorily. This same style of

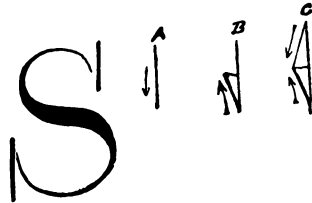


Fig. 123

ending is required in the initials C and G. At A, Fig. 123, we show a straight bar, which is cut vertically at the end of the top and bottom of the S, as shown in the same figure at the beginning and ending of the letter. After cutting this stroke downward or upward, it doesn't matter which, the graver is placed at the extreme lower point of the bar, shown at B, and cut up in the direction of the arrow, which connects with the main stroke of the letter. Then the graver is again placed at the extreme top point of the bar, as shown at C, and cut downward, thereby making a stroke in the shape shown at C, Fig. 123, which is the shape of the beginning and ending of this letter. In cutting these strokes fine line, the same method is adopted except that it is necessary to cut more than one line to make the proper swell.

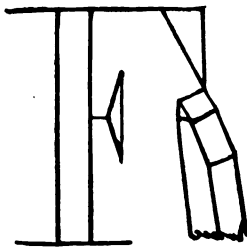


Fig. 124

In Fig. 124 we show the flat-face graver in position to cut the stroke at the top of the F, which is a similar stroke to the one in E, L, etc. In cutting this stroke the graver is pushed forward and gradually turned down from the operator, thereby increasing the width of the incision. The bottom of the E or L would be cut in the same way.

The middle stroke of an E or an F is cut in like manner, it being, of course, necessary to cut in both directions.

At Fig. 125 we illustrate the method of cutting this stroke in fine lines. The lines should all be cut down, each succeeding line being shorter; then a line cut down across



Fig. 125

the extreme tops of these lines, as shown at Fig. 126. These lines are sometimes cut by beginning all at the same point and gradually swelling out. This produces a star effect, which is entirely wrong. For this reason the engraver is especially advised to follow the methods shown at Figs. 125 and 126. It will not be necessary to describe the methods of wriggling Roman letters, as this class of letter is very seldom cut in any way other than mentioned. If, however, it is desired to cut



Fig. 126

them in any other way, sufficient knowledge of wriggling as applied

A	B	C	D	E	F	G
H	I	J	K	L	M	N
O	P	Q	R	S	T	U
V	W	X	Y	Z	&	
1	2	3	4	5	6	7
						8
						9
						0

Fig. 126 A

to old English is known to the student to be able to easily apply it to this class of letter. At Fig. 126A we illustrate the complete Roman alphabet and figures.

CHAPTER XIX.

ODD LETTERS.

At Fig. 127 we illustrate the word "Engrave" in the Japanese style of lettering. These letters can be cut to the best advantage with a flat-face graver, the size of which will depend upon the size of the letter. The graver should be as wide as the widest portion of the letter. It will be seen that the



Fig. 127

letters are simply composed of lines starting in a fine line and ending up heavy, gradually increasing from the hair line to the wide stroke. These and other letters to follow under this head are to be used in such places as the engraver will find that they can be used to best advantage. Of course, it must be acknowledged, and the student is advised that script letters and old English are the styles used mostly by engravers. The class of lettering we are considering under this head is seldom used, but a knowledge of the method of cutting it will be found very useful and in some cases valuable. This is especially true when applied to lettering souvenirs and bowls of teaspoons, where possibly this class of lettering is most used. We often find very cheap napkin rings, children's cups and inexpensive souvenirs engraved in such letters.



Fig. 128

At Fig. 128 we illustrate a style of letter which might properly be called a piccadilly letter. These letters are composed of several cuts, one of which is shown at *A*. It will be seen that the three widest portions or the wide extremity of the letters are illustrated at points indicated by the letter *C*, Fig. 128. This style of letter is very often used by engravers in ornamental work. At Fig. 129 we have a block letter H, with the left half perfectly plain and the right half with the little cut, after the style of those which compose the letter shown at Fig. 128, added to each of the corners of the letter. The arrow *B* and the cut directly under it illustrates the direction in

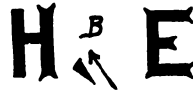


Fig. 129

which these cuts are made in the lower right-hand corner of a letter. The cuts are made by cutting in the extreme corners of all the letters, allowing the graver to increase the width of the incision as it advances, thus making the letters pointed, as shown in the right half of the letter H. To complete the letter H in this style would necessitate eight strokes. The E, same figure, would also necessitate eight strokes. The upper and lower left corners of the letter E require one cut only. This work can be reduced by making the cuts very short, allowing them to protrude beyond the corners of the letters only a very little, which would make the letters, if they were very small, appear to be very sharp and pointed, while if they are allowed to be drawn out farther, as shown in the letter H, an effect will be produced which would change the general appearance of the letter radically. This method of squaring up letters is sometimes used in cutting letters for printing in order to make the corners very sharp. A letter cut in this style is very useful for prominent lettering such as would be used on a dog collar or some coarse piece of work. It can be done on very fine work, but usually heavy lettering is not used on that class of work, unless it is outlined and filled in.

At Fig. 130 we illustrate what is known as a cap block letter. We have already told how to cut block letters and all the technical points in connection therewith. In this illustration we merely show that these letters can be changed in their general formation by adding a bar across the end of the bars, as shown here, and are then known as cap block letters. They can be cut in the various forms previously



Fig. 130

mentioned for cutting plain block letters, and can also be shaded as in plain block letters. A letter of this kind on a coffin plate can be engraved so as to appear very showy and neat by wiggling the vertical bars coarse with a narrow graver, and with a wider graver wiggling the horizontal and angular bars very fine. Then add the shade on the lower right side.

At Fig. 131 we illustrate the word "Harmoniums" in a block letter shaded at the top only. We illustrate this style of letter to show the student how a slight shade will change the position of the letter. As here seen the letters appear to be tipped forward at the top. The opposite effect would be produced if the shading was reversed and placed at the bottom. Letters to be cut in this style should be designed and outlined very accurately, and then cross

lined as here shown. The white portion of the letter at the top, it is unnecessary to say, is not cut at all. The dark showing between the letters and just above the top of the letter is made by cutting a series of fine lines. The ornamental work above the word, and at



Fig. 131

the end, is made with a square graver. In fact, the entire illustration is made by a series of fine lines, all of which is done with the one tool, the square graver. Such work as this is seldom practical, except in a very elaborate inscription on a fine piece of work, and is referred to here for the benefit of the student from an artistic standpoint, showing him the effect of shading.

At Fig. 132 we have the word "Homes" in a fancy block letter. Space would not permit, neither would it be advisable, to give many of the styles of fancy block letters that can be used. The engraver will learn from text books and from observation and study of fine specimens of engraving many fancy letters which are the result of years of experience of skilled artists.



Fig. 132

The letters at Fig. 132 will show the student that the general form of a block letter can be made very elaborate. It will be seen here, which is very noticeable in printing from type, that the spacing is not accurate. The space between the H and O and the O and M is noticeably more than the spacing between the other letters. This is necessary, as these letters were printed from type. If we were designing the word we would close up the space each side of the O. This is an advantage that the engraver has over the printer, and it is a point that should be considered very carefully by the engraver when designing. The letters shown at Fig. 132 are all cut with a square graver, with the exception possibly of the shading on the lower right side, which is done with a flat-face graver if cut bright cut. If cut on to a fine piece of polished metal this could be done with a series of fine lines.

At Fig. 133 we have the same class of ornamental letter, formed after the style of Gothic letters. This illustration is given to show the student that almost any kind of letter can be applied to the forms of the various alphabets.

Manufacturing

Fig. 133

At Fig. 134 we illustrate what is known as French script. This style of letter is nearly vertical, and is formed after the style of the round-hand script and is used quite extensively in printing. We show these letters here, not to encourage the student in the use of this style of script, but as an aid in cutting them. These letters

Meditation

Fig. 134

can all be cut with a square graver after the method of the regular script letters. It is very often the case that a beginner, when he has a piece of work to do that differs from the regular style with which he is familiar, uses the wrong graver and does not cut the letters properly. It is for the correction of such possible errors that we advise that the same should be cut with a square graver and after the method of the regular script.

At Fig. 135 we illustrate the word "Cruiser" in a style known as italics. This class of letters, which is familiar to all students in lettering and can be found in text books, is useful in engraving the prepositions and conjunctions and connecting letters in inscriptions, etc. Some engravers use this style of lettering quite extensively. It is seldom practicable, but it is sometimes necessary to either reproduce some work or execute it according to directions, in which case our judgment cannot be exercised. For the benefit of those who have this class of lettering to do we would say that the general method of cutting it is the same as for script except the capitals, which are practically the Roman letters, and a description of which has previously been given. These letters can be either bright cut or fine line, and can be ornamented by making little cuts each side of the letter.

Cruiser

Fig. 135

At Fig. 136 we illustrate the block letters shaded by a series of fine lines on the lower right side. These lines, it will be seen, do not come up to the main stroke, which can either be cut bright cut or fine line. By not permitting the hair lines to come up to the main bar we leave a prominent line of surface along the edge, the effect of which, as will be seen here, is such as to increase the prominence of the letter.



Fig. 136

At Fig. 137 we have just the reverse of Fig. 136. In Fig. 137 we have a block-shaded line, which can be easily made by cutting bright cut or fine line and the surface of the letters cross lined.



Fig. 137

Figs. 136 and 137 show the student how radically the cutting of letters can be changed in practically the same form.

At Fig. 138 we illustrate a bar of music. The object of presenting this to the student's consideration is that it is often required of an engraver to engrave a bar of music on to a watch case. We have had in the first part of this work sufficient instruction in reference to mechanical drawing to show us the correct method of procedure in laying out the horizontal bars for this work. The heavy bars should be cut



Fig. 138

with a flat-face graver, the fine horizontal bars with a square graver and the oblong dots on the notes are made with a round-face graver. The round-face graver can be used in such a way as to cut a round dot or an oblong one. In the latter case the graver should not be inserted as deeply in the metal. The dots between the notes are made with a round-face graver. The little crescent cuts and bars at the left of the notes are cut with a flat-face graver. It will be seen that the same are pointed at the beginning and end up wider on the horizontal line. This is done, as described for beginning the vertical bar of bright-cut old English, by beginning on one point of the graver and gradually turning it down until the full width of same is reached.

At Fig. 139 we illustrate some Hebrew letters. It is very often required of an engraver to engrave Greek and Hebrew letters on to various articles for presentation, and the engraver often being unfamiliar with such letters has to depend upon the rough drawing that may be submitted to him by the customer. All engravers

את השמים ואת
ובהו וחשך על-פני

Fig. 139

should supply themselves with text books, so that they may know the exact form of any style of letter. Type books are easily obtainable from printers, and alphabets of Greek and Hebrew letters can be found made in their exact form. If the engraver has such a book he can easily submit it to the customer and have him point out the letters which he wishes used. The cutting of these letters would be done, as here shown, with a flat-face graver or by cutting fine lines. If cut with a flat-face graver their form is such that instructions given for cutting similar bars in old English letters would suffice for cutting these.

CHAPTER XX.

ENGRAVING IN SPOONS AND ON BANGLES.

At Fig. 140 we illustrate a style of block letter used quite extensively for engraving or etching the bowls of teaspoons. These letters are simply the invention of the engraver, who makes the letters any style and form to suit his artistic eye and any space in which the word is to be engraved. Of course, the general form of the letter must follow a certain style, the style followed in this case being, as above stated, block or Gothic. A letter cut in this style could be either bright

Fig. 140

cut with a round-face graver or wriggled with a flat-face graver, and then bright cut along the lower right side, the appearance of which would be very effective if the bowl of the teaspoon were satin finish, gold plated. Fancy script letters with a very large capital designed in scroll shape, after the form of those mentioned in our description of script letters, are also used, but heavier letters are usually desired. The same class or style of lettering could also be used for etching. This one style of lettering is not given to the student for him to follow at all times. It is simply given to show a form of letter that *can* be used, and the student must know that many changes can be made, and should be made, as the case would require, he using regular block or Gothic letters as a general form.

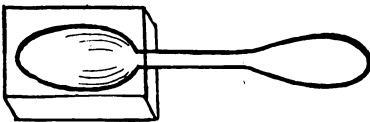


Fig. 141

To hold a spoon while engraving is not an easy matter for some engravers. We, therefore, illustrate at Fig. 141 a block of wood with a spoon thereon. A block of wood a

very little larger than the bowl of the spoon and about half an inch thick can be used, in the top of which is carved or burned a hole the form of the back of the teaspoon, so that when the spoon is placed into it the edge of the teaspoon bowl comes even with the surface of the block or a trifle above it. It is not necessary that

the hole in the top of the block should be very deep, neither is it necessary that it be the exact form of the bowl, because wax is put into it and then the bowl of the teaspoon is heated, which spreads the wax around in the hole and fills up any of the crevices that may be deeper than others and makes the foundation the exact form of the bowl. To engrave a bowl of a teaspoon it is placed on this block, the bowl being slightly heated and forced down on to the wax. After it is allowed to cool the bowl is covered with the transfer wax and then the words sketched in and cut through the wax, unless the work is very fine, in which case the design could be first sketched on, then scratched on very carefully, and then the wax rubbed off, leaving the graver only the smooth polished surface to work on. It is seldom, however, that a piece of work in the bowl of a teaspoon is so fine that this method is adopted. You can usually engrave through your wax, the coating of which should be very even and thin.

Etching the bowl of a teaspoon is done by painting around the letters with a fine camel's hair brush in the bowl of the spoon or on the bowl of the spoon as the case may be, with asphaltum varnish, one of the cheapest grades of varnish. After the letters have been painted on in some odd style, as has been described, a heavier brush is used for painting the back of the bowl and up on the handle as far as necessary to insure the acid not running on to it and along the edges of the spoon in an irregular way down nearly to the letters forming the word, thus leaving in the letter space the original surface of the spoon. It is now dipped into a bottle of one-fourth nitric acid and three-fourths water. This composition will eat the silver where it is not protected by the asphaltum varnish quite rapidly, and will leave a soft deadened finish. The time required for etching the proper depth is a difficult matter to decide. The best way to learn is by experience. If the point of the stylus is placed on the extreme edge of the letter and then allowed to drop off, one can tell if the letters are sufficiently deep. It is not necessary for the acid to eat very deep around the letters. Just little more than is necessary to deaden the finish of the article is all that is actually required. After the spoon has been subjected to the acid a sufficient time to allow it to eat in the proper depth, it is washed off in water to remove any acid, after which it is washed in turpentine. Only a small quantity of turpentine will be necessary if it is put in the bowl of the teaspoon, the latter being then rubbed

vigorously with the finger, after which the spoon bowl can be polished on the back and a very little in the bowl. The effect of work done in this way is very artistic, leaving the letters apparently embossed or raised above the surface of the background and thus very prominent, the prominence being increased by the fact that the surface of the letter and the background are of an entirely different color, one being highly polished and the other a deadened finish. Etching on steel can be done in the same way. It will be found, however, that acid diluted slightly more than for silver would be necessary.

BORDERS FOR BANGLES, ETC.

At Fig. 142 we illustrate a very common border for medals, bangles and bars for medals, etc. This border is cut by first engraving two lines parallel with each other, the distance apart to be gaged by the size of the border wanted. The wriggling in between the lines indicated by the initial *E* should be so done as to allow the outer edge of the flat-face graver to just touch the outside line and the left side of the graver to just come up to the inside line. The wriggling should be done very uniformly, leaving the spaces indicated by *A* and *B* exactly the same size. Lines *C* and *D* can be wriggled with the round-face graver after they have been cut with the square graver, if so desired. This method would elaborate the border. The spaces *A* and *B* are cut with a flat-face graver starting at the point of intersection of the wriggled stroke and the outside circle, and as the graver is pushed forward it is turned down so as

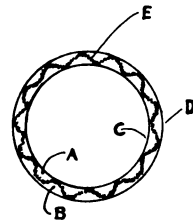


Fig. 142

to widen the incision until the widest part of the space is reached, and from that point to the end of the space the graver is gradually raised up, thus decreasing the width of the incision.

