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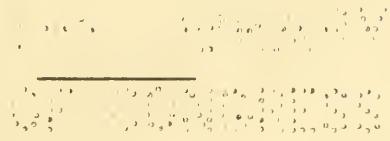
ON

LETTERING AND SIGN PAINTING

✓
INTERNATIONAL CORRESPONDENCE SCHOOLS
SCRANTON, PA.

ELEMENTS OF LETTERING
LETTERING AND SIGN PAINTING
THE FORMATION OF LETTERS

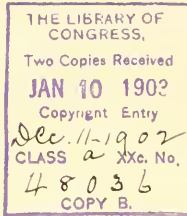
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PREFACE.

This volume differs from the one previously sent to students of our Lettering and Sign Painting Course in that the plates, instead of being printed separately and placed in a portfolio, are now inserted on guards in the volume itself. We have been induced to make this change by the fact that the plates as formerly printed were very inconvenient to use for purposes of reference. In the first place, unless the plates were put back in the portfolio in exactly the same order they were taken out, it was necessary to search through the portfolio each time it was desired to refer to a plate. Again, the plates were liable to be mislaid and the edges were likely to become turned; the plates also became easily soiled. For these reasons and others we had new cuts made of these plates slightly smaller in size, had the text matter that was printed in connection with the plates reset and inserted in the volume under the title of *The Formation of Letters*. The plates were then inserted on guards and located in their proper places near the references to them. We think that the present arrangement will prove far more satisfactory than the old one, especially whenever the work is used as a book of reference.

In addition to the Paper entitled *The Formation of Letters* there are also included in this volume two other Papers, one entitled *Elements of Lettering*, and the other *Lettering and Sign Painting*. The first, *Elements of Lettering*, contains the instruction necessary to enable the student to properly apply his knowledge of letters and their formation to suit every requirement, both in treatment and modification, and also in their various arrangement in all forms of inscription and combination designs. This Paper gives a complete education in the art of lettering in all its branches wherein a knowledge of color is not necessary. The

second Paper, *Lettering and Sign Painting*, gives the student a complete knowledge of all tools, appliances, and materials used by the advanced sign painter. It includes also instruction in the use of the brush for all purposes, and the preparation, combination, and practical application of colors to all materials. It contains all the methods, processes, and formulas for producing letters on such surfaces as metal and glass by the use of acids, and also instruction for the preparation of all surfaces on which lettering is to be placed.

The author of these Papers, Mr. C. J. Allen, has had a very wide experience in teaching the origin of letter formation and in teaching the art of lettering, and is a thorough master of the subject in all its branches. Great care has been exercised in the selection of the plates containing the various styles of the alphabet. We feel confident that nothing equal to these plates has ever before been published. The utmost pains have been taken to give the student the true form of the various styles of letters shown on the plate. The Courses have been carefully arranged to meet the requirements of every one engaged in any business that demands a knowledge of letters and their construction.

INTERNATIONAL CORRESPONDENCE SCHOOLS.

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EXAMINATION QUESTIONS.

ELEMENTS OF LETTERING.

INTRODUCTION.

1. Purpose of This Course.—It is the purpose of this course of instruction to combine the classical with the practical so as to meet the needs of all students desirous of studying the esthetic and antique, as well as the plain and simple, styles of lettering. The plates are therefore arranged and classified on a simple but progressive system, calculated to lead the student gradually from the plain and simple to the most difficult styles, but omitting from the course all such as are obsolete or not in common use.

Before requiring the student to apply himself to a knowledge of the present forms and classifications of the letters of our alphabet, he should become familiar with their history and the primitive forms of writing. He should also note the important national changes that have caused a transition from one form into another, until our present advanced era has been reached with its great variety of styles, distinctively different in character one from another, and each arising from some important period in the world's history in which the fundamental or parent style was closely allied to a corresponding style of architecture.

In order that the student may derive the greatest benefit from this course in lettering, he should not rest content with merely reading this Instruction Paper carefully once or twice, but should study its contents carefully throughout his entire course. It is only by practice and steady progress in acquiring a knowledge of the styles and formation of letters that the real value and importance of much of the instruction given in this Paper can be rightly understood and its full meaning appreciated.

HISTORY OF THE ALPHABET.

2. **Classification.**—The wonderful achievements in the arts of printing, photo-engraving, lithography, etc. have been the means of transforming the letters of the alphabet into a variety of forms or styles, which may be classified under three general heads: Plain, Ornamental, and Grotesque. The history of our alphabet and of the forms known as the *fundamental* styles will be found not only of interest but also of great profit to one who is to devote himself to the art of lettering. The degree of perfection attained in the alphabet, not only in phonetic value, but also in simplicity and completeness, makes it a monument of the intellectual advancement of the present day—a condition to which the people of all ages have contributed—although the reader may never have considered its source nor the many changes necessary to its growth and perfection. The twenty-six signs, or letters, that we call the *alphabet* are separated into two classes: those representing no syllabic sounds in themselves, which are called *consonants*; and those possessing two or more such sounds, called *vowels*. The latter in some cases are scarcely more than a breath sound, but each has a clear phonetic value, and fills an important place in our written language. By means of other characters placed above the vowels, every word may be written to express its proper sounds. We are, therefore, enjoying today the fruits of the achievements of the human intellect through forty centuries of development; for, in tracing the origin of the alphabet and the signs that led to its construction, we are compelled to go back to the dispersion of the human race through a period of over four thousand years, each epoch of which furnishes interesting developments in the growth of our letters. It will be impossible in this short treatise to fully consider this interesting history and growth, or give more than a passing glance at the world's primitive history; although in it is to be found the source of the forms whose transitions from one system of characters to another give us our present alphabet. Nor can we dwell even on the relation these characters bear to one another. The degree of intelligence attained in each period of human

history is marked by the progress made in the methods of writing, which enabled its people to record events, impart knowledge, and transmit messages to one another.

3. Ideograms.—The Scriptures inform us that when Babylon and Nineveh were built all people were of one language, and the similarity of the Babylonian, Egyptian, and Assyrian sign languages gives some evidence of this fact. The descendants of Noah are supposed to have occupied these localities after the dispersion: Shem, that of Babylon and Eastward; Ham, North-eastern Africa; and Japheth, Western Assyria and Asia Minor.

Each system of writing began with rude pictures of objects, more or less conventional, which gradually became the representatives of words, afterwards becoming the symbols of letters, or elementary sounds. We can, therefore, trace the transition from the *ideogram*, or expression of thoughts by means of pictures, to the *phonogram*, or expression of sounds by means of drawn or written symbols. Many ideograms are in common use at the present day, which proves that the Egyptian method was not without some merit. For instance, the sign \$ is derived from the monogram U. S. The barber's pole—the red stripe of which symbolizes a "blood-letter" (a custom of past ages)—the three balls used by the pawnbroker, the American flag, the sign per cent. (%), the algebraic signs, and many others are all ideograms.

4. Cuneiform Writing.—The letters of our alphabet are the outgrowth of the ancient Hebrew alphabet and Egyptian hieroglyphics (the earliest form of writing), as well as of the Assyrian cuneiform characters. In tracing to its origin the form of each letter, we are surprised at the marvelous transformations these characters have undergone before reaching the simplicity that marks their present construction. While alphabetic systems have become simplified, the Chinese system, on the other hand, which is not alphabetic, has grown more and more complicated, and affords an example of how a people, isolated for four thousand years from the rest of the world, were unable to advance beyond the ancient system of ideographic writing. The Chinese system is evidently the outgrowth

of the cuneiform characters, which are wedge-shaped, and are arranged in groups to express a thought. The simplicity of our alphabet system compared with the Chinese may be appreciated when we consider that a boy ten years old, in an American school, has acquired the same facility in reading and writing English that would take a Chinese student twenty-five years to accomplish in the study of Chinese characters.

5. The Arabic and Roman Numerals.—Without a general knowledge of ancient history it is impossible to form a clear outline of the history of writing, as one is inseparable from the other. From the confusion of tongues to the exodus of the Israelites from Egypt, a period of several centuries, we know that the three continents of Europe, Asia, and Africa were largely peopled; and, though Chinese legends point to periods much earlier than this, the system by which they have come to us, being based on object pictures, produces no evidence as to their reliability. The Hebrew writing, supposed by some authorities to be the outgrowth of the so-called Semitic writing, does not owe its origin to this early period; for there is sufficient evidence to show that the Hebrew alphabet did not come into existence until later. In the middle of this Semitic period, however, occurs the birth of Ishmael, from whom the Arabian race is descended, and to this race we are indebted for our present numeral characters 1, 2, 3, etc. The system known as the *Roman* was in use much earlier, and probably originated in ideographic writing. The digits I, II, III, IIII were originally pictures of the fingers; the V was shown by the whole hand, the fingers collected and the thumb spread apart. The X was expressed by both hands together, each being in the position used to indicate the V. The increase or decrease of value was indicated by placing a digit before or after the V or X. This system is still in use for certain purposes, one of which is the numbering of the hours on the clock dial.

6. The Hebrew Alphabet.—The progress and development of all systems of writing are marked by national changes, and, therefore, when entering on a second historical period of about a thousand years, beginning with the exodus from Egypt

and reaching to the captivity of Israel and Judah, we find a nation of at least 4,000,000 people leaving Egypt and afterward forming a most important element of the divisions of nations and one strongly influencing the many systems of writing. To this great people, it is believed, was given an alphabet, and a language in laws and commandments, embodying civil as well as ecclesiastical polity. The purity of this alphabet has remained to the present time, surviving thirty centuries, the only changes being the present Hebrew characters, which assume more of the square construction than the originals. From this nation also springs another system or alphabet—that of the Samaritans—but before considering this let us turn our attention to another country and people, the Phenicians. The Israelites occupying Palestine were neighbors of this aggressive and thrifty people, and were brought into harmonious relations with them. The chief cities of Phenicia, Tyre and Sidon, were, during the reign of Solomon, maritime centers of great activity. It is assumed, therefore, that the Greek alphabet came directly from the Hebrew and Phenician, while the Phenician in turn was evolved from the Assyrian, Egyptian, and Moabitish.