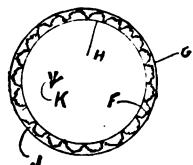


Fig. 143

At Fig. 143 we illustrate still another style of border, the general method of cutting it being the same. The lines *G* and *H* are first cut, as in the case of the border shown at

Fig. 142, and can either be left a heavy hair line or can be wriggled as the engraver prefers. The space *F* is cut out with a flat-face graver, as described for cutting out the spaces *A* and *B*,

in Fig. 142. The space *J* on the outside of the wriggling can be filled in by adding a different style of ornament made by three strokes of the square graver, as at *K*, Fig. 143, or it can be cut out with a square graver, beginning at the intersection of the wriggled stroke and the outside circle and cutting half of the space out one way, then throw the graver out and begin on the opposite side and cut the other half out. The wriggling in this case should be executed with great accuracy, as a poorly-wriggled border or poor wriggling in any place produces a very bad appearance, while very accurate wriggling is very artistic and produces the effect that is desired in case of a fancy piece of engraving, such as borders. The graver, in cutting this border, is started on the inside line, cutting the crescent-shaped cut; as the graver arrives at the inside circle on the return, after making the first wriggled crescent, it is turned, in order to start for the next trip, on the right corner of the graver. By doing this the graver is in the correct position to start for the next curve, and it will be seen that it will not be necessary to remove it from the metal at all until the entire wriggling is completed.

At Fig. 144 we illustrate what is known as the fan border. This is made by wriggling a half circle, shown at *L*, with a flat-face graver. We first cut two lines parallel to each other, either straight or in a circle as the case may require. Then starting the graver, as shown at *M*, Fig. 144, the graver is operated as it is in regular wriggling, with the exception that the left corner of the graver remains in the same place all the time. In other words, it acts as a pivot for the revolution of the remaining portion of the cutting edge of the graver. As the



Fig. 144

graver is wriggled the article is turned in the hand very uniformly, because if it is turned too rapidly or too slowly the wriggling will be irregular. Of course, the wriggling appears to be irregular in our illustration, as these illustrations are made with pen and ink, and it is quite impossible to reproduce the effect as accurate as it would be if engraved on the metal. This border is one of the most fancy borders that can be engraved cheaply. It requires some skill to do it to the best advantage, but a little practice will enable the student to engrave these fan cuts very accurately. The little space left between the tops of the fan cuts near the outside circle can be filled in by making a double cut, cutting from top of

each one towards the center of the space with a flat-face graver. This, however, is not necessary as the work looks quite complete as here shown.

At Fig. 145 we illustrate a style of border made by wriggling the same, as shown at Fig. 144, with the exception that the wriggled cuts are made all round instead of half round. The method of doing this work is to place the left point of the flat-face graver midway between the circles. Of course, it is to be understood that the graver is to be half the width of the parallel lines. When the graver is properly placed, as shown at *M*, Fig. 145, the left corner of the graver remains as a pivot, and the graver is rocked back and forward as the article is turned, which will produce a wriggled or wheel effect, as shown at *P*, Fig. 145. The space between the cuts thus made on the outside and inside can be filled in by making the chop cuts, or they can be left perfectly plain. Of course, it will be understood that these little wheel cuts will just touch one another. The position of the graver *N* shows how the spacing is measured. The right corner of the graver being placed at the left extremity of the last wheel cut, the position for the center of the next wheel is easily located. The graver is then started in that position and wriggled around, and the measuring for all other cuts is the same.

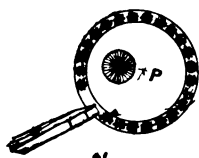


Fig. 145

It is often difficult for beginners to end up any of the borders above described properly. They will find that, as they near the completion of the border, they will lack a little of coming up to the first one started, or they will not have room for the last one. Of course, it is not practical to design such borders. They should be cut by eye only, and even when learning the student should practice the work without designs, in which case, of course, his inexperienced and untrained eye will lead him to the difficulties above mentioned, while the experienced engraver, as he nears the completion of the border, will observe by his accurate eye that he can place a certain number more of the ornaments by either closing up the space a very little or lengthening it out a very little. We do not mean that the student infer from this remark that an engraver should do his work so irregularly that such would be necessary. Yet, it not being practical to measure mechanically and figure the number that we can put in, we must arrange them artistically, and a

slight closing up or drawing out of the lines would not show, as the change necessary to make such a completion, either one way or the other, would be so very little that it would not be noticed.

At Fig. 146 we illustrate a style of border that is also used for filling in letters. This style of border is one used probably more than any other by engravers. In fact, very few engravers who have

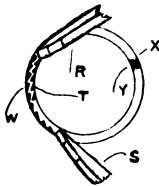


Fig. 146

any knowledge of engraving whatever in the ornamental line, are unacquainted with this style of border. The graver, as shown, is in position for cutting outside cuts, the flat-face graver being placed with the left corner on the outside line in position to make the cut. The graver is tipped up on the left corner and pushed forward in position, as here shown, to the maximum width of the incision, when it is thrown out, and then the next stroke back of it is made, remembering to cut toward the finished work all the time. By cutting in this way we mean to have the finished work always in front of the graver.

Some beginners will cut these strokes so as to leave the finished work back under the graver. This is wrong, as the length of the cut thus made is not visible, and it should be and will be if cut in the position shown at Fig. 146. After the cuts are made with the graver all the way around the circle, as shown at *S*, it is again placed in the metal in the position shown at *R*, and a little cut made from the inside circle. It will be seen that these cuts, *W* and *T*, are made by beginning the inside one where the outside one left off, thus leaving an irregular surface on the metal between the guide lines. These guide lines are, of course, cut with a square graver, and are heavy enough to be used as a guide for the flat-face graver in cutting the little cuts only. The point of the flat-face graver should very accurately follow the guide line or guide-line cut.

At *X* and *Y*, Fig. 146, we illustrate another method of cutting this border, which produces a similar effect, except that the entire surface is cut away. The method of cutting is exactly the same, with the exception that the cuts are made so wide that they come together, leaving no space between them.

In Fig 147 we show at *A* a very simple style of border for cheap work, with dots between the guide lines, which lines are cut with a square graver.

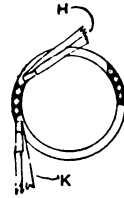


Fig. 147

These guide lines can be wriggled with a narrow flat-face graver, or with a round-face graver if desired. At *B*, same figure, we illustrate still another style of border by making five dots, one large in the center and four small ones situated above and below and on the right and left sides.

At *D* we illustrate the cut shown at Fig. 146, with the dot in between the two cuts. This style of border is very artistic when accurately executed. At *E*, same figure, we illustrate a style of border by cutting a chop cut in both directions between right and left, and adding a dot with a round-face graver between the extreme points of the cuts.

At Fig. 148 we illustrate one of the most difficult and beautiful borders that is cut ordinarily by the engraver. This style of border is known as the diamond border, as the cuts are made with the graver so as to leave the surface between the guide lines in the form of a diamond. The graver *K* is shown in position for making the first cut. After the cut is made with the graver it is reversed and placed in an opposite position and the stroke cut down over the first one. The graver in position for cutting this second stroke is shown at *H*. It will be seen that it is necessary to cut these cuts both ways, both on the outside and inside, which, of course, necessitates a large amount of work, but when the border is done, if the little diamonds are all exactly the same size and shape, the engraver will see that he has been well paid for his effort. As above stated, this border requires some skill, but it is used extensively, and the student should thoroughly master it.

**Fig. 148**

CHAPTER XXI.

SHADED OLD ENGLISH.

Shaded old English is probably not used by the engraver as much at the present time as it was formerly, or previous to the popular style of fine-line old English coming so prominently in vogue. We have described the method of shading block letters and of shading wriggled old English, which in cheap work has largely taken the place of regular shaded old English.

What is known as shaded old English is a method of cutting old English by outlining the main bars of the letter and filling in between said outlines ornamental cuts. The lower right side or upper right side of each bar of the letter is shaded. We will first start shading these lines with a flat-face graver bright cut.

At Fig. 149 we illustrate the graver *E* in position to cut the shade stroke *C*. It will be seen here that the right corner of the flat-face graver is used, and that by using said corner and inclining the graver in the position here shown, the incline of the incision when complete will be toward the bar of the letter which is the correct angle of the incision in a shaded letter, it matters not whether in monogram, fancy or plain letters. Some space was given to this subject of shading correctly in a former chapter, and those who have followed our instructions are thoroughly convinced of the necessity of shading in this way, and will make no errors in its execution.

The graver *F* is shown in position to cut the shade stroke *B*. The graver, as here shown, is in position to use the opposite point from the one shown at the bottom of the letter at *E*. This change is necessary in order to incline the incision of the bar of the letter. In cutting the shade stroke *A* in the middle bar of the letter, if cutting it from the top down, the left corner of the graver will be used. If cutting from the base upward the right corner of the graver will be used, thus inclining the incision toward the bottom. After the shading has been completed the hair lines on

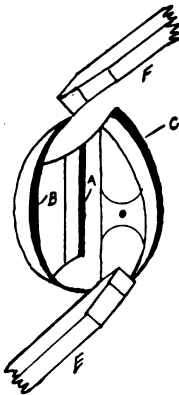


Fig. 149

left of same or all the hair lines of the letter are cut with a square graver, if a small letter. If a large letter the flat-face graver could be used for hair lines also, but there is no objection to using the square graver. In fact, it is preferable, as it is much more convenient for cutting such lines. After the hair lines are thus cut a hair line along the extreme edge of the surface of the bar just inside of the shade stroke, is cut with the square graver. This line trues up and sharpens up the shade stroke along the surface of the metal on the inside of the bar.

At Fig. 150 we illustrate different styles of filling for old English letters. The style, however, shown at *E* and *F*, are the most common and usually preferable, especially if plain old English letters are used. The other styles of fillings are so near what has been mentioned, in reference to borders, etc., that special mention of them is not necessary, except the scroll work shown at the bottom of the bar *F*. This work is quite elaborate and is made by a series of scrolls, the main scroll being slightly heavier than the others and cut down through the center, and then the other little curves inside and outside of the same are added.



Fig. 150

Just where shaded old English should be used is difficult to say. Probably the most usual place for the use of old English is in ordinary engraving, as in coffin plates. However, we have mentioned a method of shading wriggled old English for that purpose, which can be done much easier. It would hardly be practicable to engrave shaded old English on a watch cap. Just what style of shaded old English to use it is difficult to say. There are a number of text books giving the forms of old English letters, and the type book previously mentioned will show a number of different styles, many of which, of course, would not be practical in



Fig. 151

engraving. The plain style of old English letters, a complete alphabet of which we have illustrated for bright-cut old English, is preferred. This form of

letter can be cut by the shaded or outlined old English method as well as by any other. To give the student an idea of the various styles of shaded old English, we illustrate one style at Fig. 151.

These capitals are slightly ornamented and the shading is on the lower left side instead of being on the right side.

Statesmen

Fig. 152

At Fig. 152 we illustrate a style of letter formed after the old English style. This is shown merely to illustrate to the student how old English can be converted into practically a different style of letter.

At Fig. 153 we illustrate still another form of shading of old English showing the cross line finished. At Fig. 154 we illustrate still another style. This style of old English can be made by cutting the main bars of the letters with the flat-face graver or with fine lines, and the fine-line shades shown at the lower right of the letter should be

Meritorious

Fig. 153

Pictures

Fig. 154

cut with a square graver. The ornamental work around the capital P is also done with a square graver. It will be seen here that this work is very delicately and accurately executed, which is the form

that should be followed by the beginner.

At Fig. 155 we illustrate a style of cutting old English which is rather difficult and not much practiced in ordinary bright cutting.

The method of cutting this style of letter is to cut that portion of the letter between the outside lines with a narrow flat-face graver or to cut

Celebration

Fig. 155

three or four fine lines very close together, and then to cut a fine line for the outside lines an equal distance from the shade thus cut.

Treasurer

Fig. 156

It will be seen here that the bars of the letter where connecting are rounding instead of forming sharp corners as in most of the old English. This is a characteristic feature of the German text letter, which is shown at Fig. 156.

At 157 we illustrate a style of shading old English, the letters being drawn out so as to fill the space horizontally if the space is

long and the word short. At Fig. 158 is illustrated the opposite style, the letters being tall and slim. This style of letter repre-

Descriptive

Fig. 157

sents fine line or bright-cut work, while the more prominent letters can be used in shaded old English. Shaded old English capitals can be made very elaborate.

Government Bonds

Fig. 158

At Fig. 159 we illustrate the capital A, with ornamental work in and around the letter. This class of work is more elaborate than is usually required in engraving, yet it shows the student how the style of letter can be changed, and yet show that it was taken from some particular style of alphabet.



Fig. 159



Fig. 160

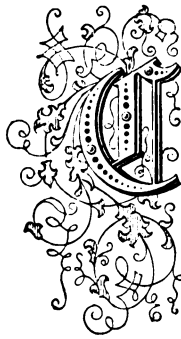


Fig. 161



Fig. 162

At Fig. 160 we show another ornamental letter, still more elaborately filled in and around. At Figs. 161 and 162 we show two other styles of old English letters, the idea of filling in and around the letter in this manner being to elaborate a single letter where but one is required, and to fill in the space above and below it.

At Figs. 163 and 164 we illustrate two other styles of letters, with more work on the letters and less around them.



Fig. 163

Fig. 164

These styles of letters will be good for the student to practice, as they will help to broaden his views as to the scope of the work. It would not be practical for us to illustrate all the various styles of alphabets or even the old English styles; nor to illustrate all the different styles of ornaments and ornamental work, nor would it be practical for an engraver to cut them. Ordinarily, for an elaborate letter, an old English letter with a little work around it, beautifully cut, is all that is required of the engraver.

ORNAMENTAL SCROLLS, ETC.

The engraver will be called upon to ornament the ends of words, inscriptions, etc., or above and below the letters, and to assist them in this class of work we illustrate at Fig. 165 a few

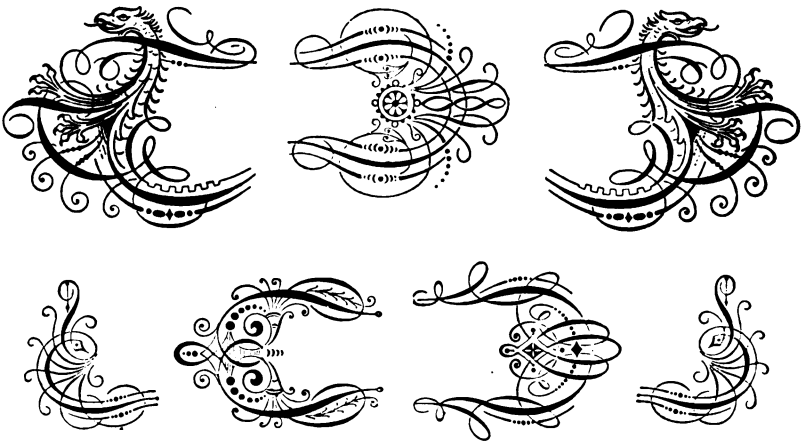


Fig. 165

ornamental cuts, which can be used for the purpose. The method of cutting such ornaments will be readily understood by those who followed our instructions. The square graver is used mostly for this class of work.

At Fig. 166 we show some styles of ornaments that can be used in and around letters, words, etc. These ornaments are very easy to cut, and will be found very useful in ornamentation.

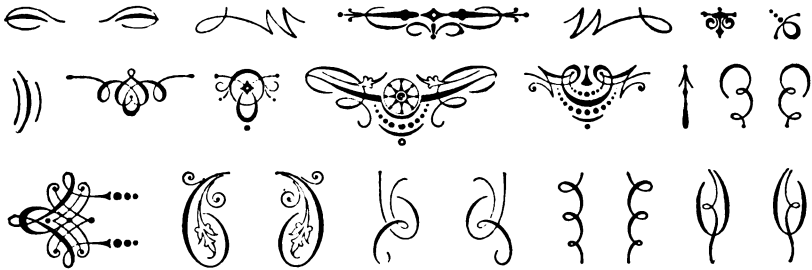


Fig. 166

At Fig. 167 we illustrate a plate of ornamental work to be used for inscriptions, in and around words, above and below and at

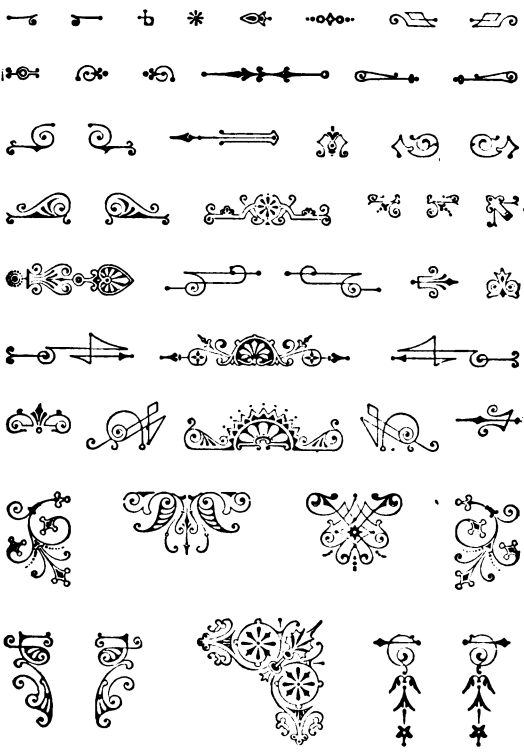


Fig. 167

the sides of fancy letters, such as above described. Ornaments of this kind, when properly placed and very delicately and accurately cut, add very much to the beauty of the work, but if they are cut irregularly and too heavy they only detract from it.

A FAVORITE STYLE OF SHADED OLD ENGLISH.

At Figs. 168 and 169 we illustrate a favorite style of shaded old English, suitable for calling cards, wedding invitations, etc., and the correct proportions of the

Mr. Frederic N. Gifford

Fig. 168

lower-case letters and the capitals. It will be noticed here that the lower-case letters are about one-half the height of the capitals, and that the style of letter varies somewhat from the form of the old English plate that we have illustrated complete. Yet the changes

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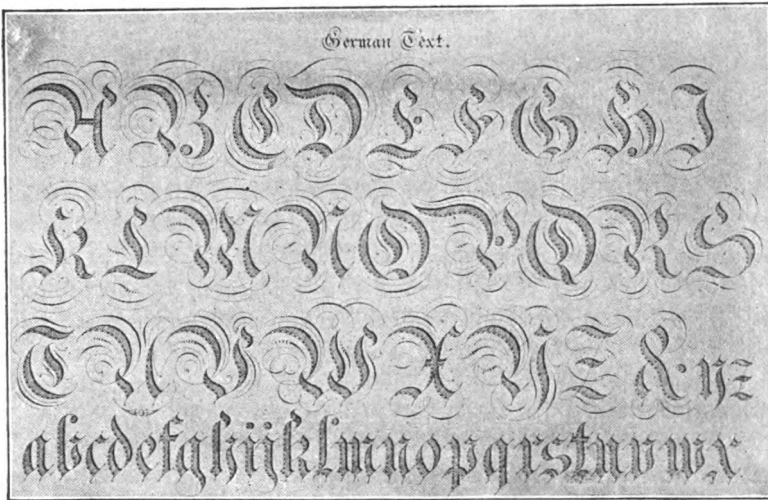
Fig. 169

are so slight and the relative proportions so little changed that the student would find little difficulty in executing this style and adapting to it the complete alphabet which we have illustrated for a general form of the letter. This style of old English can be shaded by bright cutting, or by cutting the shade strokes by making several fine lines very close together to take the place of the one bright-cut stroke. The lines filling in between the shade stroke and the hair lines should be cut horizontally, as in illustrations given.

This style and this angle are those mostly used, and the engraver should follow them in all of his practice, excepting in cases in which we commended the use of the style shown at Figs. 157 or 158. If it is necessary to put a long word in a short space, and this style of old English is to be used, the proportion of the letters could be slightly changed, the letters being made narrower or drawn out and made fuller, as shown at Fig. 157. These changes can be made as the case may require, but in making them great skill is necessary, and the student is cautioned to be very careful and accurate in making any change from the regular form of letter.

GERMAN TEXT.

At Fig. 170 we illustrate the German text alphabet shaded. It has been previously stated that the old English alphabet was probably an outgrowth of the German text. We are, therefore, inclined to believe that the German text is the one, if not the original ornamental alphabet. This is without doubt true in reference to the class of ornamental letters used by engravers. German

**Fig. 170**

text letters are not used as often as old English, due no doubt to the fact that they are so extremely ornamental and so radically different from the plain foundation of our block letters or any of the plainer styles. These letters are difficult to design and somewhat difficult to cut. They are mostly composed of scrolls and crescent cuts in their general form, there being no straight bars in the capitals, and the absence of the latter proves that the letters are difficult to cut, as well as design. The irregular shape of the letter is such that it would be quite difficult to arrange a mechanical drawing, around which or in which the letters could be designed with any degree of accuracy. In fact, German text is a style of letter that should be designed free-hand, and from an artistic standpoint, not mechanical. The method of shading German text is the same as has been described for shading old English. The

filling in between letters is also the same. However, in the regular shaded German text the plain angle hair line, as shown at Fig. 150, is used and preferred, but any of the fancy fillings could be used. Usually this alphabet has little cuts along the outside of the bar from the shaded stroke, which are made with a flat-face graver; or a square tool could be used, making what is known as little scallops or chop cuts, previously described. The German text can also be cut bright cut or fine line, the method being the same as has been illustrated and described for old English.

It is the custom of some engravers to use German text capitals and old English lower-case letters in combination. The use of German text can be applied in any case where old English could be used, as the letters are so similar. Many engravers think it unnecessary to learn to sketch these letters accurately, as they think old English will take the place of the German text in all cases. It is true that old English is the most popular, yet there are many people who will insist on having the Germant-text style, and one who is skilled with the graver and pencil in old English work, would find little difficulty in designing and engraving German text letters. It is not practical to engrave these letters on an angle tilting backward or forward. They should be engraved perfectly vertical.

CHAPTER XXII.

ENGRAVING SCRIPT INSCRIPTIONS.

Of all the different classes of work with which the engraver has to deal, that of engraving an inscription on a watch cap is, without doubt, the most difficult. This is due to the fact that the letters and words must be given prominence according to the significance of the word from the standpoint of the meaning of the inscription, or from a grammatical standpoint.

It is sometimes necessary to vary from the rules of grammar in reference to the prominence of different words, but more often the grammatical accuracy of the inscription can be carried out and due prominence given to the various lines according to the value of the word or words as used by the person ordering the inscription engraved. It is difficult to engrave an inscription on a polished watch case and make all the letters on exactly the same angle and all the lines exactly the same size and width of stroke, but this must be done in a script inscription.

In engraving an inscription in plain script the student must bear in mind the facts above mentioned in reference to inscription work. When the inscription is written out by the customer it should be rewritten by the engraver, he putting certain words on the lines as they would best fit and balance in the circle, and at the same time be grammatically accurate. One may be very skillful with the graver and yet be unable to cut an inscription and do the work with the accuracy necessary to produce a finished inscription. After the inscription has been rewritten and arranged with the words on the lines, as it is proposed to engrave it, allowing for the principal name or names to be engraved in a trifle larger letter, the next step is to find the center of the inscription. By this is meant that if there be eight lines or seven lines, the second line being larger than any of the others, being the principal name of the party or parties mentioned in the inscription, the first four lines would occupy more space than the four lines to follow, and such allowance for space must be given in spacing the inscription on a piece of paper. By spacing is meant drawing a circle with a compass and then a horizontal and vertical line through the same. Then write

the inscription in this space, enlarging the name or names to the extent called for, and thus giving them more space than is allotted to smaller lines. When such words as "of the," "by the," "is," "and," "of," "for," or any prepositions, conjunctions or connecting words occur, they should be engraved in smaller letters, and in spacing a much smaller line should be allowed for such words than for the principal words or names.

After the inscription has been written into the circle, as above described (and said circle can be as large as desired, the object of writing the inscription in the circle being to see how the inscription would appear from a grammatical standpoint), the engraver can form an idea of how it will appear when finished. He can also find the center of the words and whether or not the center of the cap will come through the center of the third line or, if there will be eight lines, between the fourth and fifth. This knowledge is obtained by writing the inscription in this manner, making the lines that should be large larger, and those that should be small smaller. Those that are to be all the same should be written accordingly.

After the center is thus obtained the watch cap is removed from the watch. This is not an easy matter to accomplish, as sometimes the rivet in the hinge is very tight. A pin punch, such as is used by jewelers, will avail, but it should be blunt or flat on the end, not pointed or sharp, as in the latter case it will spread the pin and have a tendency to rivet it over, while if it is flat and of the same size as the rivet it will drive the pin out without any trouble. Before the cap is removed it should be pricked with a stylus or any sharp instrument at the point directly over the pendant. Then when the case is removed a line is drawn from the center of the rivet to this point, which will be directly across the watch cap when placed in its position again.

The cap is now filled with cement in order to hold it firmly while engraving and to prevent the case from being dented if it is a thin one. Most watch cases in solid gold are so thin that it is advisable to cement them. A little oil should be placed around on the extreme edge of the inside of the cap to prevent the wax from sticking to it. One drop of oil when the cap is heated will be sufficient to oil the cap all the way around. After this is done the cap is laid down with the concave side up and the wax melted and run into the cap until the same is filled full of the heated wax. Now the brass or wood, to which it is to be cemented, should be held on

to the pad or block as the engraver prefers. The cement on such block is heated and the wax in the cap, which by this time is probably somewhat cooled, is warmed again slightly and the cap thus heated placed on the cement block. After the cap has cooled (if it is desired to rush the work, it can be plunged into cold water, which will cool it very quickly), it is dried thoroughly and covered with the transfer wax, mention of which has been previously made. It must be remembered that the wax is not to be rubbed on to the watch cap or any other article, but must be put on by patting with the finger, which has been pressed down on to the wax. A sufficient amount of wax will stick to the finger so pressed down to cover a watch cap. The patting gives it a deadened appearance. Then a line is drawn over the hinge to the point indicated by the dotted line made opposite the pendant before removing the cap, which is exactly horizontal and passes through the center of the cap. There is here an opportunity to bring into practical use those geometrical or mechanical problems mentioned in the early chapters of this work. We now desire to erect a perpendicular line on to this horizontal line; in other words, to draw a vertical line through the watch cap. This can be done by erecting the perpendicular on a horizontal and dropping the same below the line. Instructions as to the exact method of doing this have already been given.

Having thus made the horizontal and perpendicular lines we now know where the center of the watch cap is, and having previously found the center of the inscription by the method described, we now dot, by the use of the stylus, little marks on the vertical line above the center of the horizontal line, each dot indicating the space allotted to each line. We thus find the location of the principal word in the inscription. For instance, if the inscription is a presentation to a certain person, that person's name is thus found, and having found the location of it by this method we then draw a line for a base guide line of said words parallel with the horizontal line across the watch cap. It is to be understood that we are now considering only inscriptions such as are to be engraved in plain script, and the lines here mentioned are to be all perfectly straight.

Having found the location of the principal name of the inscription, the all-important point now is to decide on the size of the letters. The size is decided in the mind of the operator at the moment when he places the rule to draw the second guide line

for the lower-case letters. This is the time that all his skill and judgment should be brought into account, as, if the line is made too large or too small, the inscription is spoiled, and these first words, the name of the recipient, constitute the nucleus for all the other lines, as it is necessary to engrave such words in a size appropriate for the size of the watch cap and befitting the importance of the name. Then all the other lines are engraved according to the size of this one, but none can be engraved larger. Some may be the same size, but most should be smaller.

Having decided upon the size of the letters and having drawn the letters, the spacing for the first, middle and last name is the next consideration. Some engravers space by letter, some by words. If the words are short it is safe to space by words. By spacing we mean making a little dot on the line from the extreme left of the case to the end of the first word. Then, allowing for a space between the first and second words, make another dot to the extreme right of the middle name. If, however, the beginner finds it necessary it is not objectionable to space by letter, allowing, of course, more space for the capital letter and then allowing space for the letters in the name, according to the size of each. For illustration, if we come to the letter I we allow less space than we would for an M, and so on. In other words, we allow a space according to the width of the letter to be placed therein. Having spaced the lines by either of the methods above described, we then hold the watch cap at a distance of fourteen or fifteen inches in front of the eyes and study the appearance of it before it is cut. By this the reader must not infer that it is necessary for a skilled engraver to deal with such preliminaries; we are now speaking especially for the benefit of the beginner.

Holding the watch cap as mentioned we study the size of the letters and their appearance as sketched, to note if they are too large or too small for the watch cap. If they are too small they must be obliterated by patting the index finger over the words and doing them over again, and if any change is necessary great care should be exercised to avoid crowding of the letters or allowing more than the proper space for letters or words. The distance allowed between the letters, that is, lower-case letters, at the beginning of the line, should be maintained throughout the line. In the work of students it is sometimes observable that words are begun by drawing the letters out, and as the student nears the end of the

line the letters are crowded, which is found necessary in order to get all the letters on the line. Such spacing, of course, must be very carefully avoided. We must maintain the same spacing and same width of letter both in the width of the letter from the right bar to the left bar of the same, and the widths of the bars or the shade strokes. If the beginning of the line is cut heavy each and every letter of the line should be cut exactly the same. For instance, if the student will study the lines of a finely-cut monogram or letter by actual measurement, he will find there is not a variation of a thousandth part of an inch in the width of the shade strokes. Especially is this true of an inscription. There is probably more skill required in engraving an inscription on a watch cap when the inscription is composed of eight or ten lines than in almost any other class of engraving that is done in a jewelry store. The difficulty in this case arises from a cause similar to that in the case of a wedding announcement or invitation, as all the lines must be exactly the same, according to the importance of the words.

If the words appear to the engraver to be accurate when held in front of his eyes as above mentioned, he then commences at the left to engrave a line. Among the students who have had years of experience as practical engravers there are few who would begin to cut a word at the right and work to the left instead of beginning at the left and working to the right. The reason given by them for this is that they do so in order to avoid rubbing out the line. Of course, this would not apply to a watch cap, as the fingers and thumb work around the edge of the case and seldom pass over the horizontal line, but if it was on a larger piece the argument in favor of cutting from the left to the right would not hold, as it matters not whether you cut from the left to the right or right to the left, the same amount of crossing of the horizontal line is necessary in doing the work.

Some labor under the impression that in cutting shade strokes they turn to the left and rub out the design. If anyone holding this opinion will carefully observe his finger and thumb he will learn that he does not curve his hand around on an angle of more than 50° to the right. Therefore, we find that there is no more danger of erasing a sketch than there is in cutting from the left to the right, and as it is more natural to work forward than backward, the student is advised by all means to begin at the left of the line and cut the capital letter first complete. Then cut all the down strokes

in the first word. Then reverse the article and cut up all the shade strokes that should be cut up. Cutting the shade strokes up, going backwards, is done by beginning at the right and cutting back to the left. When we arrive at the capital letter again we go over the word the third and last time, and cut up all the hair lines and all the cross lines, such as the top of an R. Then the second word and third and so on are engraved similarly throughout the line. A great many engravers prefer, in work of this kind, to cut all the down strokes first throughout the line, then all the up strokes and then the hair lines, but it is perhaps more advisable to cut one word only at a time when such words begin with capitals, such as the names of persons or any proper noun. Where a line begins with a lower-case letter and is composed of lower-case letters throughout, the spacing being very accurate, all the shade strokes throughout the line should be cut first, but this method is scarcely orthodox from a practical standpoint when we find capitals on the line.

Opinions may vary as to the proper procedure, but there are certain rudimentary principles which apply equally to differing methods. Now, in the case of cutting all the down strokes in a line where it is composed of lower-case letters only, it is advisable to do as above stated if the spacing is very accurate, as in this way the work can be accomplished with much more rapidity, because it is not necessary to reverse the plate so often. This, however, amounts to but little when working on the modern engraving blocks.