7. The Samaritan Alphabet.—We find that the Samaritan alphabet has Hebrew as a base, with a strong interspersion of Assyrian and Chaldaic. Israel, about the middle of this period, was divided into two kingdoms, the two tribes constituting the kingdom of Judah and the ten tribes that of Israel. The latter, as well as the Egyptians and Phenicians, suffered severely from the Assyrian and Babylonian invasions. These powerful eastern empires took captive the ten tribes of Israel, thereby causing their complete downfall and loss of national identity. The Mosaic laws prescribed that the soul that did not observe certain ceremonies after eight days would be cut off from Israel; the ten tribes failed to observe these ceremonies as a nation, and therefore lost their identity in the Hebrew family. They returned to Samaria subsequently, however, and held to a revised Pentateuch—hence the lost ten tribes of Israel and their relation to the Jews. Mention is made of this to assist the student in locating the origin of the Samaritan

alphabet, which is so made up of others that little or no reference is usually made in regard to its origin, bearing as it does so close a resemblance to the primitive Hebrew. The only examples of the earliest alphabets are to be found on monuments or tabulated inscriptions, on coins, and on fragments of utensils. Among these the principal ones during this period are the Baal-Lebanon Bowl, 10th century B. C.; the



FIG. 1.

Moabite Stone, 9th century B. C.; and the Siloam Inscription, 7th century B. C. This period closes with the captivity of the remaining two tribes in Babylon 588 B. C.

S. The Phœnician Alphabet.—The Phœnician, as previously stated, is the source of our phonetic alphabet; and the ascendancy and decline of the Grecian empire and the establishment of the Roman marks another period, during which the alphabet characters attained their present development, as shown by the inscription on the Arch of Titus, built 70 A. D., a cut of which is shown in Fig. 1. In recapitulating what has

thus far been stated, we have satisfactory proof that our phonetic alphabet came from the Hebrew, but descended through the Phenician branch.

9. The alphabet characters have slowly evolved from hieroglyphic writings, first from syllabic signs, and these forms must have been developed from verbal phonograms. The verbal phonograms were adopted from ideograms, which could have originated only from picture writing. Surrounded by such advantages as the Hebrew and the Egyptian characters, and all other forms of writing, it is not surprising that the Phenicians should have constructed an alphabet of clear phonetic value, which afterward gave birth to the classic Greek. The name of every letter of the Hebrew has a significant meaning, while the Greek names, though similar, are meaningless. For instance, the first four letters of the Hebrew and Greek alphabet are as follows :

HEBREW.	GREEK.
<i>Aleph</i> (ox)	<i>Alpha</i>
<i>Beth</i> (house)	<i>Beta</i>
<i>Gimel</i> (camel)	<i>Gamma</i>
<i>Daleth</i> (door)	<i>Delta</i>

10. **The Greek Alphabet.**—Several centuries of the Hebrew period elapse before the Greek alphabet becomes an important factor in the formation of our alphabet, in fact not until after the fall of Greece as a universal empire. But as early as 880 B. C. there came with the birth of the Greek alphabet a most intellectual conception of literature, art, and architecture, of which subsequently the Latins were only imitators.

11. **The Latin Alphabet.**—Although the Greek alphabet still remains, evolution continues as long as the imperfect exists, and with the fourth universal empire comes the Latin alphabet. As the Roman empire was composed of almost the entire civilized world, their alphabet formed the base, or was the mother of all modern styles of writing. The Roman alphabet

16. Modern Styles.—Of the styles of more recent date, the style known as Rund-Schrift (round-writing), which is an adaptation of the German Renaissance, was the invention of a German. Aside from this we name with much pride several styles known the world over as American writing; these are the Full Block, Half Block, both plain and antique, Railroad Block, Round Full Block, Spencerian Script, and Shippers' Box Marking. These styles are used chiefly by letterers, while the varieties in type which are of purely American origin are so numerous that we would not attempt to classify or name them. Their form and style are peculiarly identified with printing, and are seldom if ever used by letterers; while to the art of printing under its many heads is due all progress made in the invention of styles of writing since the 15th century.

GENERAL RULES.

17. The few general rules following are very important to the student, and it is necessary, therefore, that they should be carefully observed and followed.

1. Do not attempt any form or style of letter other than the style furnished for each lesson.

2. Do not allow the eye to dwell on that which is inartistic; for, just as truly as "evil associations corrupt good manners," just so surely does association of the eye with that which is out of proportion, distorted, or irregular, leave an impression which is lasting in its effect on, and by no means easy to dispel from, the mind. When the student has advanced to the study of inscription designing and ornamentation, he will better appreciate the importance of this advice.

3. Do not become discouraged if you do not make as rapid progress as you should like to. The assertion is often made that "it is not possible for one to become a master of an art or profession, without a natural talent for it"; this may be true along some lines, but it is not true in regard to lettering, especially if behind the effort there is persistent will power and a patient determination to succeed. Concentration of thought and constant practice must of necessity follow these qualities.

4. Give as much time to practice as possible; do not be satisfied to make a letter several times only, but practice each letter until you have mastered it, and have learned perfectly all the rules governing its construction in every characteristic line and stroke.

5. Be sure you thoroughly understand all of the instruction pertaining to each plate before beginning to practice. Study the instructions carefully with the plate before you.

Strive to excel; despise mediocrity.

The advantages offered in this course should induce every student to aim above a general knowledge of letters only, and to seek to attain a position equal to that occupied by the few that fully understand the many forms of alphabetic characters and all their applications.

18. Materials Required.—When practicing in the evening, use a good steady light, and place this directly in the rear of the table on which you are working, and from 12 to 18 inches above the work, while the eyes should always be protected from it by means of an eye shade. The student will need the following materials:

Drawing instruments	1 velvet rubber; 1 Faber's improved ink eraser
Drawing board, 16 in. \times 21 in.	
T square, 22½ inches	½ doz. sheets Whatman's drawing paper, 12 in. \times 19 in.; ½ royal size
2 triangles, 45° and 60°	
1 scale	2 red sable brushes, Nos. 3 and 4
½ doz. thumbtacks	1 pad ruled paper, 2 in. \times 7 in.
Drawing pencil	
1¾ oz. bottle waterproof drawing ink	

19. Draftsmen and other students interested in a similar class of work will find these tools sufficient for practice and specimen work. But for the benefit of the students that wish to apply a knowledge of lettering to sign painting we would advise that the practice work be done on cardboard or Manila pattern paper, using a camel's-hair brush, and card black, the preparation of which will be given hereafter. By this process the letters can be made any size, but the plate sent in for correction must invariably be 8¼ in. \times 15 in., inside the border lines, which are 1½ inches from the edge of the paper.

DRAWING THE LETTERS.

MECHANICAL AND FREEHAND LETTERING.

20. Instrumental and Freehand Drawing Definitions.—Drawing is the art of representing objects on a convenient surface, such as paper, by means of lines or colors, or both. The representation of an object in this manner is called a *drawing*. If the pencil, brush, pen, or marker by which a drawing is made, is guided wholly or partly by instruments, as, for example, by a straightedge or by compasses, the drawing is called an *instrumental* or *mechanical* drawing. If no instruments are used, the lines drawn by the free hand, and all dimensions laid off by eye only, the drawing is called a *free-hand* drawing. A preliminary rough or unfinished drawing is usually called a *sketch*.

21. Purpose of a Drawing.—The purpose of a drawing is either to assist the memory or to convey to others an idea of the shape, size, combination, form, color, or appearance of some object. Drawings also aid us in perfecting ideas when we are designing or inventing. The practice of freehand drawing trains both the hand and the eye. It enables one to estimate distances and lay them off on a drawing correctly, and to compare the relative sizes of angles, lines, and figures in general. It thus trains the hand to draw quicker and better with instruments. The ability to draw well freehand is one of the most useful of accomplishments.

22. There are but two plates or styles in this course that are in the true sense mechanical styles, that is, made exclusively with the aid of a straightedge and other instruments. These are the Full-Block Plate and the Half-Block Plate. The others are made up of straight lines and curves. These curves, though slight in many cases, are all drawn by the free use of the hand, and therefore, so long as freehand drawing enters into their construction, we have chosen to classify them under this head. We advise the use of the straightedge, however, in

making all straight lines, whether in mechanical or freehand styles, but do not recommend the use of the compasses in making curves in freehand letter styles, unless a perfect circle is required.

COMPONENT PARTS OF A LETTER.

23. Stroke.—The stroke is the term applied to the width between the outlines forming the letter; when applied to letters possessing more than one width between its outlines, it always refers to the greatest width, and usually the vertical portion of the letter, as distinguished from the “fine line.”

24. Fine Line.—The fine line is the line connecting the strokes or lines attached to them, forming a part of the letter, and is usually a horizontal line.

25. Spur.—The spur is a small projection from the extremity of a letter, and exists in several varieties, according to the style of letter on which it is used.

26. Face.—The face of a letter usually includes all the space forming a rectangle enclosing the extremities of the letter, but is often applied to the surface within the outline of the letter.

27. Shade.—This term is used to describe the treatment or finish of a letter, and is applied to a letter to give it the appearance of relief from the background; also to cause one part of the stroke to appear projected or depressed from the surface.

28. Block.—This is similar to the shade in effect, and is used to give a letter thickness, or, as its name expresses, to give it a solid block effect, in which case the shade also is sometimes used beyond the block in the form of a natural shadow.

29. Outline.—The outline of a letter is the line that forms the letter, leaving the body of the stroke open.

30. Width.—The width of letters always applies to the space occupied between the vertical lines to the extreme right and left, and never refers to the height.