After the principal name has been designed and engraved, then the words "presented to," or "awarded to," or any forms preceding the principal name, should be engraved in a size smaller, and otherwise harmonizing with the first name engraved. Then the second line should be engraved, and if there is a preposition or conjunction, or other connecting word between the third and second lines they should be engraved after the third line has been cut. The spacing between the second and third lines should be a very little more than is necessary, as it can be filled in by the prepositions or conjunctions, such words being engraved so small that they can often fit in well over the smaller lower-case letters. After these lines are engraved in this manner the lines following are engraved in rotation. The engraver should be very particular to engrave the last line, which is usually a date, in exactly the same size letter as the words "presented to," or whatever the first word of the inscription may be.

If an inscription is of the style where an article is presented to a person in honor of any event or for heroic performance of duty, the sentence in reference to such incident should be engraved exactly the same size and style of letter.

The reader will remember that we have previously mentioned the condition of the graver for engraving on polished metals, which is the condition it is in as it leaves the oilstone. Now, this advice will not always apply, as some engravers use an oilstone that is altogether too coarse. The advice given will apply only to those using a fine Arkansas stone, because if a coarse stone is used the condition of the cutting edge of the graver will be such that it will be almost impossible to hold it into a piece of highly-polished gold, and it will be so grooved on the front that the extreme point of the graver will break off very quickly. A fine Arkansas stone will leave the cutting edge of the graver in condition to cut a line giving an appearance of a deadened finish, as described in the early portion of this work. This is the condition of the graver required for the work mentioned.

After the inscription has been designed and engraved the wax should be washed off with a brush and soap and a very little ammonia, after which it should be heated by holding it with the engraved side just above the alcohol lamp. After it is heated a very little the screw driver, or even a graver, may be placed on the edge of the cap; this can be pressed down and will immediately drop off from the block, leaving thereon nearly all the wax. The little wax that does adhere to the watch cap can be removed by boiling it in wood alcohol, which is not expensive, or in water, to which latter should be added borax, in the proportion of a teaspoonful of borax to a glass of water. But even twice this amount of borax would do no harm. The advantage of using this proportion is that there is no danger of it catching fire. After the wax has boiled off from the cap in this manner it is thoroughly washed and dried with a towel, after which it is ready to be polished on the lathe. In polishing, the engraver who finds it necessary to wait on customers in a store and desires to keep his hands as free as possible from the bad effects of a polishing lathe, should hold the cap by its extreme edge with a piece of tissue paper, and should pick up the buff with a piece of tissue paper, placing it on the lathe without allowing his fingers to come in contact with the rouge buff. The polishing should be done very carefully and very accurately, the

lathe running at as high a speed as is possible, the pressure on the watch cap being uniform. The cap should not be held in any one position for any period. It should be constantly changed. The ordinary felt buff should be used first, after which the very fine cotton buff should be used. After the cap has been thus polished, if there is any rouge in the engraving, as there often is, it should be washed by pouring several drops of ammonia on to a brush, which has been previously drawn across a bar of soap; then a little water may be added to the brush and the surface of the cap washed by giving a circular motion. The ammonia will cut the rouge very quickly, and the surface of the cap is thus washed off very easily. It is now thoroughly rinsed off in clean water, and then a little alcohol should be poured on to the surface, or it should be dropped into a dish of alcohol and afterwards thrown into boxwood sawdust and dried. After removing it from the sawdust the little dust that adheres to it should be brushed off with a very soft brush or very clean chamois skin. The watch cap is now placed on the case and should be held in the hands with a piece of tissue paper to avoid the finger marks.

In engraving inscriptions on gold filled watch cases it is not necessary to cement it if one has an engraving block. The engraving block can be used by setting it with pins on the inside of the cap. The pins should never be placed on the outside of the cap. The method first mentioned should be followed, as it holds the cap very firmly without any danger of injuring it, as the pins are grooved in such a way that they will exactly fit the inside of a watch cap.

The exact diameter of an inscription is a matter that has attracted the attention of a great many beginners in engraving. Some labor under the impression that in engraving a monogram on a watch cap, for example, the monogram should be made as large as can be placed on the case. The best rule to follow is that the inscription on a cap or monogram on a watch case should protrude out to the edge of the case where the latter begins to bevel downwards. Of course, some cases decline from the very center, but we refer in this instance to where the case begins to bevel over to form the outer edge. If this rule is followed, the engraver will rarely make any mistake as to the size of the inscription or the size of the monogram. Of course, some customers might prefer to have a very small monogram or inscription right in the center of the case.

CHAPTER XXIII.

INSCRIPTIONS IN DIFFERENT STYLES OF LETTERS

At Fig. 171 we illustrate an inscription engraved in three different styles of letters, which styles are used mostly in inscription work. The circle here shown represents a watch cap. The space indicated by the lines *C C* inside the circle and yet outside the line *B B*, circumscribing the inscription, is left perfectly plain. The idea entertained by many students that in inscription work they should fill the circle of the watch cap is erroneous, as we have already shown in discussing this class of work. Inscriptions should be worked from the center up and down, occupying only such space as the distance apart of the lines would necessitate, and leaving an equal amount of space above the first line and below the last line of the inscription.

The inscription shown at Fig. 171 has three names, which occupy a space much longer than any of the other lines, and for this reason we have engraved it in scroll shape, showing the student that a greater number of words can be placed in this way than in a straight line, and we have, besides, a desirable place for the word "by." It is not advisable to place two lines that are scroll or oval-shaped near each other. A line engraved horizontally should be placed between any two curved lines. Of course, this could not apply in the case of the words "presented to" and "Ethelind Fowler Rees," as it is necessary or rather desirable to engrave the words "presented to" oval, so as to make them conform to the shape of the watch cap as nearly as possible. We sometimes see several lines throughout an inscription engraved in scrolls, ovals and various fancy forms. This plan should not be followed, as it is not good form. A straight line should be made between curved lines to give prominence to them and show a contrast. If several curved lines are close together the appearance will be what we might term "mixed up," in other words, very irregular.

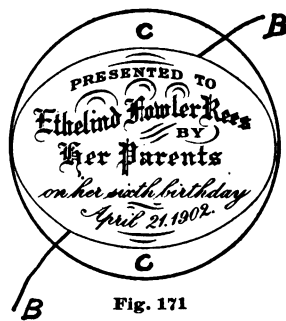


Fig. 171

In engraving the inscription, shown at Fig. 171, it is not intended that the line *BB* should be engraved. It is here given simply to circumscribe the inscription so as to show the amount of space left above and below. Now, if there were less lines than are given here the inscription would not occupy as much space vertically, while if there were one or two additional lines it would occupy that much more space. The relative proportion of letters in inscriptions, especially when engraved in script, Roman and old English, is one of the necessary points to be considered by the student, as a beautifully engraved inscription can be spoiled in its general appearance by making the letters either too large or too small. In the case of the inscription here given the proportions of the letters are as they should be. It will be observed (and it is a good rule for the student to follow) that in engraving the words "presented to," preceding a line of old English, where the latter is the prominent name of the inscription, the words "presented to" should be engraved not any larger than the small lower-case old English letters, and it is sometimes advisable to make them a little smaller. The same rule will apply to the word "by," or any smaller words connecting the principal letters. Roman letters can be engraved with fine lines and, therefore, the size can be made as desired by the engraver to fit his inscription. When the giver's name follows the recipient's name in the inscription, the former should be engraved no larger than the latter, but could be engraved the same size. As is here shown it looks well when engraved the same size; nor would it matter if it was a little smaller, but it would be in bad form to make it any larger.

In reference to the size of script, as compared to old English, it cannot be definitely stated just what would be right, as the proportions of old English letters vary to some extent, engravers very often engraving some bars of the letters heavier than others. The proportions here given are about correct, and the student should gage the proportions from the lesson here given. The idea possessed by many of our beginners in engraving that in forming the inscription they should make the lines as ornamental and irregular as possible, is erroneous. Lines of words in inscriptions engraved straight are usually acceptable, and very slight curves in some of the principal lines are all that should be considered in a well-formed inscription. Inscriptions must be legible and at the same time artistic, and the engraver should engrave them with this

fact in view. In the case of the words "presented to," in the inscription under consideration, it will be observed that the arc on which these letters are formed is about the same as the arc of the line "April 21, 1902." The curve, however, of the latter is a little sharp, which is necessary, as the line "presented to" occupies a greater space and is a longer line, which necessitates the arc being greater than that of the date. If the line occupied by the date were in the same style and size of letter and of the same length in relation to the line preceding it, as the words "presented to" in relation to the line following them, then both these lines should be on the same arc.

The student should be very cautious in reference to these little points in inscriptions, as if the proper curve is not given to the beginning and ending of a line the inscription will appear irregular. We sometimes see one that appears flat on top and rounding at the base. Of course, this should not be. As indicated by the line *B B*, in the case of the inscription in question, we find that the lines are so formed that they conform to a circle above and below on the same arc. This is as any well-formed inscription should be, provided there is no curve at all to the first and last lines. Sometimes inscriptions are engraved by making all the lines exactly horizontal, which is not bad form. However, if slight curves can be given, after the form of the lines here shown, the artistic features of the inscription are enhanced and the legibility is not lessened.

Great care should be exercised in making the little curves in and around the lines in an inscription. They should be very delicate and very accurate. It is not necessary that they should be extremely ornamental. We often find inscriptions in which the ornamentation and fancy curves in and around the lines are so elaborate that they detract from the lines of the letters. Such inscriptions are not as legible as they would be if such embellishments were absent. It should be remembered by all students in the art that the ornaments in and around letters should be so engraved as to appear in the background, and should never be made sufficiently prominent to detract attention from the lines or letters.

Inscription work is one of the most difficult kinds that the engraver has to do, owing chiefly to the fact that in the case of the making of the three most prominent styles of letters which we illustrated at Fig. 171, it is very difficult to engrave the letters in different styles so as to be in the correct size in relation to the

preceding or following letters, in order to maintain harmony throughout the entire inscription. It would be an easy matter to either make one line a little too heavy or a little too small, but to get them all, when in different styles of letters, the right width, height and distance apart, is not an easy matter. Inscription work, therefore, is a most difficult class of work, and affords a broader field for study than any other. If practiced in accordance with the suggestions here given it will educate the engraver more than any other practice in which he could engage. No one is entitled to call himself an engraver until he has mastered the engraving of inscriptions, as he will find in a store of ordinary size, or in any engraving establishment that there is a great demand for this class of work. Hence the necessity of being able to execute it with the greatest degree of accuracy and artistic skill.

CHAPTER XXIV.

ENGRAVING ON SPOON HANDLES.

Engraving on spoon handles is one of the classes of work that the engraver is most frequently called on to do, and the patterns vary so radically that some knowledge of laying out the work is necessary. We often see letters, initials or names engraved on spoon handles too far to the right or left, too far up or down; in other words, not in the center of the spoon handle or the space on the spoon handle for initials. Of course, these errors do not exist among skilled engravers. It is merely a weakness of the beginner who has not the advantages of experience or the technical knowledge of laying out such work.

At *A*, Fig. 172, we illustrate a representation of a spoon handle with a line drawn through the center of it, which is the first

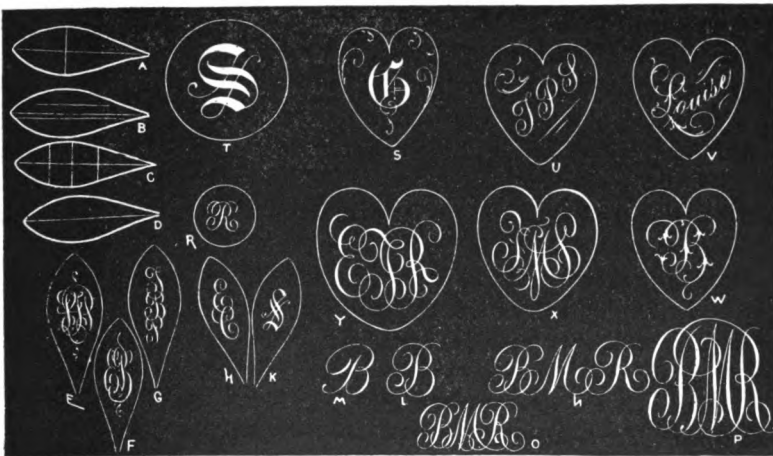


Fig. 172

thing to do after the handle has been covered with wax in the method previously described. If the design is of such a shape that it is impossible to get the centers to the right and left; in other words, if the space on the handle is irregularly shaped, then a line should be drawn horizontally as here shown through the center of

the space and should be on a line direct from the center of the bowl of the spoon to the center of the end of the handle. We sometimes find spoon designs with a space for the initial or initials below or above the center. In this case the method above described by drawing a line parallel with a line from the center of the bowl to the center of the end of the handle should be made, said line passing directly through the center of the space. In the case of the design shown at *A*, Fig. 172, the handle here represented is a plain one and the method of laying out the work to be described for this one will apply to nearly all styles of spoon handles, and when we mention spoon handles of course we have reference to spoon, fork or knife handles, or any similar spaces suitable for initial or initials. After having drawn the line horizontally through the center of the handle, as shown at *A*, we next find the center of the space. We might term this center the general center, as the vertical line here drawn is not half way from the extreme left and the extreme right, but it is in what may be termed the general center of the space on the spoon handle. This line is used to give the engraver when designing an accurate idea of the center of the space. If his mind were on the accuracy of the design at the time of execution he would not be so apt to observe the proximity of the letters to the left or their distance from the right, in which case they might not be properly placed. It is our duty to place the initials exactly in the center of the space intended for them and in the size appropriate for said space, but it must not be understood that the letters should be midway between the extreme left and right. As above described, the letters should be in the general center of the space near the end of the handle proper.

After having drawn the horizontal and vertical lines we now draw a line, if engraving a name, just below the center line as shown at *B*, Fig. 172. The space between the center line and the line below the center is to be the height of the lower-case letters and the line above the center line is the top of the capitals. In some cases it is necessary to have the top of the lower-case letters slightly above the center, but in the case of a design such as the one here shown the top of the lower-case letters may well be arranged to pass directly through the center of the space, the capital protruding so much farther above the center counterbalancing the lower-case letters below the center. This rule will not apply to all names, but will answer for any name without any great variance from exactness.

If we are engraving a word with several lines below the lower lower-case guide line such as G, Y, Z, P or F, then it would not be necessary to drop the small lower-case letters so far below the center. If we have a word with several of the lower-case letters protruding above the top guide line of the lower-case letters, such letters as T, H, L, K or D, then the capital and these letters protruding so far above the center would necessitate lowering the small lower-case letters farther than if we had several of the letters above described protruding below the line. These are technicalities that should be considered seriously by the engraver, and are one of the features in engraving that are conducive to accuracy and high art in the work. The engraver who simply draws a line by guess work on a space and throws the letters on promiscuously, or carelessly, is usually the one who does not make a success of his calling. These little points may be deemed by the student to be of little value, but he will find that it is necessary, especially in beginning, to know the proper location of initials or names in order to reach any degree of accuracy. We do not mean that all of our most skilled engravers, when engraving a single spoon, would make all of these lines, but they must have a knowledge of their proper location and draw such lines as are necessary to follow out the principles here outlined. A student can plainly see that if these rules are followed the greatest accuracy will be attained, and after he has followed these rules for a time it is possible that experience will enable him to place the word or initials on the space with great accuracy by drawing one line only. This is the way that our most skilled and experienced artists design names on such spaces, but the beginner must follow the rules we have mentioned in order to make sure that he knows just where to place such letters.

At C, Fig. 172, we show the second and third vertical lines in addition to the ones shown at A. The one at the left is the base line and the one at the right the top line of the space in which a single letter is to be placed in the spoon handle when said handle is held in a vertical position and the letter is to be read in that way. By the aid of the horizontal and vertical line, and the two other lines, we have the exact center of the space together with a guide for the base and a guide for the top of the letter, and a student in the art would be indeed very cumbersome or awkward in his designing if, with such guide lines, he would not be able to place the initial in the proper position.

At *D* we show a line drawn from the center of the handle. This illustration is to be viewed by holding the handle vertically. The object of this line is to guide the engraver when sketching initials on the spoon handle after the style known as drooping letters. By the aid of this line he is sure that the letter will be midway between the right and left of the handle.

THE PROPER SIZE OF LETTERS FOR ANY SPACE.

We have thus far considered the exact formation of letters and the method of engraving the same, together with some points in reference to properly laying them out. We now arrive at that stage where it is necessary to consider the subject more deeply and give some thought to the subject of the exact size of the initial in proportion to the article being engraved, and before we pass to this all-important question it will be necessary for us, in order to follow the work through the different styles of letters, to first consider the method of engraving ciphers or entwined script. This, undoubtedly, is a subject which will be appreciated more by the beginner than any other, as the author's experience has been that students are not satisfied until they have reached the monogram course, and it will be admitted, even by skilled engravers, that monograms are extremely interesting, and there is a fascination about the work that does not attach to general lettering.

INITIALS FOR CIPHERS.

In considering the subject of ciphers it is our first duty to learn the correct form of letters for such work. The cipher initial varies from the regular script letter which we have illustrated and described, in reference to the loops more particularly. The letters, of course, in ciphers are usually vertical and are made with all loops complete, and wherever a loop can be made on the letter it is made complete. The letters are usually made a little fuller than the regular script, an illustration of which is shown at Fig. 172, where we show at *L* the monogram style of *B*, and at *M* the regular style of the same letter. The student will observe that it will be an easy matter to entwine script letters made in this manner. The trouble with most of our engravers, who have not been taught the art thoroughly, in doing monogram cipher work, is that they have not the correct form of the initials. If the student will bear in mind that the letters are all to be made with all loops complete, and a little fuller than

the regular letter, and vertical as shown and illustrated at Fig. 172, he will experience little difficulty in entwining the initials. We will first consider entwining, and then proceed step by step to complete cipher work.

We will first entwine the initials in what is called running or entwined script. We begin by making the first letter complete; then the second, and hook it into the first as closely and at such points as the form of the letter will make convenient, illustration of which is shown at *N*, Fig. 172, where we have the initials B, M, R, entwined in what is known as running or entwined script. The engraver, in learning cipher or script monogram work, should practice designing initials in this manner until he has become so skilled in the work that he can entwine them as rapidly as he could design them separately. Then the student should commence closing the letters up, and by so doing gradually work into a regular monogram.

At *O*, Fig. 172, we illustrate the same letters designed closer together. Of course, it requires some more skill to design the letters as close as this which makes what we might term a cipher or script monogram, yet the same initials can be made more compact than here shown, and can be engraved after the same style, either round, oblong or full in design.

At *P*, Fig. 172, we show a complete cipher of the same initials. Now the student is especially cautioned in reference to engraving a complete cipher at the start. He should have patience in the work and practice after the style shown at *N* and *O*, Fig. 172, until he is complete master of any initials that he may desire to engrave in this design before he attempts to set them as close together as shown at *P*, Fig. 172. The trouble with most of our monogram engravers is that they are not sufficiently skilled in designing, thinking that the great test of skill is in the cutting. There is really more skill required in laying out the cipher after the style here shown than in cutting it. For this reason the student is advised to diligently practice designing.

This work can be done in the evening, or at such leisure time as the student may have outside his regular business or studies. One who will practice the designing of ciphers diligently will experience little difficulty in mastering the art providing he follows the plan here described. It confuses a student very much if he launches out from plain letters into complete monogram as shown at *P*, Fig. 172, at first; while if he will practice entwining the

initials as described and shown at *N* and *O*, Fig. 172, he will gradually master the work before he realizes it, and the work as he advances will seem much easier to accomplish.

After the student has become familiar with designing the ciphers, he must consider the method of cutting them. We have said in the early part of this work that in cutting script letters the graver should always be thrown out in the center of loops or at the top or bottom of a loop. In monogram engraving this advice in reference to script is to be ignored. Indeed, it is almost impossible to lay down any set rules by which the student can be guided. One of the most important points to be borne in mind is the method of procedure after the monogram has been designed. If it is a large one the monogram should be scratched on with a stylus very delicately, so that it could be easily polished off if it were necessary to do so.

Some engravers will commence a monogram by beginning at the extreme right of the last letter and work to the left, and others will begin at almost any point convenient for them, which is entirely wrong. We should go about our work systematically in order to insure a successful end. We should start a monogram by commencing at the beginning of the first letter at the left and cutting the loop of said letter around to that point where it may cross another loop, or where said loop terminates in a line of beauty ; and if said line of beauty have a loop of another letter curving around it, we should, when arriving at that point, throw out the chip in front of the graver, stop the cutting of the loop or line and cut the loop around the line. In other words, loops should be cut first where they curve around vertical or angular lines. This is necessary, as a loop is more difficult to cut than a straight line, and usually in a hair line, where the vertical or angular lines getting nearly straight are shaded, if a shade stroke were cut first, a loop around the shade stroke would have to be cut by cutting up to the shade stroke, then throwing the graver out and raising it across the incision of the shade stroke, inserting it on the opposite side and continuing the curve of the loop around in this manner. By proceeding in this way it will be an easy matter to make a letter untrue. In other words, it is difficult to insert the graver on the opposite side of an incision where it has been previously thrown out, and begin it so as to curve around on exactly the same arc as the line on the opposite side of the incision.

The student must not misunderstand this point and get the idea that it is his duty to cut all loops first. It is only his duty to cut such loops as come in contact with the vertical and angular portions of the first or any other letter that he may be cutting. After he has cut such loops, he then proceeds with the letters in rotation and cuts as far as he can without coming in contact with other loops. Whenever a loop crosses a shade stroke, or vertical stroke, or a stroke nearly vertical, such loop should be cut first—whether it is the first, middle or last letter of the monogram. By doing the work in this way our loops are cut by a continuous stroke, it not being necessary to throw them out in the center or at the top or bottom. Thus the highest degree of accuracy is attained.

CHAPTER XXV.

LETTERS ON SPOON HANDLES AND LOCKETS.

At *E*, Fig. 172, is illustrated a spoon handle, such as has been previously mentioned, with a cipher engraved thereon, with the initials L, T, P. The illustration is intended to show the student how a little cut at the top and bottom of the monogram will add to its beauty, and also to show the student the size the monogram should be for a spoon handle or a space on a spoon handle. It is not to be understood that such little cuts as are shown at the top and bottom of this monogram should always be made, but in a space at the top and bottom such as this, the engraver will see that such cuts add to the beauty of the monogram and make the work appear more complete.

At *F*, same figure, we illustrate a two-letter monogram, showing how a loop of a B can swing down under the E and the first portion of the B in order to fill in the space below, it being formed in such a way that the little cut at the bottom will fill in the space below the monogram after the style shown at *E*, same figure. Monograms are sometimes engraved on spoon handles horizontally, but usually they are engraved vertically, as here shown.

At *G*, Fig. 172, we illustrate hanging initials. This style of entwining letters on spoon handles is very popular and is not difficult to do, and the student who will practice this class of lettering will find that he can, after a little experience, throw the letters together in this way as quickly as he can design them perfectly plain and separately, and he will also find that this class of lettering will please his customers much more than the plain letters. It would not be safe to say that this class of work could be done as quickly or quite as easily, but the difference between the amount of time and skill required to do the work and the plain letters is so slight that it is advisable in most cases to engrave spoons, where they are sold singly, after this style, unless otherwise ordered.

At *H*, Fig. 172, we show another style of engraving spoon handles, known as drooping initials. The letters in this case are entwined similar to those shown at *G*, and are slightly plainer, and if the letter is such a style that it is practical, they should be

engraved in such a way as to appear drooping. The initials shown here are of such a form that it is quite impossible to obtain that appearance.

At *K*, same figure, we illustrate a spoon handle with the initial *S* engraved thereon in old English in a size appropriate for the space, which is the point we have endeavored to emphasize in all the spoon designs here illustrated. We show these illustrations that the student may form an idea of the various ways in which the spoon handles can be engraved in addition to the regular way. Of course, it is useless to show the old English engraved horizontally, in plain script initials or old English words, as the student is well aware that this is a very ordinary way of engraving.

PROPORTIONS OF LETTERING FOR LOCKETS.

At *R*, Fig. 172, we illustrate an initial *R* in a circle. The circle is to represent a small locket or a round space in or on any article. This initial is here shown to give the student the idea of the form of the letter and the size to fit in such space. The idea here given is illustrated on a larger and more elaborate scale at *T*, Fig. 172, where we have the initial *S* in old English made in a form to fit into the circle there indicated.

At *K*, Fig. 172, we illustrate an oblong *S*, which is made to fit in an oblong space, and at *T* we have the opposite effect to attain. Here we have a round space, and it is the duty of the artist to make the letter as nearly as possible to conform to the article or space in which the letter is engraved. In this case it is our duty to make the letters as nearly round as possible, which we have done, and made the letter in a size appropriate for the space.

At *S*, Fig. 172, we illustrate the initial *G*, in old English, engraved on what is represented to be a heart locket. It is assumed that the locket when it comes to the hand of the engraver is perfectly plain. The little curves around the letter have been added to show the student that such spaces can be filled in by slight curves of this description if it is desired. The little curve or loop at the bottom of the letter is simply a continuation of the letter itself, and if artistically formed and engraved will enhance the artistic appearance of the letter.

At *U*, Fig. 172, we illustrate the idea of engraving initials on a heart reading upward diagonally. If these letters were engraved straight across the locket they would appear stiff, while if they are

engraved diagonally, as here shown, with a slight ornament, even a straight line, above and below, the work is much more artistic.

At *V*, Fig. 172, we illustrate the word "Louise," engraved on a locket, showing how the first letter of a word in such a case can be ornamented to fit in the space, and also to show the advisability of slightly curving the name, especially if it be a long one. With a slight ornament above and below the letter, and the initial itself slightly ornamented, the work is much improved.

At *W*, Fig. 172, we illustrate a B on a heart locket formed in such a way as to fill in the space as nearly as possible. It will be seen in all these cases that it is necessary to vary from the general formation of the letter to such an extent as to fill in the space as nearly as possible and yet not deform it or make it appear inartistic.

At *X*, Fig. 172, we illustrate a cipher formed to fit into the shape of a heart as nearly as possible. It will be seen in this case that it will be necessary to make many more loops to the monogram than would be necessary if it was round or flat on top and bottom. There are some monograms that can be formed after this style to better advantage than others. The one shown here is one of the kind that is difficult to form in this way to advantage, and its objectionable features are that there are so many loops that the monogram is not as readable as it would be otherwise.

At *Y*, Fig. 172, we illustrate a regular monogram formed nearly the shape of the heart. It will be seen here that these initials are more appropriate for such a space than the ones shown at *W*, and that it is possible to fill in this space on a heart with such initials without any radical changes from a regular plain cipher, the principal change being in the cutting off of the last loop of the R and throwing it around over the line of beauty, as here shown.

We have shown these illustrations to the student as a result of practical experience in engraving, and he will profit by following the instructions given. The important point to be considered in this work is to make the cipher initial or initials in shape and size appropriate for the article or space on the article allotted to the letter. Usually they are too large, and the student is cautioned accordingly. It is better to make an initial or monogram too small than too large, but if a little judgment is exercised it is an easy matter to form a monogram or a letter of a size that will be perfectly right. It is our duty first to learn how to cut a letter, then to learn to cut the letter perfect; then to learn to cut in a size and shape appropriate for the space or article to be engraved.

CHAPTER XXVI.

DESIGNING AND ENGRAVING CIPHERS.

At *O* and *P*, Fig. 172, we illustrate the initials B, M, R, entwined in two different styles of ciphers. We might use the term "form" instead of "style," as the letters are both of exactly the same style, being plain; but the form of designing them as shown at *O* is not as closely entwined as shown at *P*. A few little points in reference to these two monograms will start us on our studies in cipher work with some knowledge of entwining, as these letters have been chosen because they are not easily entwined.

The monogram shown at *O* would possibly be more properly termed entwined script. The difference between the entwined script and the monogram or cipher is, in the engraver's parlance, that entwined script is drawn out much more than the regular cipher. A regular cipher or monogram is so compact that it would occupy a space either square, round or oblong. In the case of the monogram shown at *O* it will be seen that the first stroke or line of beauty of the M has a loop entirely different from the regular loop shown at *N*. This is necessary, as it is impossible to put the other style of loop on to the letter and make it close to the first letter. Even then we find that there is a slight vacant space between the top of the M and the B, which is easily filled by the continuation of the line of beauty of the B, curving it around and filling the space. Such little so-called tricks as this are necessary in order to become a skilled artist in monogram designing.

It will be seen that the space between the first hair line or line of beauty of the M and the second vertical hair line of the M and the shade of same are farther apart than the first hair line and shade stroke. Usually the distance between these two shade strokes and the hair line preceding them is the same, but in this case it will be observed that the shade stroke of the M at the right is necessarily curved out to the right to allow room for the loop at the lower end of the line of beauty of the R and the continuation of the loop of the M to lock or cross. This is done because there is no other place where they can be entwined. We must, in this case, make

the loop of the line of beauty of the R at the bottom a little larger than would be necessary otherwise, which, of course, necessitates making the top of the R smaller than usual. Therefore, we have by necessity the top of the B large and the top of the R small, in order to fill in the space around the same. A loop of the style shown at the end of the line of beauty of the M is a very convenient loop to use in entwining monograms where the initials have lines of beauty or capital stems, for the reasons mentioned.

Referring to the same initials in the cipher *P*, if we study the cipher we see that it is equally divided, or nearly so, and that the highest point of the cipher at the top is in the center of the cipher. Now, if we study the individual letter, we find that the top loop of the R appears to be irregular or too high at the extreme left, yet it fills in the space it should fill and makes the highest point of the entire cipher in the center of the same. In order to allow room for the top of this loop to curve around with a fair-sized loop, it is necessary to lower the loop of the B around its line of beauty. We also find that it is not convenient to put either the style of loop shown at *N* or *O* in the figure on the line of beauty on the M in this cipher, as there is not room for either one; therefore, it must be cut off as here shown.

It will be seen that if we put either of the styles of loops on, there would be crowding, but as it is, it locks into the other letters sufficiently, owing to its proximity to the B, by simply making a dot at the end of the line. It will also be seen that it is convenient in this case to cut off the last loop of the R and make instead a dot, as in the case of the M. By doing this we have the cipher with an oval top and a flat base and the angles of the right and left sides about equal, which some spaces would necessitate, and in order to meet those cases we show this cipher with loops cut off in this way. We do not mean that the student should understand that this is the best and only way that these three letters should be entwined. They are entwined in this manner simply to show how changes can be made from the general form of a letter in order to entwine to best advantage.

Ciphers can be engraved either bright cut or fine line, the style depending on the article to be engraved. If a cipher is to be engraved on a polished tea spoon or any sterling silver article highly polished, it is advisable to either cut fine lines with an unpolished graver or to cut it in the style of bright cut with an unpolished

graver. Some skilled engravers have been criticised for engraving with an unpolished graver on polished metals, the criticism being that the cuts were ragged, the critic believing that the skill of the engraver is manifested in his ability to cut a bright cut. Of course, this is an erroneous idea. The reason an unpolished graver is used on a polished surface is to produce a contrast between the surface of the metal and the lines cut. It has been said before, and a repetition will do no harm, that the aim of the engraver is to produce a contrast and effect to the best advantage. It is needless to say that it would be unwise to cut a bright-cut stroke on a polished surface and a ragged stroke on a deadened surface in order to produce the best effects. Therefore, the student is advised to engrave all polished surfaces with an unpolished graver.