31. Background.—The background is the surface on which the lettering is placed ; it is also sometimes called the *ground*, or *field*.

32. Condensing.—Condensing is a term applied to the closer spacing of the letters, or to making them narrower than normal width.

33. Elongating.—Elongating is the term applied when the letters are drawn out to a greater width than the normal. This term should not be confused with the appearance of a condensed letter, with the relation of its height to its width.

34. Cyma.—The cyma is a character employed to equalize the spacing of irregular letters by placing it where the space is open and requires something more than the plain letter to make the word appear solid. This character derives its name from the Greek, its undulating form resembling a wave. The cyma is usually attached to the letters A, L, M, W, etc. ; it is used in but few styles of lettering, while in some styles it forms a part of the letter itself.

SPACING OF LETTERS.

35. Importance of Spacing.—Next in importance to the formation of letters stands the art of arranging them in words in a way calculated to make the word not only legible but symmetrical ; this is called *spacing*. Nothing will destroy the harmony of a line of perfectly formed letters more effectively than a disregard of this art. Aside from a few general rules, the letterer must depend on his own good judgment, and cultivate the ability to proportion all spaces according to the combinations of letters. Irregular combinations occur in many ways, but true proportion must always reign in a word accurately spaced, so that its regularity is apparent to the eye at a glance. To accomplish this, special attention must be given to the following rules :

36. Correct and Incorrect Spacing.—Make the interspacings equal to one another, or as nearly so as possible. To do this may require the shortening of some extended letters, and the spreading apart of letters having vertical or parallel

lines. This is shown by Figs. 2 and 3, in which the right and the wrong spacing can be seen. The L in Fig. 2 is shortened a full stroke in width instead of one-half stroke, which is the normal width of the letter; and the space between the A and the W is about one-half the width of the letter A at its base. At the top of the A is shown the *cyma* used to relieve the space which cannot be equalized. The *cyma* is also often used in a

FIG. 2.

FIG. 3.

vertical position on the L, the point almost resting on the lower right-hand spur. Fig. 3 shows the effect of the rule followed by some letterers, who allow the same space between the extremities of all letters, and make no allowance for unequal-sized inter-spaces. The parallel strokes of the A and the W are the same distance apart as the L and the A, leaving the L full width. Many such combinations occur, and unless we observe this rule we may expect no better effects than in Fig. 3. Two projecting letters, either L's or T's, often occur together, as in such words as "millinery," "butter," etc., and at the same time in connection with letters that are full face or occupying full width top and bottom, as shown in Fig. 4. In such cases the L should be made the width of the stroke

FIG. 4.

FIG. 5.

narrower than the full-face letters, and the spaces between the latter and the right-hand letters next to them should be one-half the width of the stroke. There should be a space of the full width of the stroke between parallel-stroke letters, as the I and the L. In Fig. 5 the T's are shortened only one-half the width of the stroke, allowing the same space between them and the letters on each side as allowed in Fig. 4 between the end of

the right L and the stroke of the N. The letters, therefore, with which we shall experience the most difficulty in spacing, are the slanting-stroke letters A, K, V, W, and Y and the projecting letters F, J, L, and T.

37. Full Block and Roman.—When spacing such styles as the Full Block and Roman observe the following rules: When two letters having spurs come together, as

HE

leave the width of the stroke of the letter between the spurs. When a spur and a plain-stroke letter come together, as

HO

leave $1\frac{1}{2}$ width of stroke between body or stroke of letters. When two spurless letters, as

OS

come together, leave space of one stroke between them. Slanting-stroke letters, such as the W and the Y, leave the half-stroke space between the spurs, and the same space if the next letter be a spurless letter.

38. Egyptian, Half Block, and French Roman.—The Egyptian, Half Block, and French Roman can be spaced by the following rules: Leave width of stroke between all parallel-stroke letters, and one-half this width between projecting letters. Between round letters coming together on rounded sides, as

NOC

leave $\frac{1}{2}$ stroke. Between words never allow less than the space

of a full-sized letter, including spurs ; and, if possible, leave $1\frac{1}{2}$ spaces. Never allow letters to touch each other, except shaded letters, and not then unless it is unavoidable. Two round letters coming together, such as

OO

in condensed styles, having no spurs, may be allowed to almost touch each other without having the effect of doing so ; while such letters as

JE

produce the effect of being closer together than they really are.

39. Care must always be exercised in selecting a style of letter to suit a space as well as a word. The placing of a word in a given space not appropriate to it will cause the letters to be either so separated by spaces or so condensed for want of space as to make them unsightly and difficult to read. Under the heading of "Inscription Designing," the subject of the

SENATE

FIG. 6.

selection of styles to meet all requirement is fully treated. The appearance of the spacing of letters is similar to that of a company of soldiers. If a portion of the company be separated by a space greater than the manual prescribes, it has the appearance of a separate detachment and is noticeable at a glance. In the same manner, if a word is spaced properly throughout with but one exception, it has the appearance of two words. For example, take the word *Senate* shown in Fig. 6, where the space between the N and the A gives it the effect of two words.

PUNCTUATION.

40. There is seldom sufficient attention paid to this important subject among letterers, as may be observed on the signs on almost any public street.

41. Origin of the Apostrophe.—The apostrophe is frequently misplaced in the plural possessive case. To fully understand the rule governing the possessive case and the origin of the mark used to denote possession, we should first know that the apostrophe is used to indicate that something has been omitted. If we should look on the fly leaf of some very old book, we would see the name of the owner, "John Smith," and underneath, the words "his book," which was the early form of expressing the possessive. Later, it became a custom to contract the name and article possessed—thus, "John Smith's book"—and to insert the apostrophe to indicate that the "his" was omitted. By bearing in mind this simple custom, one can always locate the proper place for the apostrophe, according to the location of the pronoun. To further illustrate, take, for example, the words "men's and boys' clothing." To use the method of our ancestors we would express it, "men, their clothing, and boys, their clothing." According to the rule, the apostrophe and final "s" should be substituted for the pronoun, making the phrase read "men's and boys' clothing." Thus, the letter "s" would not be necessary after the apostrophe in the word "men's," as the pronoun "their," which has no final "s," is used; but for euphony, or to obviate harshness of sound, the "s" is often added after many words, and also omitted from words ending with "s" for the same reason.

42. The Comma.—The comma is frequently used where the period is the mark required. For instance, the words "John Smith. Law Office." make two complete and independent statements, and each should be terminated by a period. However, if the words used were "John Smith, Lawyer." the case would have been different, as there is but one statement, which should be terminated by the period.

RULES FOR PUNCTUATION.

43. Period.—The period is put at the end of every word, phrase, or sentence that is complete by itself, and not interrogative or exclamatory. It is also placed after all abbreviations.

Quit yourselves like men. The M. D. addressed his letter to James Howard, LL. D.

44. Colon.—The colon is an intermediate point between the semicolon and the period, and is used as follows :

1. After words that promise a series or statement of something important.

His accomplishments, he said, were not many : a stout heart, a firm resolve, and—fifty cents.

2. Before an important remark added to a sentence, especially when it sums up the sentence, or presents the meaning in another form.

Avoid evil doers : in such society an honest man may become ashamed of himself.

45. The Semicolon.—The semicolon is used to separate clauses that are themselves divided by the comma, or that require a point greater than a comma and less than a colon ; or to separate the parts of a loose series.

He was courteous, not cringing, to superiors ; affable, not familiar, to equals ; and kind, but not condescending or supercilious, to inferiors.

46. Comma.—The comma is the most frequently used of all the punctuation marks. The chief purposes for which it is used are the following :

1. To separate the terms of a closely related series, or two such terms when the connective is omitted.

Hedges, groves, gardens.

It was a dark, desolate region.

2. To separate terms that are contrasted or otherwise distinguished, and terms of which a part in one might be referred improperly to the other.

He is poor, but honest.

3. To set off a word, phrase, or clause that is parenthetical, or that comes between other parts and breaks their connection.

You will then, however, be in no better condition.

4. To set off a modifying word, phrase, or clause that is not closely connected with what it modifies, or that is removed from it by inversion.

Behold the emblem of thy state in flowers, which bloom and die. By Americans generally, the hero of the Battle of Manila Bay is beloved.

5. To set off words or phrases used independently or absolutely.

Ristallo, give me what is mine, and that right quickly.

6. To separate the predicate from its subject, when the subject is very long, and has a clause, or consists of punctuated parts.

The fact that he is allowed to go unpunished, makes him more insolent than ever.

7. To separate clauses that are neither very closely nor very loosely connected.

There mountains rise, and circling rivers flow.

8. Short simple sentences or clauses seldom require a point within them ; and phrases or clauses that stand in close connection with that on which they depend seldom require a point before them.

Tell me when it was that you saw him after he returned.

47. Interrogation Point.—The interrogation point is placed after every complete direct question, whether it forms a complete sentence or only a part of a sentence.

What mean'st thou by that? Mend me, thou saucy fellow?

—*Julius Cesar.*

48. Exclamation Point.—The exclamation point is placed after a word, phrase, clause, or sentence that indicates great surprise, grief, joy, or other emotion in the speaker.

Woe unto thee, Chorazin ! Woe unto thee, Bethsaida !

49. Dash.—The dash is chiefly used for the following purposes :

1. To show omission caused by interruption.

Cassius.

Yet I fear him :

For in the ingrafted love he bears to

Cæsar—

Brutus. Alas ! good Cassius, do not think of him.

2. To show emphasis or suppressed feeling, or to show an unexpected turn in thought or style.

Heaven gives to its favorites—early death.

3. To set off a parenthetical phrase, especially when emphatic or when there are other points within it.

To render the Constitution perpetual—which God grant it may be—it is necessary that its benefits should be practically felt by all parts of the country.—*D. Webster.*

4. Before echoes, or where the words “that is” or “namely” are understood.

The four greatest names in English poetry are almost the first we come to—Chaucer, Spencer, Shakespeare, and Milton.

50. Parenthesis.—The parenthesis is used to enclose some incidental remark or explanation that breaks the regular construction of the sentence and can be omitted without injuring the grammatical sense.

Know then this truth (enough for man to know),

Virtue alone is happiness below.—*Pope.*

51. Quotation Marks.—Quotation marks are used to enclose words taken from the saying or writing of another person.

The doctor made the sage remark, “while there’s life, there’s hope.”

52. Apostrophe.—The apostrophe is used to denote the omission of one or more letters.

’Tis pleasant, sure, to see one’s name in print ;

A book’s a book, although there’s nothing in ’t.

—*Chatterton.*

53. Hyphen.—The hyphen (-) is used (1) at the close of a syllable that ends a line when the remaining part of the word must be carried to the next line ; (2) to join the parts of compound words.

54. Ditto Marks.—The ditto marks (") are used to avoid the repetition of the word or expression directly above them.

55. Underscore.—The underscore is a line drawn under words in manuscript or copy to give them special emphasis, showing that they are to be printed in *Italic* or capitals, one line denoting *Italic*, two lines denoting small capitals, and three lines large capitals.

SHADING.

56. Shading on the Left Side.—Shading is used to cause the letter to appear in relief, and thereby take away the flat or plain appearance. Shading may be placed on the top, bottom, or either side of a letter, but it should at first always be placed on the bottom and left side; as, for several reasons, it is best not to try to shade a letter on the right side until the student is familiar with the left, as he will use this side for all practical purposes. The reasons for giving this side the preference are: (1) Regularity and symmetry of the shade occurs



FIG. 7.

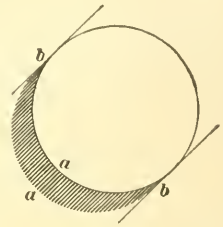


FIG. 8.

in more of the letters when shaded on the left side, such as the S, E, C, R, etc. Fig. 7 illustrates this advantage, and shows the single stroke on the left at (a), and the broken shade from the stroke on the right side at (b). (2) By shading to the left, the letterer can accomplish more in a given length of time, and produce a better effect in his work when finished. (3) The majority of strokes in shading to the left are drawn towards the letterer, while in shading on the right the brush is pushed to the right, which in itself is a strong argument in favor of the former.

57. Shading should always be executed on the assumption that the light falls on the letter at an angle of 45° . This principle can best be shown by reference to Fig. 8. The maximum width of the shade occurs at *a, a*, midway between the two lines *b, b*, and then diminishes to lines *b, b*, where it is completed. The tendency of the average letterer is to give too much thickness where shade begins or finishes. All letters must be shaded on the same angle at every point, and, after practice, this angle becomes as well established with the letterer as the horizontal or vertical lines. Every characteristic point of the letter must be shown in the shade, as at *a, a*, Fig. 9, and all

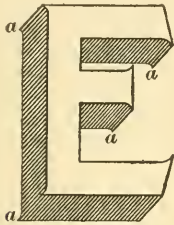


FIG. 9.

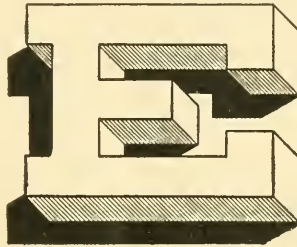


FIG. 10.

must be of equal width in all letters except the round characters, whereon the shade reaches this width only at the maximum point of thickness in the letter.

58. **Block Shade.**—There are many methods of obtaining beautiful effects in shading, which will be considered separately. The block shade, as its name indicates, consists of the effect of making the letter appear to have thickness. This is done by the use of two shades, the dark, or stronger, one being used underneath all horizontal strokes, and the lighter tint on the side of all vertical strokes. The block shade can be placed on the top or right side of the letter, in which case the block, as well as the letter itself, is shaded as shown in Fig. 10. Here the shade has below and to the left of the letter the appearance of a cast shadow.

59. **Cast Shadow.**—The cast shadow is also used in connection with heavy-stroke letters, block shading, etc., giving the

letter the appearance of standing upright, either on a level or on a slanting surface. The top of the shade is on a line about one-fifth of the height of the letter below the top. The shade is made on an angle of 30° to the left, the point resting on the

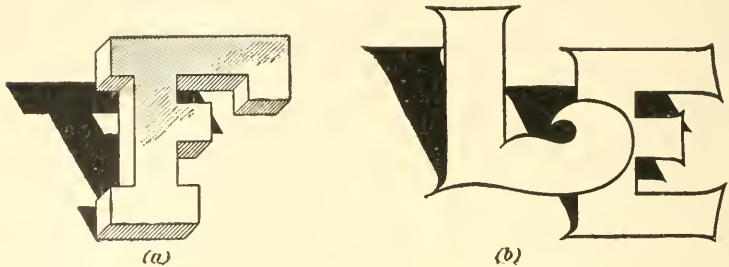


FIG. 11.

lower left corner of the letter, as in Fig. 11, where (a) shows the letter with a block shade and cast shadow, and (b) shows the simple outlined letter and cast shadow. The shade is sometimes used by duplicating the letter in the form of a shadow cast on the background, one-fifth of the height of the letter below the top, and on the same angle (45°) as the regular shade, as shown in Fig. 12.

60. Relief Shade.—Relief shade is obtained by leaving a space between the letter and the shade on the same angle as

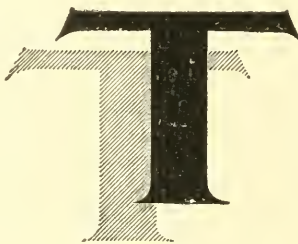


FIG. 12.

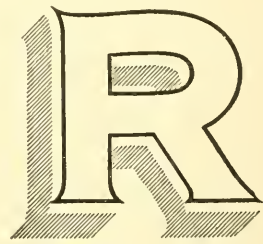


FIG. 13.

the shade, as shown in Fig. 13, making the space and shade of uniform width. When used in connection with block shade, it is often of the nature of the natural shade, and is added to the block shading without any line or space between. The

relief shade when used as a natural shade on a white or tinted ground is made to represent the strength of the shadow cast from an object on the ground on which the letters are placed. This shade is produced with the pen by means of lines, but more effectively by the brush and transparent color.

LETTER-FACE LIGHTING AND SHADING.

61. Importance of Subject.—The treatment of the face of the letter is a very important consideration. The letterer often finds himself confronted with a line of extremely plain lettering that, even after it is shaded, remains flat and unsatisfactory. This effect can sometimes be overcome by the addition of lights and shades placed directly on the letter face itself. The face of the letter may be variegated or blended from a light to a dark shade, in which case a sharp outline must surround the entire letter, as shown in Fig. 14. Lighting and shading

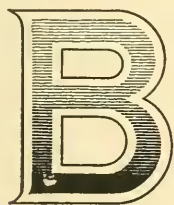


FIG. 14.

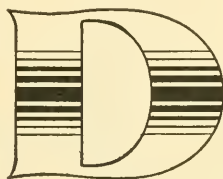


FIG. 15.

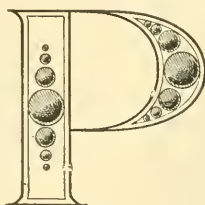


FIG. 16.

are used with best results on heavy-faced letters, as all treatment of the face of a letter by shading has the tendency to considerably reduce the apparent width of the stroke.

62. Effects Produced.—Another effect is produced by running bars of color across the center of the letter, and diminishing these bars in width to a point midway from center to top and bottom, as in Fig. 15. Diminishing circles are also used on letters of lighter face, such as the Roman, and can be made to occupy the entire face, or, as is shown in Fig. 16, terminating at a given point, which must be regularly observed throughout the line of letters.

63. Heavy Highlight.—The heavy highlight is used in the treatment of the face of the letter by making the upper half of the letter a uniform tint, either by lining, as shown in Fig. 17, or with colors. The darker shade *b* is placed on the lower half of the letter, allowing a highlight on this equal in strength to *a*, or the upper half. The highlight *c* on the upper half of the letter is left white. By a combination of the shades of colors many beautiful effects can be produced by this means, using such colors for *a* as blue, green, gray, or gold color, the last of which combines with sienna for the lower portion, and with cream color for the upper highlight. Blue or green when used should have tint and shade of the same color.

64. Beveled Shading.—Shading on the face of a letter to represent a beveled appearance is another treatment that gives a line of lettering a finished and pleasing effect. In this

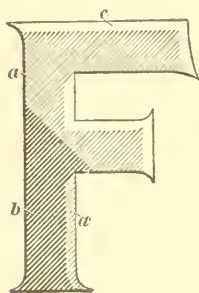


FIG. 17.

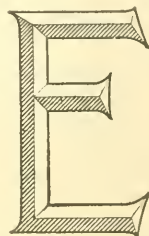
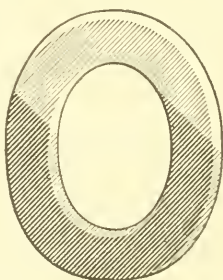


FIG. 18.

process it is necessary only to observe the rules of light and shadow, as shown in Fig. 18, by shading the letter on the left and bottom sides from a line drawn through the center of the face of the letter. This form of shading is often used on a gold or silver letter by the use of transparent colors such as varnish stained with asphaltum, which is used on gold, and varnish darkened with lampblack is used on silver letters. There are many other methods of treating the face of letters by the use of ornament, whereby it loses its identity as a plain and becomes an ornamented letter.

THE HIGHLIGHT.

65. As its name indicates, the highlight is used to illuminate or light up a letter, which it does with wonderful effect. The highlight is placed on the edge of the letter, opposite the shade, or on the right and top of the strokes. It is always a fine line of either gold, silver, white, or cream, according to the color of the letter on which it is to be placed. If the letter is a colored letter, gold or silver can be used. If the letter is gold, nothing will serve the purpose of a highlight so well as cream or white. On silver or aluminum, white only can be used. To be most effectual this highlight must be a fine, even line. The heavy highlight is used in letter-face lighting and shading, and is explained under that head.