We have said before that the stone to be used should not be a very coarse one. The graver should be finished on a very hard, fine stone, as a coarse stone would leave the graver in too rough a condition to cut smoothly. The incision should be cut smooth but not polished. We do not mean when we say an incision should be cut with an unpolished graver that the cuts should be necessarily ragged and rough, but a deadened appearance should be produced, clean, but not bright or polished. Fine-line engraving, such as we mentioned and described in reference to fine-line old English is the most beautiful of all the styles of engraving and perhaps requires as much skill to execute properly as any other. In cutting fine lines the graver should always be unpolished, it matters not where or on what the lines are cut.

Some engravers use a polished graver for cutting a fine-line monogram on a deadened surface. This, generally speaking, is unwise, as a satin or French gray finished article could be engraved with a bright-cut monogram, and if a bright-cut monogram was not wanted there are other styles of outlined monograms which we will describe later on that could be used. Of course, if a customer requests a fine-line monogram it will be our duty to cut it, and then an unpolished graver should be used, unless it is a very cheap article, in which case the polished graver could be used even in cutting fine lines to produce an effect.

In cutting ciphers the all-important feature to be borne in mind is that loops of letters or bars should not be made so close together that they appear crowded. Whenever a loop is made so that it comes near to another loop it is advisable to stretch it a little more

and have it hook into the loop. The great trouble with most ciphers is that they do not produce a harmonious or uniform appearance. A cipher should be so formed that the space occupied by it is nearly uniformly filled in by bars or loops of the letters. This is a point that is largely overlooked by some of our artists in cipher work. We often see a beautifully cut cipher crowded in some places and space sufficient for relief of such crowding left in others.

One point of advice to be followed by the student is to cross all vertical lines with loops as nearly as possible at right angles, always endeavoring to avoid crowding and never form one loop to run parallel with another. We might even say that parallelism should be entirely avoided in cipher work. We do not mean that all the capital stems and lines of beauty of letters should not be parallel with one another and perpendicular. It is necessary in some cases to have bars of letters run parallel one with another, even though they are close together. This would be the case if we were to have a V for the first letter and an A for the second. It is necessary in this case that these lines run parallel with one another. To entirely avoid parallelism in ciphers never allow one loop to run parallel with another and never allow one loop to curve around entirely within another loop.

Such a case as the one cited above is very rare. If the points mentioned in reference to crossing all bars and loops of letters as nearly as possible at right angles, avoiding lines running parallel with one another and equally dividing the lines in the space allotted for the cipher, were followed, the student would in time find cipher engraving very easy. The trouble with students in engraving ciphers is that after they have designed the cipher they are somewhat confused by its apparently conglomerated state. It might be safe to say that they get lost in their design. By this we mean that they fail to see the individual letter. It is a difficult matter for a beginner to see the letter separately and then see the entire cipher at the same time. We do not mean by this that he is to keep in his vision the entire cipher, but that he is, while studying and working on a single letter, to consider and observe its relation to the cipher as a whole.

All loops in the monogram should be absolutely perfect and all bars and limbs of the letter should be perfect in their angle or whatever form they may be made in. It is just as easy to make a perfect letter in a cipher as it is to make a perfect letter separately.

The trouble with a student is, as above stated, that he loses himself in the combination. He cuts the bars but does not exactly see the individual letter, and if his design is at all out of the way the complete cipher will be likewise.

In designing ciphers it has been said by some so-called expert engravers that when any three letters are mentioned to them they can see before their mind's eye the cipher as they would sketch it. It is needless for me to say that such a mental feat is impossible, as no one can see before his mind's eye the entire combination of any three letters. It is possible, of course, for an engraver to gain some idea the moment three letters are mentioned to him as to how he would sketch them, but to see the entire combination in detail is impossible.

In working on a cipher, when we first select the letters to be used we start out with the first letter and make the main bar of the same. Then, as we study in our mind what the form of the following letter will be, we find before completing the first letter that it can be changed in such a way as to fit or allow for some portion of the letter to follow, and so on, between the second and third letters. In sketching a cipher at first it should be sketched by broken lines, making no attempt to draw it perfectly. The sketching should be done very delicately at first. Then if any change is required as the engraver proceeds it can be made without mixing the cipher up and confusing the engraver to such an extent that he may become disgusted with his design.

In designing a cipher the engraver should go about his work very deliberately and very carefully, but no attempt, as above stated, should be made to draw the letter accurately. We often see engravers designing ciphers on paper for a trial before placing them on the article. This is advisable and should always be done by beginners. They should not bear on their pencil so heavily as to make a very dark and heavy line. Sketching should be done free hand, allowing the hand to rest upon the third and fourth fingers very freely, giving perfect freedom to the index finger and the thumb, and it should be done in broken lines and very finely. This leaves an opportunity for us to make such changes as the complete combination or the combination nearing completion would require.

It is considered by many engravers very difficult to design a cipher in a circle. This is due to the fact that they do not follow

the rudiments. By proceeding properly it is no more difficult to design a cipher round than square, or any other shape. We know of engravers who would take a watch case and proceed to design a cipher on it perfectly round without the aid of any circle or other lines, and very often in such cases the result would be that the cipher was to one side or the other. Such a guesswork method as this should be carefully avoided.

At Fig. 173 we illustrate a circle with a vertical and three horizontal lines. If we want to engrave a plain cipher on a watch case we take the compasses and allow one point to rest against the edge of the case and the other to protrude over the case to such a distance as it is desired to engrave the cipher from the edge, thereby making the circle around the case the size that it is desired to make the cipher. After making this circle it is needless to say it is designed through the wax. The vertical line is drawn from the pendant to the center of the hinge below. Then the horizontal line is drawn across the center of the same. Then a line above and below said horizontal line as shown at Fig. 173. Now, assuming that we have at this point learned how to design a cipher flat on the top and bottom and nearly square, it will be an easy matter to place the same in the circle here shown, allowing the top of the cipher to protrude up to the line *A A* and drop down to the line *B B*. We have now the first and last letter as near the form of the circle as is possible with slight changes near that portion of the letter next to the vertical line. In order to make the cipher, it matters not what the letters may be, perfectly round or nearly so, all that is necessary to do is to change our design above the line *A A* and below the line *B B*. By this change we mean simply to drop the center letter, or such portions of it as can be changed, down below the line *B B*, and to raise it, or such portions of it as can be raised, above the line *A A*.

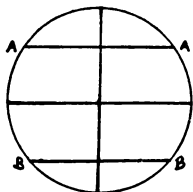


Fig. 173

To more thoroughly explain this point we illustrate at Fig. 174 a cipher of the initials T, R, S designed with flat top and flat base. The dotted line will indicate how, after making a design in this way, we can simply drop the loops down and make the cipher nearly round. Any intelligent student following these instructions will experience little or no difficulty, while if he were to

attempt to engrave the cipher in a circle without the aid of this method he would find it quite difficult to do. It is often necessary to engrave a cipher oblong. In this case the engraver must make his letters long and slim, and his loops oblong instead of rounding. By so doing he will find it no more difficult to make the oblong cipher than the square or rounding one, except that it is necessary to make the letters closer together, inasmuch as the proximity of the letters requires the highest degree of accuracy, there being no room for any irregularities or variations of the letters.



Fig. 174

We often have ciphers to engrave in the bottoms of oblong dishes or trays. An example of this style is shown at Fig. 175, where we illustrate an outline of a button or pin tray. Now, in



Fig. 175

order to engrave a cipher in a tray of this kind, we first caliper a line around the inside as indicated here by the dotted lines. Then we make our cipher what might be termed rounding script, with the letters drawn out so as to fill the space within the dotted lines as nearly as possible.

Another style of engraving ciphers in a tray of this kind would be to make the letters after the style shown at *G*, Fig. 172, hanging or drooping letters. There are many forms of cipher monograms all of which are engraved in the same general style, and the general rules in reference to their construction are the same.

A cipher with the top tipped in is very desirable for some spaces and is well adapted to cigarette boxes, match boxes and some styles of trays. However, it is not necessary that a student

in engraving should make all of these different forms of ciphers. The ciphers that we have, and will illustrate, will be the principal styles used and will suffice in all ordinary cases.

Having briefly considered the method of designing ciphers and the different styles of the same, we will now consider ornamenting them. The beginner, as a rule, does not like perfectly plain work, as he never feels that he is a perfect master of his business until he is able to do all styles of fancy engraving. This is a wrong idea. A student should remember that perfectly plain work calls for the highest degree of accuracy, and accuracy should be first attained. No attempt should be made to ornament a cipher until after one has become sufficiently skilled to engrave the letters perfectly in detail.

It is a very common error with unskilled engravers to cover up their deficiencies, and we might say blunders, by ornamenting the letters. It is needless to say that this is entirely wrong ; that a cipher should be ornamented only in order that its beauty may be enhanced, and we cannot enhance its beauty if it is not perfectly accurate to commence with. Of course, to an easily satisfied customer the ornamentation may cover up the errors, but it is unwise to resort to such a scheme.

But the beginner may ask what shall he do in case the graver slips and a line is made in a place or direction where it is not wanted. If a graver is in perfect order it is very seldom that it will slip. Of course, it is possible that the point will break off the graver when in the metal, and unknown to the operator, in which case it is possible, and very probable, that it would slip, but a graver in the hands of a skilled operator will not slip far enough to do any great damage as a rule, as the delicacy of touch, or feeling of the hand, of the skilled engraver is such that the moment the point of the graver is broken off and deviates a little in its course he knows that there is something wrong, and even if he does not learn of it before the graver does slip out, he is so skilled in its use, and so sensitive to its every move that the slip will be a very slight one, in which case it can be easily burnished with a jeweler's hand burnish ; it being borne in mind that the burnishing should always be done lengthwise of the incision and never crosswise.

Sometimes it is possible that a slip will be sufficiently deep and long that it would not be possible to burnish it out entirely. In such a case, a scraper sold by any jobbing or material house, and used extensively by jewelers, is to be used. This scraper scrapes off the

surface of the metal. After its use the surface should be Scotchstoned and then burnished and polished, after which the engraving in the location of the repairs should be recut. Of course, if the article in hand were one with a French gray, satin or Roman gold finish, or any finish other than a polished one, we could not use this method. In those cases it would be necessary to refinish the article, and if this could not be done the only remedy would be to allow the slip to remain as it was made and ornament the cipher regardless of it ; not attempting to make an ornament out of the cut unless it should by good fortune happen to be of such a kind that this could be done.

CHAPTER XXVII.

ENTWINED AND ORNAMENTAL CIPHERS.

At Fig. 176 we illustrate a watch case as it would appear after the cipher is sketched on through the designing wax or Chinese white. It will be seen that the letters are made by a series of broken short lines and are sketched delicately, so that any change that is desired can be made.



Fig. 176

It matters not what style the cipher is to be, it should always be designed after the manner of the above mentioned sketch. In any cipher or monogram work it is our first duty to lay out the cipher in the rough sketch, as here shown, perfectly plain. Then such ornaments as we may desire to use are added. By this method the student will never become perplexed in the combination. If the design is first made perfectly plain, then the ornaments can be added in such places and on such bars and in such a form as to fit in and beautify the letters. It is an erroneous idea that a great many engravers have that in making a fancy monogram they must design the ornaments as they are advancing with the general form of the letter. A trial will convince the most skeptical that a design made perfectly plain and then ornamented, can be made much more artistic.

Many of our engravers are of the opinion that a monogram should be entwined regardless of its legibility. One of the paramount points to be considered in reference to monogram work is the simplicity of the letters. All of the loops should not be added in a cipher if they interfere with other loops that are necessary in completing the general form of any of the letters. It will be often found convenient to cut off some of the loops of letters, that is, superfluous loops. The loops and bars forming the general foundation of the letter should always be made as nearly complete as

possible, and should be formed in such a way as to fill in and balance up the monogram perfectly. There should be no crowding of the loops or bars, and the spaces should be filled in by changing the forms of the loops in such a way as to balance the monogram. It will be considered by some impossible to do this, but there are very few combinations that cannot be made to balance well.

ORNAMENTING CIPHERS.

When cutting a cipher on britannia metal, or in any soft metal in bright cut, if the cipher is a large one, it should be cut with a flat-face graver, the width of which should be a little more than the widest part of the shade strokes. After the cipher has been engraved in this way a fine line should be engraved along the edge of the shade stroke at that point where the surface of the letter and the incline of the incision meet. This line often enables an engraver to correct any variations of the width of the shade stroke which may exist owing to the unsteadiness of the hand, or possibly the spring of the metal when engraving. A square graver can be used for cutting a bright-cut cipher, providing it is very small, but, as above stated, the flat-face graver should be used for cutting large ones. In cutting the hair line of even a large cipher the square graver can be used if the engraver so desires. Some engravers use the flat-face graver for the entire work.

Having briefly considered forming and sketching ciphers, together with the method of cutting same, and assuming that the student will practice the plain ciphers diligently before any attempt is made to ornament them, we will now proceed with what is known as the lily ornament for bright-cut ciphers.

At Fig. 177 we illustrate a line of beauty with the ornament known as the lily ornament added thereto.

We are pardoned for using the term "lily" ornament in this case from the fact that it resembles to some extent the general form of the lily. In cutting this stroke the graver is thrown out at C, and then inserted again

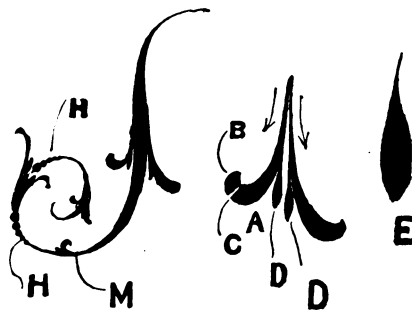


Fig. 177

at *B*, and the little cut indicated by said line is cut around to *C*, as in finishing the end of a capital stem of a regular script letter. The ornament as here shown is disconnected. This is not as it should be. The stroke should be connected, but it is disconnected here to show the student where the two cuts come together. After making this cut, the cut at the right is made in the direction of the arrow with one stroke. After this stroke the little cut is made by starting on the original line and cutting almost straight downward, as shown at *D D*. This stroke on a larger scale, to show its exact form, is illustrated at *E*. It will be seen that the cut is not as blunt on the end as it would be if the graver were lifted directly out. When throwing the graver out at the extreme lower end it is not lifted directly up, but is forced a little forward as it is lifted out of the metal, thereby elongating the end of the cut.

It will be remembered in referring back to plain script work that this is the style of throwing out the end of the hair line at the top of the *R* and *S* in lower-case script. This ornament is made the same on the hair line as on the shade strokes, excepting that on the shade strokes it is cut a trifle heavier, and when on the hair lines the dots indicated by the initials *HH* are cut preceding and following the same, and varying in their size as here indicated. These cuts are made with a round-face graver, the heavy ones being cut deeper than the little ones. By decreasing the width of the incision the dots are reduced in size.

Referring to that portion of the line of beauty at Fig. 177, indicated by the line *M*, it will be seen that we have one-half of the ornament in question on the inside of this curve. It will be found in making ciphers that there are a great many little places that can be filled in artistically by making such cuts. It is not always convenient to make the ornament complete owing to its proximity to another line or loop. Hence the advisability of making few ornaments. This style of an ornament is more appropriate for a small bright-cut cipher than for any other. We would suggest that it be not used on fine-line ciphers or on very large bright-cut ciphers. Very large bright-cut ciphers should be cut only of such

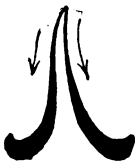


Fig. 178

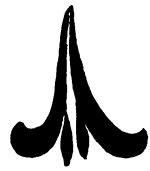


Fig. 179

size as can be done with a flat-face graver, and an ornament should be cut something after the style of the one illustrated at Fig. 177, a

portion of which is shown at Fig. 178. These cuts are cut with a flat-face graver shading inward by cutting in the direction of the arrows. After these strokes are made, as shown at Fig. 178, a hair line is cut on the inside of same, as shown at Fig. 179.