CUTTING IN LETTERS.

66. Uses of Cut-In Letters.—This term is applied to that style of treatment wherein the letters are drawn in outline, and the background is filled in around them. In inscription designing this method is resorted to frequently, in order to



FIG. 19.

break the monotony of several lines of plain lettering. The insertion of a panel or ribbon, on which the letters are “cut in,” provides a colored background, against which the letters are outlined, allowing the same color for the letters as the main ground of the inscription design, as shown in Fig. 19. The color of the panel and background will govern very largely the character of letter to be cut in. If the general ground is white or any *light* color, and the cutting-in, or outline, color is very dark, a heavy-faced letter may be used without causing any

appearance of clumsiness or ill proportion. But should the letters be in gold, a much lighter-faced letter would be necessary, as the effect of the gold luster is to make the letter appear larger than it actually is. A very fine line of gold on a black ground can be readily distinguished even at a great distance,

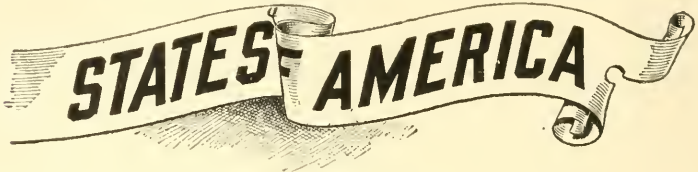


FIG. 20.

and a white letter on a blue ground can be read at a greater distance than any other combination of colors.

67. Points to be Observed.—In the practice of cutting in letters the student should begin on the plainer styles, such as the Full Block, Half Block, etc., before endeavoring to execute the Roman or Script. Fig. 19 shows the letters in outline, and also with the background filled in. In order to insure uniformity of width in the horizontal elements of the letters, faint lines may be drawn through the entire word by means of a thread or string charged with charcoal, chalk, or other material that afterwards may be readily dusted off. Cut-in letters may

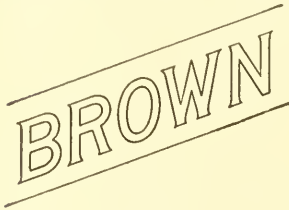


FIG. 21.

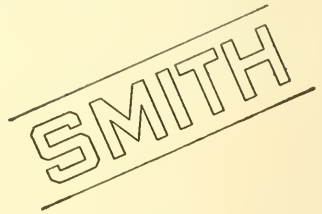


FIG. 22.

usually be permitted to stand closer than other styles of work, as they are seldom shaded, though when they *are* shaded, the regular spacing should be used.

68. Irregular-Surface Lettering.—Where letters are cut in on an irregular surface, such as a ribbon, as in Fig. 20,

they must be maintained at a uniform angle and not changed to suit the angle of the ribbon, as at *a*. The importance of this will be considered more fully later on, but its connection with the subject now under discussion must not be overlooked. When letters are cut in on an inclined panel or ribbon the letters should be maintained in a vertical position, as in Fig. 21, or perpendicular to the lines of the panel, as in Fig. 22.

CLASSIFICATION OF LETTERS.

ORNAMENTAL LETTERS.

69. Scope of the Subject.—The plain letters include all alphabets in which no line or curve enters that is not absolutely necessary to show their form or outline; a line thus added may place them among the ornamental letters. Although it will be impossible to go over the entire ground covered by this subject, as there are endless varieties of ornamental letters, the styles found to be most essential will be considered. There

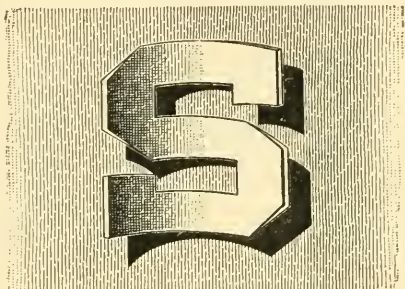


FIG. 23.

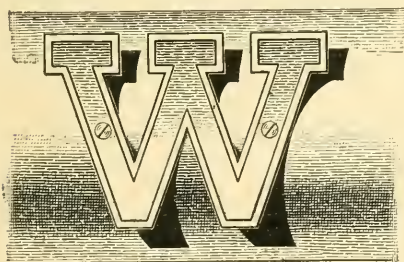


FIG. 24.

are many letters into which ornamental construction enters but slightly, while others are composed entirely of ornamental forms. The ornamental letters of most value to the student are those on the face of which the ornament appears, either in the form

of relief scrolls, geometrical figures, or designs in arabesque.

70. Ornamental Forms.—Letters classified as ornamental are of so great a variety that such as are used in connection

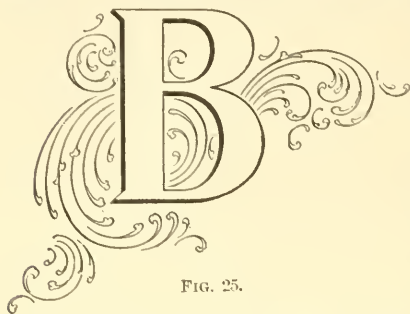


FIG. 25.

with the shade to produce a bent or rounded effect, as shown in Figs. 23-24, might be classed with this style. Fig. 23 shows the ground to be a plane surface and the letter bent or warped, while Fig. 24 shows the letter to be perfectly straight, and fastened with screws, while the ground has the effect of being bent or warped.

71. A letter that in itself is perfectly plain but surrounded by ornamentation, as shown in Fig. 25, is called an orna-

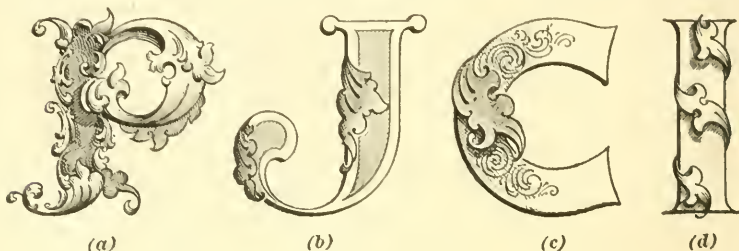


FIG. 26.

mental letter also, though as a matter of fact the letter itself may be perfectly plain.

72. Other Forms.—Other ornamental forms are as follows: The relief-ornament letters shown in Fig. 26 can be made in various ways. The whole form of the letter may be treated in this manner, as at (a), or by simply suggesting it in the middle or edge of the letter, as in (b), (c), and (d). A letter may be plain, so far as its face is concerned, but on account of its

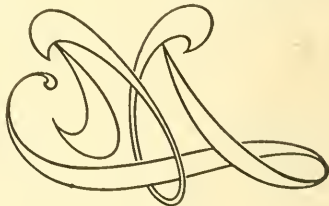


FIG. 27.

form and construction it may be classified as ornamental, as shown in Fig. 27.

There are many forms of designs used in letter-face ornamentation, either filigree work, geometrical designs, or a com-

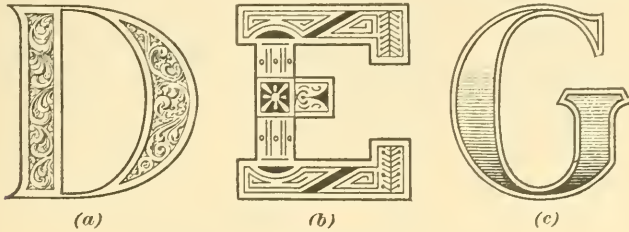


FIG. 28.

bination of both. In Fig. 28 are shown three letters of the face-ornament class, the one at (a) being decorated with filigree work, while (b) shows a geometrical design, and (c) simply the cross-line shading.

GROTESQUE LETTERS.

73. All letters, as previously stated (Art. 2), are either plain, ornamental, or grotesque. The first two classes follow in their outline construction the forms of the fundamental styles and their many variations, but this third class is entirely different. The grotesque letters have no recognized or classical form, such as would place them among the styles of the alphabet, but are made by using natural objects, which are arranged so as to conform to any regular or irregular shape that will cause them to represent a letter, and any form, therefore, is allowable so long as the letter may be recognized. To accomplish this, objects such as a human figure, a piece of rope or ribbon, broken boards, leaves, vines, and trunk of the tree, are used.



FIG. 29.

Of the three latter forms, the rustic letters are made. The leaves, tendrils, stump, and trunk of the tree form the material used for an entire alphabet, one letter of which is shown in Fig. 29. These letters can be made very artistic, and show

great skill in their arrangement. And, while they may be pleasing to the eye, they are of no practical importance to the student in the study of the forms of the letters, as their proportions are purely arbitrary. Fig. 30 shows the forms of

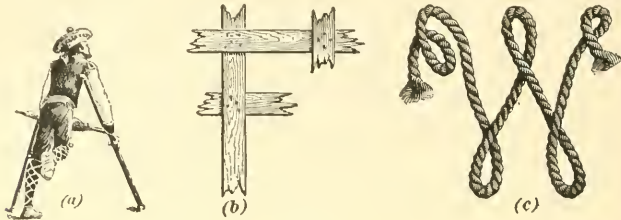


FIG. 30.

some of the grotesque letters, in which (*a*) is formed by a human figure, (*b*) by broken boards, and (*c*) with a piece of rope. Any alphabet may be constructed of these forms as the fancy of any artist may dictate, even though he may be ignorant of the true form or proportion of the simplest style of the alphabet.

ILLUMINATED CAPITALS.

74. History and General Use.—The monks of the Middle Ages were the first to make use of this art, many specimens of which would indicate that they must have spent days in designing and executing a single letter. In treating this subject here, our purpose is simply to call attention to the most simplified forms of illuminating, especially those forms designed for the use of the average letterer. The practical use of this art is now confined to lithographing, engrossing, card work, and ecclesiastical decorations. The printing and lithographing artists have displayed wonderful skill in recent years in illuminated work, especially on show-bill designs. The use of colors to light up the capital letter gives a surprising effect to a complete line of lettering, and is done by a simple combination of designs of most harmonious colors with the letter executed, and by using colors of striking contrast to the tints used to form the background. Such colors as can be combined to give a brilliant effect are used in the form of a plaque,

part panel or both, on which the letter is brought out most conspicuously, as shown in Fig. 31. The illumination practiced by engrossers is usually of such a nature as to produce a finished and pleasing effect without resorting to colors. There are many ways by which this can be accomplished. One method is simply by the use of a pen and black ink, as shown in Fig. 32, outlining the letter first, then making the orna-

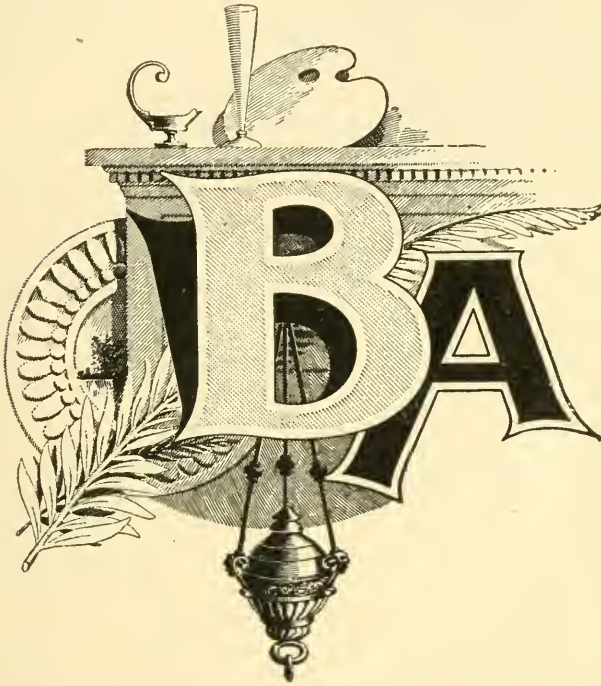


FIG. 31.

mentation surrounding it conform to any desired design, thereby giving the letter prominence. Great care should be taken that the ornamentation is not made more pronounced than the letter, but rather that the former is used as a means to bring out or illuminate the letter.

75. Card Work.—For card work, the illuminating of capitals gives tone and finish, and relieves a show card of extreme

plainness. For practical purposes, such as attractive advertising cards, banners, etc., the illuminating of capitals will be found to hold an important place, and is coming into favor and more general use. There are also



FIG. 32.

many forms and designs employed as a panel, on which illuminated capitals are placed, in a solid or outlined letter; the outline letter, however, being the most convenient, is most frequently used, especially when either the panel or the letter, or both, are to be treated in water colors. The letter outlined is sometimes filled in with carmine or other bright color, while the panel sur-

rounds it with a tint of cream-white, yellow, or green. Two or three shades of color are sometimes used, either variegated or in the form of line work on top of tint, as in Fig. 33.

76. Ecclesiastical Decorations.—For ecclesiastical decorations, such as wall panels containing inscriptions, which

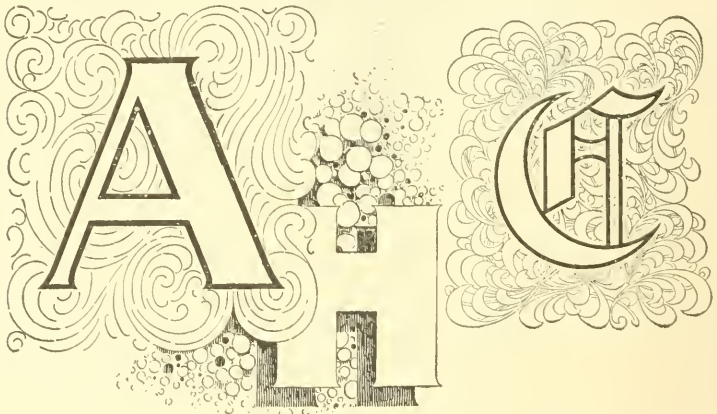


FIG. 33.

are usually in the Old English, Gothic, or Church Text style of letter, as well as for display mottoes in schools, halls, etc., where the Old English or other suitable lettering is used, the first

capital (and sometimes all capitals) is illuminated, either on a panel of gold, silver, or color. In all cases the panel is made



FIG. 34.

to conform in a general way to the letter, as Fig. 34 shows. If gold or silver is used for a ground, the letter must be a dark color. If a colored ground (which is preferable) is used, a gold or silver letter will be found to light up with colors and produce a most satisfactory result.

77. Heraldic Shield.

An heraldic shield is often brought into use, on which the illuminated capital is placed. There are many designs or forms of this shield, which can be changed to suit any form of a letter, as shown in Fig. 35.

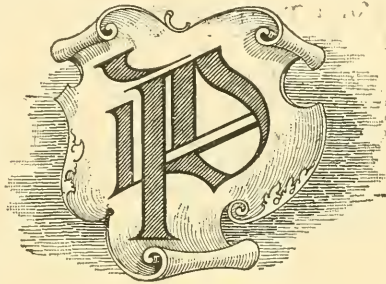


FIG. 35.

EFFECTS IN LETTERING.

CONDENSING, ELONGATING, TELESCOPING, AND INTERLACING.

78. Condensing Letters.—In conforming letters to fill a required space, we are often compelled to resort to various means of accomplishing our purpose, without making the inscription appear distorted or out of proportion. When the panel or space to be lettered is much shorter than would admit of a regularly proportioned letter, we are compelled to resort to the condensing of the letters, observing generally the

rules of their proportionate width. All styles of letters can be condensed except Railroad Block, which was invented exclusively for the opposite purpose. To illustrate more fully,



FIG. 36.

the word *Company* is used to show the two forms of condensing, as well as the two forms of elongating.

79. Example of Condensed Letter.—In Fig. 36 is shown the condensed form, as may be seen by comparing the proportions of the letters with those of the Half Block



FIG. 37.

Plate. The letterer may condense his letters to the width of those of Fig. 36, and find they are still too large for the required space; the vertical strokes can then be reduced to one-half the regular width, and the horizontal strokes maintained at the regular, or even greater, width, and less space allowed between letters, as in Fig. 37. This reduces the word to almost one-third that of Fig. 36.

80. Elongating Letters.—To elongate the same word in the same style of letter, make the height, for convenience, one-half that of Fig. 36; thus it will be observed that if this elongated letter were twice the height it is in Fig. 38, it would



FIG. 38.

occupy a space almost four times that of Fig. 36. To further elongate this word, reverse the rules of Fig. 37, by reducing

the horizontal strokes one-half the regular width, keeping the vertical strokes regular width ; or these may be increased to twice their regular width if desired, also giving more space between the letters, as shown in Fig. 39. By this means a word



FIG. 39.

can be made to fill a space much too long for the regular proportion given this style of letter.

81. Telescoping.—Telescoping is not of so much practical advantage as condensing or elongating, and is used mostly to produce a relief effect. This is done by giving the letters the appearance of overlapping one another, as shown in Fig. 40.



FIG. 40.

Every alternate letter is dropped enough below the line to prevent confusion of horizontal lines and to preserve the complete identity of each. These letters can be shaded on the background but not on the face, as this would tend to destroy their legibility.

82. Interlacing.—Interlacing to its fullest extent enters into the construction of a monogram ; but the form of interlacing at present under consideration is somewhat different, and includes the interlacing of an entire word. This is very often resorted to by the designer, especially in the use of eccentric letters, which are made to extend far beyond the limits of the fundamental styles from which they are derived, as shown in Fig. 41.

OUTLINING AND FILLING IN.

83. Water Colors.—Water colors are used for all classes of designing, and especially in commercial advertising work, as a small quantity of lithographic or printed work executed in black outline can be very economically colored or filled in with water colors by hand. A knowledge of the handling of water colors is, therefore, a necessity to the letterer. Dry color in powdered form is used when large areas of blended color are required. This is applied with a wad of cotton, with which the



FIG. 41.

dry color is spread evenly over the surface by gentle rubbing. The outline of the design is the guide for all water-color work in lettering panels, floral designs, etc. The wider this outline is made, the easier will be the work of flowing the color evenly, and the less the liability of running over the line; the fine outline, however, is used in many places, especially for floral designs, etc.

84. Use of Water Colors.—Water colors are used to the best advantage on white show cards, having a dull finish, which readily absorb the moisture. The outline is made with the glossy black to which the water color will not adhere, but flows to the edge and stops. By this outline method, beautiful designs in flowers and highly illuminated effects can be produced. Water colors also serve the purpose of shading or

tinting borders of cards outside of the fine line. For shading the letters, a brush is used that will as nearly as possible make the shade with one stroke, as water color cannot be worked over, when once applied, without showing brush marks. Therefore, the color must be flowed on evenly with a quick, well-directed stroke, using care not to apply the brush again over a shaded part when the excess water has been absorbed by the card.

DESIGNING.

85. Scope and Importance.—The subject of designing is an almost inexhaustible one, and covers a broad field. There are, however, many general rules and many commonly accepted forms, which establish a foundation on which new ideas may be built. Designing will ever be an art that, aside from these general rules, involves the faculty for producing original conceptions or combinations which must conform to the dictates or system of a recognized class or school. Very few letterers are designers in the full sense of the word, and few of our best designers are good letterers. Students in this course should cultivate a knowledge of this most important subject. An inscription of several lines of lettering, arranged so as to show intelligence in design, proves that the letterer has accomplished that which is of as much importance as a knowledge of the proper formation of letters. The first thing, therefore, is to study the underlying principles of designing from the curve, which forms the first departure from a plain line of letters, to the combination, pictorial, and the wide field of original designs, the possibilities of which lie beyond the limits of this Instruction Paper. In showing the many ways in which curved lines are used for inscriptions, we will not attempt to make lines of letters, but allow the curves and straight lines to represent these.