After these are cut the graver is inserted at the point where these little cuts separate from the original one, which point is indicated by *A*, Fig. 180. The graver starts in with a fine line and curves around, gradually increasing in width until the end, as shown. This line should be so cut as to gradually creep away from the original stroke so as to leave a little surface between, as here illustrated, and the end of this last line should not connect with the original one,

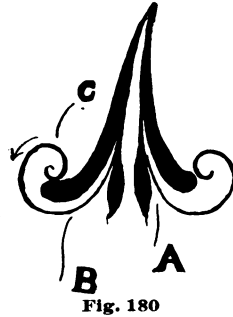


Fig. 180

thus leaving a slight opening and producing a desired effect. In cutting this last line, as at *B*, Fig. 180, the graver is inserted at the opposite end from the point of beginning of the first one, shown at *A*, and cut around to the point where the original stroke and the second stroke separate. In cutting in this way it is necessary, of course, to commence the stroke heavy at *C*, and as it is cut around in the direction of the arrow to diminish the width of the incision. The object of cutting this stroke in a direction opposite to the one on the other side is that it enables the operator to curve to the right, which is the most advantageous way to cut curved strokes. Of course, it would be practical to use the opposite corner of the graver to the one ordinarily used in operating the flat-face graver, and cut this line in the same



Fig. 181

direction as the one shown at *A*. There is no objection to doing it in this way if the operator so desires.

At Fig. 181 we illustrate the line of beauty of a cipher shaded with what is known as the chop-cut ornament. We have placed the ornaments thereon as they would appear if this line of beauty were a portion of a completed letter.

At Fig. 182 we illustrate the method of forming these cuts on a large scale. They are cut by starting in at the pointed end and cutting deeper and heavier as the graver advances. It will be seen that they are separated sufficiently at the



Fig. 182

beginning so that when the cut is thrown out the ends of the same will exactly meet. There should be no space between the ends of the cuts.

These three ornaments are those mostly used in bright-cut ciphers. The last mentioned is also used very extensively on fine-line ciphers.

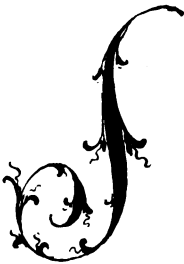


Fig. 183

The method of cutting fine lines has been thoroughly described, and further mention of it is not necessary at this time. It suffices to add that an appropriate ornament for fine-line ciphers is shown at Fig. 183.

At Fig. 184 we illustrate this ornament on a large scale, making the method of cutting same perfectly plain to the stu-



Fig. 184

dent. It will be seen that the ornament is very similar to the one described and illustrated at Fig. 177. The method of cutting it is exactly the same, with the exception of the little twisted hair line, starting from the division of the outer and inner cuts. Some engravers prefer to cut these little hair lines in, some to cut them out. It matters not which way they are cut so long as the best results are attained. They are begun quite heavily and decrease in the width as they are cut, and should curve around, as shown. These cuts can be divided up in the same proportions as the others. This ornament is more appropriate for fine line than any other.

Having learned all the preliminaries in cipher work, where the hair lines are made of a single stroke, and the shade strokes in proportion thereto, based upon the principles of formation of the plain script letters, we are now ready to advance to the more difficult study of ciphers and study the method of cutting them on a larger scale or in a style appropriate for a larger scale.

The first thing to do is to convince the student that a regular fine-line cipher can be cut by making the hair lines wider than a single stroke. This would increase the width of the cipher, making it heavier throughout. A cipher cut after this style would be more on the order of a parallel-line cipher or a ribbon monogram, excepting that the letter would, of course, not be irregular.

RIBBON CIPHERS.

A ribbon cipher should first be designed perfectly plain, as illustrated on the watch case, shown at Fig. 176. After sketching the cipher in this manner it is again gone over and the form modified to represent the ribbon style of letter, which is simply shaded and twisted at the ends, as here shown. This twisting of the ends and other strokes of the letters is done by making the lines composing the letter all radiate or emanate from one given point, as shown at *B*, Fig. 185. Now, all that is

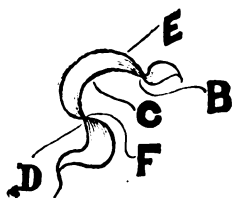


Fig. 185

necessary in order to make this stroke appear to be twisted over is to cut the stroke shown at *C* a trifle heavier at the point indicated by *D* and allow it to cross the line *E* at the point *D*. Then all the lines at *F* should radiate from that point. One of the



Fig. 185A

great difficulties in cutting ribbon ciphers is that the engravers do not cut their lines accurately. In fine-line work or in ribbon work,



Fig. 186

or any style of ciphers composed of a series of fine lines or parallel lines, they should radiate from the same point and not disappear or run into one another before they arrive at their destination. To give the student an idea of the form of a ribbon letter we show the initial *B* at Fig. 186, the general construction of which will be seen is the same as a plain cipher initial, the location of the shading simply having been changed. If a student should attempt to design a cipher in the ribbon form

at first he would find it almost an impossibility, but if he will follow our advice to make all ciphers perfectly plain first in a delicate sketch and then make such modifications as the form or style of the cipher desired would require, he will experience little difficulty in making such modifications to suit the style wanted.

CHAPTER XXVIII.

PARALLEL LINE CIPHERS.

The next style of cipher to be considered is one of the most difficult, if not *the* most difficult style of cipher to engrave. It is known as the parallel line cipher. We cannot technically apply the appellation of parallel line to this style of cipher, because the bars of the letter vary in width ; therefore, technically speaking, the lines would not be parallel, but they are so nearly so that the most appropriate name for this kind of cipher would be the one above given.

It is difficult to cut a plain parallel line cipher composed of lines an equal distance apart, except when the bars of the letters increase and diminish, in which case, of course, the lines increase and diminish in distance apart and widths accordingly. The line on the lower right side of a bar, or limb, of a letter should be cut a very little heavier than others in a plain parallel line cipher. Then the others should all be exactly the same width and the same distance apart according to the oval of the bar of the letter. Such lines are shown at Fig. 185 A. A cipher of this kind is very difficult to cut, owing to the fact that it is difficult to make the lines so close together, and yet leave a small amount of surface between them. Indeed, the lines run so very close together that it is almost impossible not to allow one to come up to the edge of the other, which of course would not be correct. A cipher of this kind should not be cut very small. The engraver should use judgment in selecting the style of cipher to suit the size. It is not practical to engrave a parallel line cipher very small for obvious reasons.



Fig. 187

It is safe to say that the most difficult cipher to cut correctly from the standpoint of accurate wielding of the graver is what is known as an oval parallel line cipher. Such a cipher, slightly ornamented with a plain leaf, is shown at Fig. 187. It will not be necessary for us to illustrate this cipher

plain, as the student will readily see that the ornaments could be easily dispensed with and the cipher composed of perfectly plain parallel lines made in such a way as to make the bars of the letter appear oval. This effect is produced by diminishing the proximity of the lines and their widths as the lines approach the center. The entire cipher, when made plain and devoid of such ornaments as here shown, should be composed of exactly the same number of lines from beginning to end ; the widths of the bars being increased and diminished by increasing and diminishing the widths and distances apart of the lines.

We have here shown the oval parallel line cipher ornamented, as such a cipher is quite difficult to cut. The upper portion of the initial *C* in this cipher is left unfinished to illustrate the method of cutting. The dotted lines indicated by *H* are left to show the student the outline of the original sketch. Engravers differ as to the best method of cutting this style of cipher. Some think that it is best in cutting it to outline it first and then fill in between the outlines by cutting a line first on one side and then on the other, the finished side of which is shown at the point indicated by *M*, where there is a line on each side showing that we are now ready to cut the second line. While some are of the opinion that this is the proper way to cut them, others are of the opinion that it is better to start on one side and cut the lines over to the other continuously. As to which method is better the student must decide for himself. The cipher can be engraved very nicely either way. Experience has led us to believe that in cutting a monogram on a large scale the first method is the best. In cutting on a small scale the latter would be preferred. The little crescent cuts between the leaves shown at *W* are cut with a square graver. In fact, the entire cipher is cut with a square graver. The shading of the plain leaf illustrated at *E* is made by starting the lines at the pointed end and cutting into the original outside line, allowing them to uniformly taper down to the outer line, the curve of which is to conform to the oval of the bar. It is needless to say that extreme accuracy of the lines must be observed in order to produce this effect, and no student in the art, without considerable skill in the use of the graver, should attempt to cut the cipher in this style.

One skilled in cutting the regular fine-line ciphers would experience little difficulty in executing these ciphers. It will be seen here as in other cases, and in almost all cases of ornamental

ciphers, that it is often convenient and advisable to place half of a regular size ornament inside of some loop or bar of a letter. This cipher is shaded where one bar comes over or under another. This shading is effected by making very fine lines, the width of which is increased, and the size of which is diminished, as they are cut outward from the bar that is on top. The cipher here shown is after the form necessary for a round cipher. It will be seen here that the middle letter is a trifle higher and lower than the other two letters. Care should be taken that the outside letters are the same height.

A cipher of the form of the one here shown can be cut in a great many different styles. The top portion of each loop, which is indicated here by the leaf from the left top of the center of the curve above the cipher, should always be cut the same as previously shown. Under the left, at the point indicated by the line *G*, the style of the letter can be changed. It could be outlined and filled in with all the various styles of borders that we have mentioned, and such fillings we will have occasion to mention later on in reference to block monograms. It could always be cut by the regular fine-line method, which is probably one of the most ordinary ways of cutting it. It is much easier to cut it in this way, and possibly it could be done with greater rapidity. If the cipher were engraved on a satin-finished surface it may be cut bright cut below the leaf, in which case the bright-cut lines, or whatever else this portion of the letter may consist of, would be made the same style around to the next leaf, or half leaf, at which point the style would again change to parallel lines, and continue in parallel lines around to the middle of the next curve or the next leaf. It is needless to enumerate the various styles of cutting this portion of a cipher. It suffices to say that it can be cut in almost any way possible to cut a script cipher, allowing the top of the same from the leaf *E* or *W* around to the center of the curve above, to always be made of parallel lines as here shown and producing an oval effect. If this portion of the letter is made to produce an oval effect, and the under portion at *G* to produce a flat surface, the contrast will increase the prominence of the cipher and add to its artistic effect.

A cipher after the general outline of the one here shown can be made complete of fine lines, including the upper portion of the lines, but such a monogram is very difficult to cut, and the resultant effect is not sufficient to warrant the amount of work. A cipher

can also be cut in this form on satin-finished surfaces, or any deadened surfaces, by cutting half of the bar and ornaments on one side with a flat-faced graver ; then on the other side up to the middle with a shade stroke of equal width, thereby making a cross section of the incisions pyramid-shaped.

There are a great many little original ideas in cutting ciphers that it would not be practical to enumerate in a work of this character. Our aim is to give to the student the most practical styles, which will form a basis for such additional ideas as he may originate himself, but we must caution him against thinking that some new ideas of his own may be far superior to those of some of the most skilled engravers. His supposed new ideas may be very old to the experienced workman.

CHAPTER XXIX.

FLOWER LEAF CIPHERS.

Of all the various styles of ciphers the style known as the "flower leaf" is probably the most elaborate. It is difficult to decide what style of leaf to advise a student to practice, as there are various styles of flower leaves, or leaves of other kinds, applied to letters. We often find ciphers engraved with a leaf curving around on the main stroke of the letter, and again we find ciphers that are completely covered in and around them with leaves. Such elaborate designs are, however, mostly engraved to show the ability of the artist; in other words, made as samples of the artist's work. While it is advisable to make ciphers ornamental, they will be more artistic if the ornamental features are not carried too far. If a cipher is ornamented too elaborately it detracts from its legibility. It is surprising how many people are unable to read even a plain cipher. Consequently, a cipher should be made as readable as possible, which necessitates its being rather plain in general outline. Then the ornaments should be so added as not to detract too much from the general appearance of the foundation of the cipher. Students are not infrequently partial to the so-called flower leaf ciphers. This is due, no doubt, to the fact that in these ciphers they find possibly more opportunity to display their artistic talent than in any other.

In presenting the cipher shown at Fig. 188 we have selected a style of leaf much used by skilled engravers, and yet one of such simplicity that it will be easy to master. This leaf should be placed on the widest part of all shade strokes where it will not conflict with any other loops or bars. The cipher can be made perfectly plain with the exception of the leaf on the shade strokes. We have here,

however, for the benefit of the student added smaller leaves and ornaments such as can be used to fill in and around a cipher. The

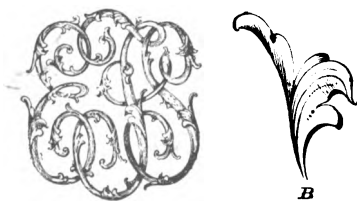


Fig. 188

background or foundation of the cipher shown at Fig. 188 is composed of parallel lines made to produce an oval effect in the bars of the letters. While we show the cipher here in this style, we wish to advise the student that the most common style of cutting flower leaf ciphers is to cut a fine line foundation for letters. They are sometimes engraved by outlining the bars of the letters and then cross-lining them and filling them in with the various styles of fillings for block ciphers and old English letters. This is, however, not as practical as the fine line and the style here shown.

At *B*, Fig. 188, we illustrate the flower leaf on a large scale, showing the student its general outline. In cutting this leaf the outlines should be engraved first, care being taken to shade the leaf at the points where they are shown shaded here. It will be observed that there are only three lines in the main part of the leaf composing the shading, that is, apart from the cross lines—the number of which does not matter. This is the portion of the leaf that gives the student most trouble, as he does not make these lines all radiate from the same point, or run through to the same destination, as he ought to. It will be observed here that the lines all radiate from and taper down to the left side of the leaf. This, from an art standpoint, is necessary in order to produce the effect of the leaf being curved at that portion. The object of curving the line of the leaf near the extreme right point is to give it the effect of being sunken in at that point. This leaf will give the student some difficulty until he has mastered the idea of its construction, and has become familiar with the number of lines necessary in forming it. No attempt should be made to shade the leaf until after it has been cut in outline complete.

A cipher of this description can be made in what is known as a double flower leaf cipher. The difference between such style and the one here shown is, that on the main shade strokes of the letters there are two leaves, one protruding downward and the other upward. Between the two leaves there can be a different filling from that in the remaining portion of the cipher. Such work as vermicelli, beadwork, etc., can be engraved in between these two prominent leaves, while the remaining portion of the letter could be engraved in the style here shown. The main leaves of the cipher should be the same, not necessarily the same size but as nearly so as space would permit, and as nearly the same shape as possible in the space ; but the small fancy cuts or portions of leaves protruding

from the various loops and bars of the letters are not necessarily engraved the same. In fact, these are usually an innovation of the artist as he proceeds with the work ; he making them in such shape and size as is deemed necessary to fill the space artistically. We have previously mentioned the fact that it is advisable to design all ciphers perfectly plain first, then add the leaves or other ornamentation.

It would seem to the student in looking at the cipher at Fig. 188 as if he should make the ornaments as he was sketching the cipher. This is entirely wrong. The cipher here shown was designed perfectly plain first in outline, then the main leaves were added. Some of the little ornaments, or portions of leaves, were not designed at all, but cut as they were needed when cutting the cipher. Of course, for the student it would be advisable to design the cipher in outline complete, and then to add all the little ornaments complete ; not depending upon his eye to cut any of the ornaments. Skilled artists, however, can make such little cuts with as much accuracy without the aid of a previous sketch as with it, and time is saved in this way. The same general style of leaf as here shown can be, and often is, twisted and formed in somewhat different shapes. Some engravers will make them more blunt on the end and some more pointed. The one we have selected, however, will probably be found the best for general use.

A flower leaf cipher well engraved necessitates a large amount of work and much skill. In fact, in the flower leaf ciphers we find the artistic abilities of the engraver brought out to their fullest extent. This being true, the student is advised to engrave this style until he has mastered it thoroughly, as the work of cutting it is very effective in developing his ability both from an artistic and mechanical point of view.

CHAPTER XXX.

BLOCK CIPHERS.

At Fig. 189 we illustrate the complete alphabet in block monogram. There are many different styles of block monograms and many different styles and ideas of entwining them. It would not be practical for us to give time and space to the various styles of fillings, etc. The student will, however, from the illustrations here given, gain

sufficient information to develop into a good monogram engraver. The first thing to do in engraving a block monogram on a watch case, or any other round surface, is to first make the circle and lines, as shown at Fig. 173, which gives the student all of the necessary lines for drawing the monogram with great accuracy.