86. Some Simple Combinations.—In Fig. 42 is shown the combination of the plain curve and straight line. The Roman letter or some light-stroke style is used on the curved-line, block, or other heavy-stroke letters on the straight line. The letters on the curve must be either vertical or parallel with the radius of the curve.

Next in importance is the compound curve, or ogee, which is used when the inscription is composed of two words of about equal length, as in Fig. 43. Here, two ogee curves are used

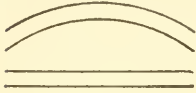


FIG. 42.



FIG. 43.

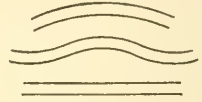
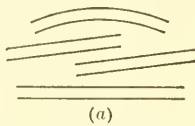


FIG. 44.

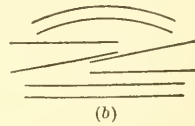
under a single curve and above a straight line. Where one word occurs, we use the double ogee, which is made by uniting two ogee curves, as shown in Fig. 44.

In many designs, the inclined straight lines are used, as shown in (a) of Fig. 45, or diminished in width from the outside to the center of the inscription, as shown in (b) of the same figure.

While these and many other lines and curves are used in designing an inscription, several straight lines of lettering



(a)



(b)

FIG. 45.

require a great amount of skill in equalizing and arranging them properly, even in straight lines. In such designs only one style of letter (but made of various sizes, as the arrangement may require) is often used throughout the inscription.

RIBBONS.

87. The Ribbon.—The ribbon is used in many forms, and can be made to suit almost any style of inscription by folding or extending. When folded, the part representing the back of the ribbon is called the *return*, and must be shown by color or shading. The ribbon is made either in a regular curve or with irregular and broken edges. Fig. 46 shows the ribbon in some of its many forms, of which the names of its component parts are as follows: *a*, the bow; *b*, the broken band; *c*, the regular band; *d*, the returning band; *e*, the streamer; and *f*, the roll.

The ribbon is used also in a square or geometrical form, in which case the graceful and natural wave does not enter, as shown in Fig. 47. This form of ribbon serves its place in conventional or set designs.

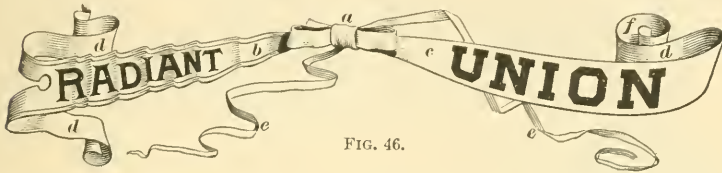


FIG. 46.

The ribbon is used also in the same form as the double ogee, and when thus used it must be made symmetrical on both ends. The fold can also be made in middle of ogee, as shown in Fig. 48, without distorting its symmetrical effect, but rather

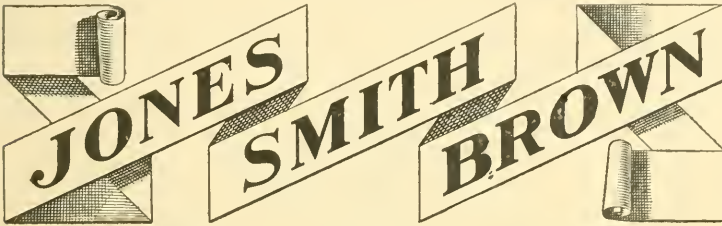


FIG. 47.

giving it ease and grace, which should always be the aim of the designer.

88. Shading the Ribbon.—In shading a ribbon, to make it appear natural always observe the law of light and



FIG. 48.

shade. If the light should strike on one part of the ribbon, the opposite side corresponding with it must necessarily be in shadow.

The study of light and shade is the first principle of design,

and has been considered with reference to individual letters under the head of "Shading." In designing, as in drawing from nature, strict adherence to this law is absolutely necessary, as the slightest disregard of it is noticeable to the skilled eye. We have seen the advantage of shading single letters to the left, and it is well to practice the shading of designs on the left also, in order to avoid such mistakes as are likely to occur, by showing a shade on two opposite sides of an object or of several objects, when they are combined to form one single design.

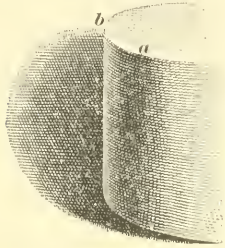


FIG. 49.

89. Reflected Light.—In the shading of ribbons or any rounded object, there occurs what is called the *reflected light*. It shows the edge or line which, without the observance of this principle, would otherwise be lost where the darkest shaded parts come together. Fig. 49 shows this principle of reflected light, the greatest strength of the shade being somewhat removed from the extreme edge of the object, as at *a*, while the shadow cast by the object itself is strongest against the edge at *b*.

PANELS.

90. Rectangular Panels.—The panel has more forms than the ribbon, and is made to serve many purposes. The

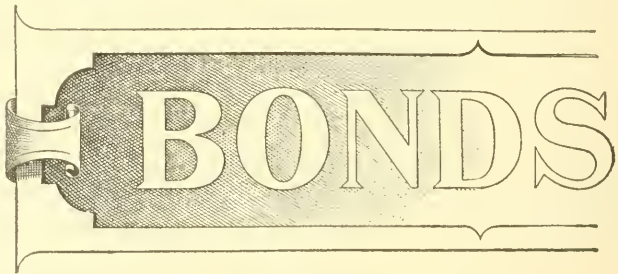


FIG. 50.

simplest form is that of a rectangle, within which is sometimes drawn an inner panel of the same, or different, shape shown in Fig. 50. The surroundings of the panel can be made either

simple or elaborate, as the material at hand in this style of design is inexhaustible. One of the many forms of the exterior of the panel is such as shown in Fig. 51. This work may be



FIG. 51.

so elaborated that the inner panel on which our lettering is to be placed becomes of minor importance, as shown in Fig. 52. This, of course, is not such a design as should be used to display a conspicuous inscription. We must, therefore, keep in



FIG. 52.

mind the fact that the inscription, if important, is of greater value than the ornamentation, the latter being employed only to embellish it, without detracting from its prominence.

91. Part Panels.—Another form of panel is that which is combined with some other design, in which the panel is not in the foreground of our design, as shown in Fig. 53. When the panel is left unfinished on one end, as in Fig. 53, it is known as a part panel, and many beautiful effects can be produced by its use. In this the damask principle is used, the panel being blended into the ground by means of color or with the pen. The lettering is also blended; the extreme of light color is thus contrasted against the darkest part of the panel,



FIG. 53.

and the dark lettering is continued on the light ground outside of the panel.

92. Elliptical and Round Panels.—Elliptical and round panels are also used and can be made extremely ornamental. A touch of simple ornament in a design will often counterbalance a quantity of plain work, and give a general effect of ornamentation throughout. Fig. 54 shows an elliptical design, with simply a frame of ornamentation, which is sufficient for the purpose of ornamenting a design; when such work is placed on other plainer material in a design, it gives the whole the appearance of completeness.

93. Rococo Panels.—Another style of panel that has come into our modern designs is the rococo panel; not only is the scrollwork used for the panel itself, but it is frequently applied to the embellishment of many parts of the design.

Fig. 55 shows one of the great variety of shapes the rococo panel assumes, as this style can be made to conform to the

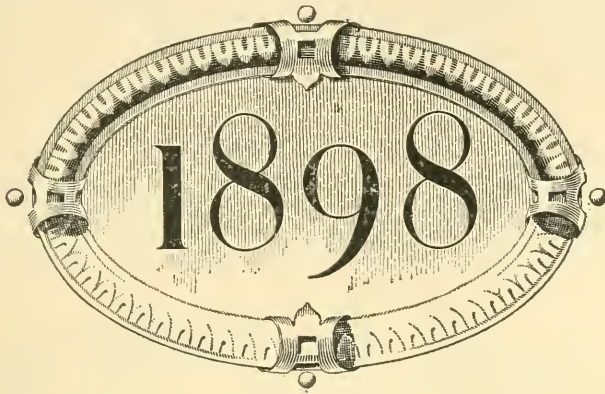


FIG. 54.

lines of any inscription, or to form a part of nearly any style of a design.

The same style of scroll is frequently used for the purpose of filling up an open space in a design, although this is done also through the employment of natural forms, such as palms, olive or laurel branches, flowers, leaves, and conventional objects, vases, lamps, lions, griffins, etc., and, in fact, any object pertaining to, or in harmony with, the inscription. If the inscription of a design pertains to music, the lyre may be used to embellish the design; if it pertains to the trades, such tools as are identified with the trades may appear in the design. If literature or science is the subject, symbolic objects



FIG. 55.

can be used in a variety of ways. A large collection of choice designs should always be on hand for reference, from a review of which a suggestion may often be obtained that leads the designer's thought into an original channel, which, as we have stated before, is the chief aim of the designer.

INSCRIPTION DESIGNING.

94. Proportion.—A piece of lettered work, no matter how artistic or elaborate it may be in itself, is not satisfactory if improperly proportioned or balanced. The tendency in design-

LAKE VIEW
PERMANENT
SAVINGS
AND LOAN
ASSOCIATION
OF CHICAGO.