In engraving a block monogram it is necessary to make three different shaped letters, one oblong, one medium and another full or grotesque. By making the letters

in this way we find it very easy to entwine any three letters in the alphabet, and if the student will observe any three-letter monogram that may come to his attention he will find that there is one long letter and one very broad letter and one medium shaped.

There is one very common error in monogram engraving, which we must criticise at this point, and advise the student in reference to before we give any ideas of entwining. We show at Fig. 190 a monogram beautifully engraved from a standpoint of accuracy, and yet crowded at the top and through the center and at the base. This is one of the common errors in block monograms and in cipher also. This monogram could be made very artistic

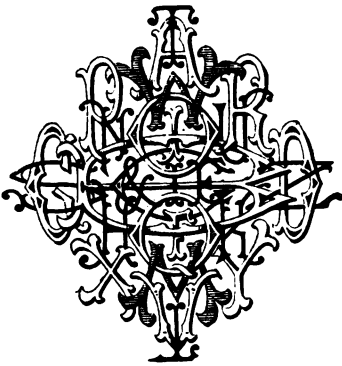


Fig. 189

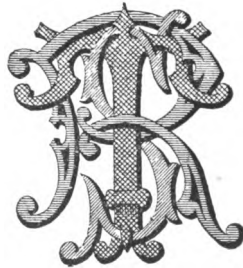


Fig. 190

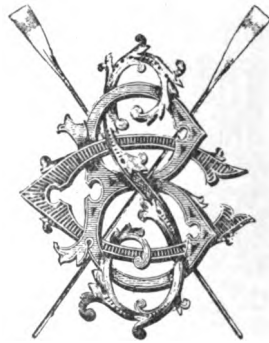
and devoid of such crowding, as the samples to follow will show. Another fault of the monogram here given is that the styles of filling are so similar that there is not a sufficient distinction between the letters. A block monogram, in order to be readable, should have different kinds of filling. Most block monograms are so made that each of the three letters will touch the circle in which they are engraved. Some, however, are made on different lines. Usually block monograms are filled on the inside of the general outline.

Students in the art of engraving appreciate the value of samples of monograms or monogram designs, and often make inquiries as



H.K.B.

Fig. 191



S.B.C.

Fig. 192

to where such samples may be procured. The best collection of monograms known to the author is "The Keystone Portfolio of Monograms," containing 121 different designs and quite a variety of combinations. This useful portfolio can be procured from THE KEYSTONE for 50 cents. By way of an object lesson in block-monogram engraving we here reproduce a few specimens taken from the portfolio, each illustrating some point that merits the special attention of the student.

At Fig. 191 we show a monogram which is without the fault of crowding and shading, to which we called attention in Fig. 190. Attention is also directed to the style of entwining and to the protrusion of portions of leaves from the principal letter.

Most block monograms are engraved perfectly round. Sometimes, however, the engraver has occasion to engrave them oblong.

We illustrate at Fig. 192 a monogram engraved oblong. In this case the instruction given in reference to making a circle would apply, excepting that it would be necessary to make an ellipse and then draw the necessary guide lines, as shown at Fig. 173. The S in this monogram has the artistic features of a flower leaf cipher letter, the bars of the letters being parallel and composed of ornaments representing to some extent the outline of a leaf. It will be seen that the line work to make this style of letter is something after the style used in making an oval parallel line monogram, and the shading of the ornaments is the same or somewhat similar to the shading of leaves in flower leaf ciphers. Great accuracy is de-



H. A.

Fig. 193



A. A.

Fig. 194

manded in cutting these shade strokes. The cross lining of the C in this combination can be done with a flat-face graver, round-face graver or a square graver. If the strokes are to be heavy a round-face graver can be used to advantage. All the fine-line cross lines are done with a flat-face graver.

At Fig. 193 we illustrate a very beautiful monogram, the design of which is something beyond the ordinary from an artistic standpoint, as in such a combination it is difficult to obviate crowding the bottom of the A and H at the base. The artist, however, in this case has thrown the bars of the A around in such a way as to fill in the vacant space on the right and left of the H, and at the same time has so utilized the material of the A as to make it complete and oval. A monogram of this style can be engraved complete with a square graver. The vermicelli filling in the A is

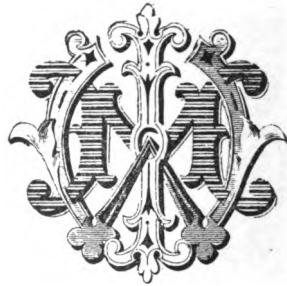
made by making little crescent cuts with the square graver, as close together as possible. The H is made by parallel lines as previously described.

At Fig. 194 we illustrate a monogram of two letters A A, it being, of course, pointed at the top, yet this monogram is made in such a way that the combination would fill a circle to advantage. The artist, in designing this monogram, evidences much ability as a monogram artist.

In cutting a block monogram the style of shading in cutting on a watch case is usually fine lines, the same as in cutting fine-line old English, as previously described. The most common



L.M.H.
Fig. 195



L.M.W.
Fig. 196

fillings for block monograms are cross lines and dots, or cross lines and plain filling and bead work.

We illustrate a monogram at Fig. 195, the principal letter of which is engraved with a bead-work style. In making these beads after the line has been engraved on the inside of the delineation or outline of the letter, a circle is engraved for the bead and then the little lines around on the lower right side of the circle, producing the shade effect which gives the appearance of a bead. The black background of the H, here illustrated, is made by fine lines or by chopping the surface out between the beads with a flat-face graver, as described for making the diamond border. It will be noticed, however, that on the L in this monogram, a leaf similar to the style of leaf mentioned and illustrated at Fig. 188 is used.

We often have monograms of combinations that are very difficult to entwine, and a monogram containing an M and W often gives the engraver trouble. We illustrate a combination of L, M, W,

at Fig. 196, where a style of a W, somewhat different in form from the ordinary letter with which the student may be familiar is used, in which case the objectionable features of this combination are

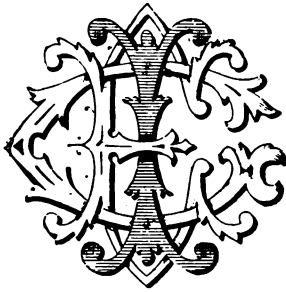


1887.
Fig. 197



S.W.W.
Fig. 198

entirely overcome. It will also be seen that the style of work around the W is such that the leaf similar to the flower leaf previously described can be used to advantage. The filling on the M is made by making a heavy and a light line alternately.



G.E.I.
Fig. 199



W.H.R.
Fig. 200

At Fig. 197 we illustrate a monogram of four figures. The little dots on the center in this case are made with a round-face graver. The little ornaments around this monogram are, of course, done with a square graver, and show the student how such little artistic cuts can be placed around a monogram sparingly and produce a very artistic effect.

Two W's in a monogram are very difficult to entwine. We show at Fig. 198 a monogram, composed of S W W, showing the student how the two letters can be entwined to advantage. It is sometimes desired to make several little ornaments protruding from a letter or make a letter in outline rather fancy or ornamental. A monogram after this design is shown at Fig. 199. The filling in this monogram is rather plain. The style of the fillings can be arranged to suit the artist.

One of the most common fillings in use in high-class monogram work is that known as vermicelli filling. The vermicelli engraved watch cases are very well known to most of our engravers,



A.B.C.

Fig. 201



H.E.D.

Fig. 202

especially those who are jewelers. This class of work requires considerable skill, and yet is made by simply making a continuation of little curves and circles, several little curves within a larger curve. The initial R in the monogram shown at Fig. 200 is filled with this style of vermicelli.

At Fig. 201 we illustrate a monogram of the first three letters of the alphabet, showing a very neat combination and some little fancy ornaments added thereon that can be applied to many other styles of letters. The beads on the B are also made very delicately, which shows another way to use the beads to advantage.

A block monogram can be engraved to advantage on a very elaborate scale if the engraver has a perfectly plain case to engrave on, by engraving the letters rather plain in outline, something similar to the combination shown at Fig. 202. No filling is

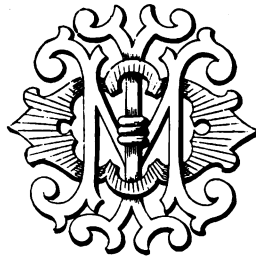
engraved in the letters, which are left perfectly plain, the vermicelli style of engraving previously mentioned being then cut in and around the letters. This style is sometimes engraved by cutting around the letters, making little cuts nearly triangle shape with a square graver, and so close together that there would be none of the original surface left. This would leave the letters perfectly plain, and the case all around and in between the letters fully engraved, the effect of which is very beautiful. Of course, it would be necessary in a case of this kind to engrave the case all over the same style or make a circle of the same on the front case.

We often have monograms of more than three letters. We



J.B.C.D.E.

Fig. 203



M.I.O.

Fig. 204

show a monogram of five letters at Fig. 203, showing the student that if the letters are changed in form by making some of the letters very full and the others very slim, even a five-letter combination is not a difficult task.

The monogram shown at Fig. 204 gives the student many points in reference to the ways of ending of letters.

We sometimes have a request for what is known as rustic monograms. In other words, a cipher made to produce the appearance of a branch of a tree. We illustrate a monogram at Fig. 205, two letters of which are made after this style. It will be seen that the filling is very easily done, and the student who has followed our lines of instruction thus far is familiar with the cutting. It is simply a matter of cutting shade strokes with a square graver, producing the effect of irregular outline.

We illustrate a three-letter rustic monogram at Fig. 206, showing a very odd combination.

At Fig. 207 we illustrate a combination showing how the lower



Y.A.C.
Fig. 205



B.S.C.
Fig. 206

portion of a P can be thrown around to the right to fill in a space in order to make a monogram round.

We have previously mentioned the fact that the most common



J.D.P.
Fig. 207



A.W.K.
Fig. 208

fillings for block monograms are the parallel line, beads and dots. We show a monogram made after this style of filling at Fig. 208.

At Fig. 209 we illustrate a combination showing a style of fancy filling in the B which is worthy of the consideration of the student. In designing a block monogram the student should usually

first make the full or broad letter; then the medium letter, and then fill in the oblong letter. Of course, there are combinations where this rule would not apply. Block monograms are first designed by making the outline plain but very accurate, after which it is advisable to scratch the designs on with the steel point of the stylus; the designing material, be it what it may, either wax or Chinese white being then rubbed off. Then we have the clean, smooth surface of the metal to work on. In cutting a block monogram it does not matter whether the first, middle or last letter is cut first. Usually, however, it is the custom of most engravers to cut the last initial first. In engraving a block monogram the student should make the last letter of the initial the heavier or most prominent. This can be done by either increasing the width of the bars of the letter or by making the filling more prominent than any of the others. By observing the designs we have shown it will be seen that this is the rule carried out.



H.F.B.
Fig. 209

One of the most elaborate styles of shading a block monogram is by making little cross lines, all of which should be made on the same angle—starting from the inside of the shade stroke and protruding to the outside. This method of shading is illustrated at

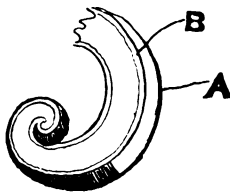


Fig. 210

Fig. 210, where we show a bar of a letter, the line *B* being the inside of the stroke and the line *A* the outside of the lower portion of this bar which we have shaded, showing the student how the lines are made. These lines should be so close together that there is no visible surface between them. Some surface is shown in the illustration here given in order to show the student how

the lines are made, but in actual work the lines start on the line *B* and are very close together. In fact, one line reaches up to the edge of the other. Then, as the graver is pushed forward, it is pushed in deeper, thereby increasing the width of the incision. By cutting the shade stroke in this style it gives the monogram the appearance of being raised much above the surface of the metal upon which it is cut.

The common error of students in cutting this style of shade is that they do not cut the lines all in the same angle. As previously mentioned they should all be cut on the same angle, it matters not whether they are on top, at the extreme right, or end a bar of a letter. In cutting this style of shade strokes it is the practice of the best engravers not to cut the line *B* until after the shade cuts have all been made, in which case we must gage the distance between the line *B* and the outside of the stroke *A* by the eye; it being necessary, of course, to increase and decrease the length of these lines according to the width of the shade stroke. Then after the shade strokes have all been cut, the line *B* can be engraved around and the edges of the same trimmed off with great accuracy. There is no objection to cutting the line *B* first if the engraver so desires.

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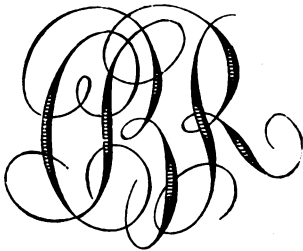
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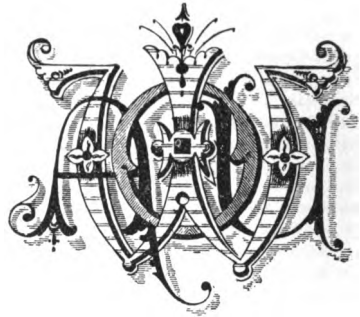
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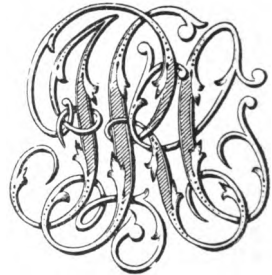
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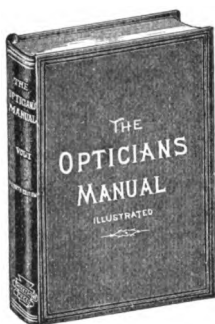
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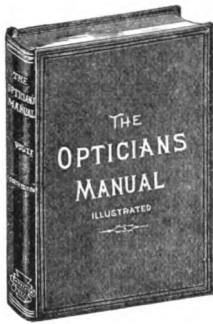
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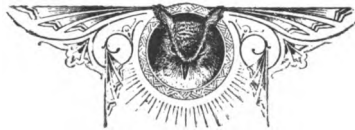
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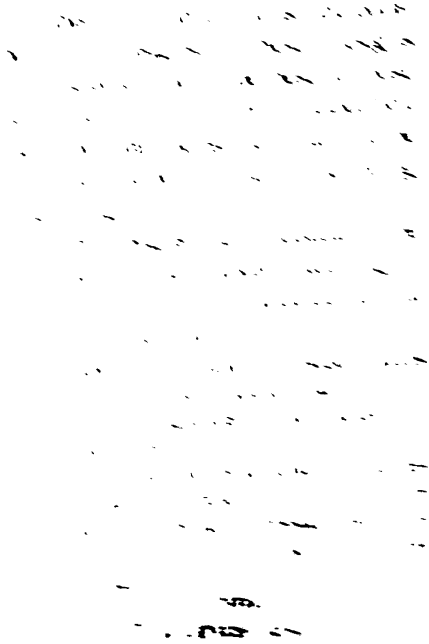
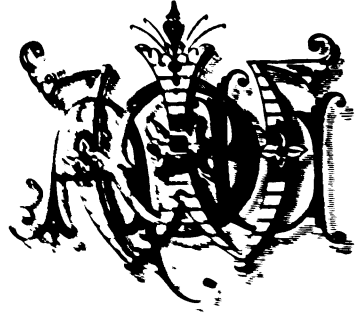
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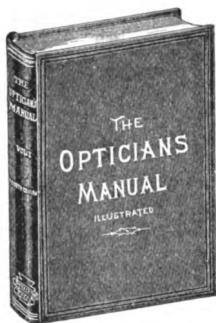
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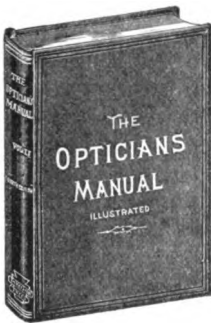
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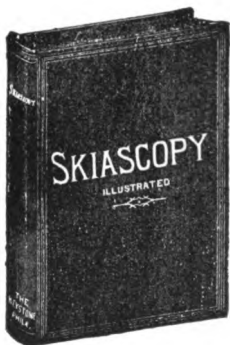
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