FIG. 56.

ing is to distribute the strength over the entire surface. If we keep in mind the law of art in a picture, it will help us in designing. The *foreground* should be the strength of a picture,

the *middle distance* should be the semistrength, while the *distance* should be indistinct. This is the key not only to successful designing, but also to satisfactory lettering. The top and bottom lines of the design shown in Fig. 56 are Roman ; the words "permanent" and "association" are styles of heavier face, while the strength of the inscription is centered in the two middle lines. The selection of the proper style of letters to suit each requirement should be carefully studied. A single word or line of letters can be made of any form or style, but as soon as another line is added the letterer is compelled to study their combinations, and to make their relation to each other harmonious to the eye and in proper proportion. In an inscrip-



FIG. 57.

tion of several words, the most important should be displayed in the most prominent style of letters, such as the Block or Egyptian, while the less important should be of smaller letters, and of such styles as one-stroke letter, or caps and lower case of the Roman or other styles. This rule does not interfere with the general effect produced in Fig. 56. If it should happen that the inscription cannot be made to conform to one rule in designing, it is best to change the design accordingly. In Fig. 57 is shown a design of an inscription in which the first and last words are most important, and from which eight words therefore could be taken, and still in effect, the principal feature of the whole inscription would remain "Brown's Shoes"; these words, therefore, should have the greatest prominence by making them large and of a solid-stroke letter.

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STENCIL PATTERNS.

PURPOSE OF STENCILS.

95. Letter Stencils.—The letterer is sometimes forced into competition with the printer, especially when handling a large order for advertising signs; the method of hand work, therefore, must be laid aside for something that will have the effect of hand work, and still be accomplished with more rapidity, observing, at the same time, cleanliness and finish when the work is completed. The stencil pattern most effectually fills this place, and is made to stencil either the letter or the background. The stencil for the former purpose is made by cutting out of paper or other material the greater portion of the letter, but allowing parts called “*ties*” to remain, as these tie the inside of the letter and parts likely to curl up when in use. A second stencil is also required, which is laid over the work done by the first stencil when it has dried, thereby covering up the spaces left by the ties, and thus making a solid and complete letter. The same rule is observed in regard to the “cutting-in” stencils, which are used to make the background, and leave the letters the original color of the surface on which the color is spread. Large ties are used for “cutting-in” stencils, reaching from the letter to the edge of the stencil or border. A second stencil, so cut as to overlap the edges of the ties, is also used, thereby completing the entire background, leaving the letter clear and distinct.

96. Variegated Grounds for Stenciled Letters.—The ground having been prepared and the inscription designed, the spaces occupied by each line of letters can be blended—a process known among letterers as *variegated stenciling*. This is accomplished by laying various colors on a ground, and blending them together. As colors are too strong for this purpose, two or three delicate tints are used, and are laid on horizontally, and without regard to where the color is placed, except where the letters show. In all cases, the selection of

the tints used to variegate the letters should be governed by the color to be used for the background, according to the rules of harmony and contrast.

MATERIAL FOR STENCILS.

97. Paper.—The toughest medium-weight Manila paper should be used for stencils, oiled thoroughly with boiled linseed oil, and allowed to stand at least twenty-four hours before coating both sides thinly with orange shellac. If a light quality of fiber board is used, no preparation is necessary. A sheet of glass laid on a perfectly even table provides a surface on which the stencil can be cut with a good steel knife sharpened to a thin point. It is well to mark the ties with some bright color, to avoid cutting through them, as a single tie cut through destroys the whole stencil, and an imperfect stencil will cause more bother in its use than it is worth. It is best, therefore, never to use a patched or repaired stencil.

98. Tin-Foil Stencils.—Tin-foil stencils for glass sign printing are designed and cut in the same way as the paper. A roller only is used in operating this stencil, while either brush or roller can be used with the paper stencil. A large soft brush will produce better results than a stiff brush, and be less likely to destroy the pattern. In dipping the brush in color, great care should be used to rub it out well, so that but little remains before applying to the stencil. This is the secret of cleanliness in stenciling.

99. Cutting Stencils.—Figs. 58 and 59 show one method of cutting stencils. First, Fig. 58 shows the stencil that makes the letter, allowing ties to remain where most strength is needed for the preservation of the stencil. This stencil being completed, a small triangle is cut in each corner, shown at *a*, called the *register*, or *guide*, by which the stencil can always be placed in proper position. This stencil is placed on material prepared for the No. 2 stencil, as shown in Fig. 59. Letters are either marked or stenciled with a brush, which should be almost free from color, so that the second stencil for the ties can be cut out,

allowing enough lap to fully insure its covering the open space, as shown in Fig. 59. Register, or guide, marks are cut in this stencil also, though these marks are never used except where a border color is to be placed afterwards, and serve only for

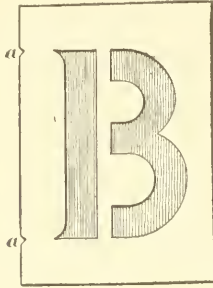


FIG. 58.

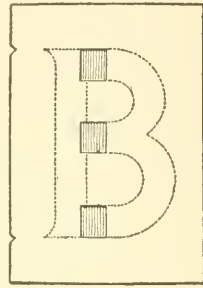


FIG. 59.

a second stencil. The edge or corner of a sign will, in most cases, serve as a guide in stenciling. Ties should always be cut so as to do away with points or projections as well as to secure strength where needed. If these rules are not followed, serious difficulty will be experienced when using a stencil, and may necessitate the making of a new stencil before the first one has been made to fully serve its purpose.

100. Background Stencils.—To make stencils for back-

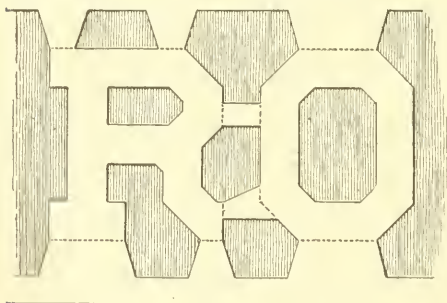


FIG. 60.

grounds, everything is reversed from the first form. The letters must be covered, and all ties cut so as to keep these letters where they belong. If a border is required, we must treat it the same as a letter. The ties must be cut wider on border edge,

as they thereby give more strength where needed. In making this stencil it is

better to have too many ties than leave one place weak. The general tendency is to leave one or more such places in this form of stencil. Fig. 60 shows two letters R, O, and the ties necessary for strength and protection. Fig. 61 shows the No. 2 stencil, or the one to be used to cover spaces left by the ties of No. 1; the parts to be cut out are represented by the shaded spaces.

101. Sign Stenciling.—Stenciled signs are often relieved by a few touches of hand work, either in outlining the letters or by artistically using some bright coloring that produces the effect of study and labor. This is often accomplished by shading or ornamentation. For stencil work, a color must be used of a slow-drying nature, otherwise the stencil will soon become clogged and more liable to become broken. There is also danger of using color too thin, and thus causing it to flow underneath the edge of the letter, thereby destroying the cleanliness of the work.

102. Cleaning Stencils.—The stencil must be cleaned often when in use. Not more than five or six signs should be stenciled before cleaning the stencil, which may be done by laying it face down on a clean board or other surface and rubbing well on back with a cloth rolled in ball shape. The stencil must be thoroughly cleaned with benzine after using, and never put away with any color remaining on it. This if neglected will either cause the

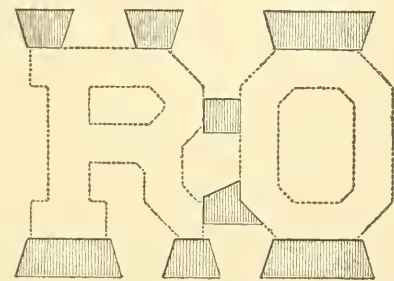


FIG. 61.

stencil to break easily, or the color to flow underneath by the extra thickness of the dried color. Color left to dry on the stencil often warps it so as to render it practically useless, or cause the letterer much unnecessary trouble.

GEOMETRICAL FIGURES.

TRIANGLES.

103. Definition of Triangle.—A triangle is a closed figure having three angles and three straight sides.

104. Isosceles Triangles.—An isosceles triangle has two *equal* sides and two *equal* angles (Fig. 62). The length of

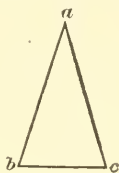


FIG. 62.

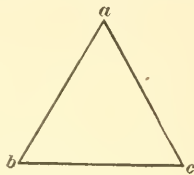


FIG. 63.

the third side is usually different from that of the two equal sides, and is called the *base*. The term *base* is, however, applied without distinction to any side on which a triangle is supposed to stand.

105. Altitude.—Whatever side is taken as the base of a triangle, the altitude, or height, of the triangle is the perpen-

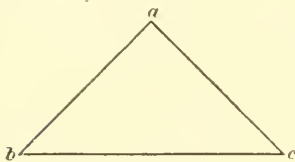


FIG. 64.

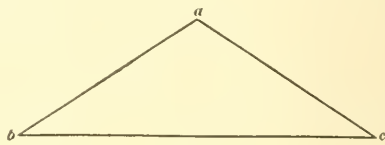


FIG. 65.

dicular distance from the base to the vertex of the opposite angle. That vertex is also called the *apex* of the triangle.

106. Angular Pediment.—When the height of an isosceles triangle is short in comparison with the base, the triangle is called an angular pediment (Fig. 63).

107. Gable.—A gable is an isosceles triangle whose equal sides differ but little from the third side (see Fig. 64). Gables, however, may also have the shape of Fig. 65.

108. Equilateral Triangle.—An equilateral triangle has three equal sides and three angles, as in Fig. 66, which is made up of equilateral triangles.

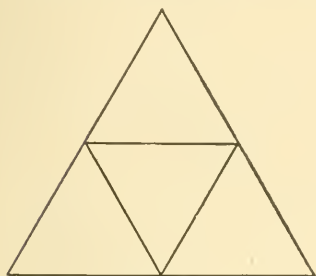


FIG. 66.

109. Right-Angled Triangle.—A right-angled triangle is one having one right angle (Fig. 67). The side opposite the right angle is the longest, and is called the *hypotenuse*.

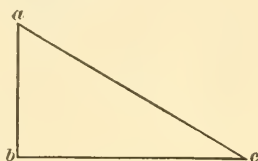


FIG. 67.

A triangle cannot have more than one right angle, nor more than one obtuse angle; that is, if one of the angles is either right or obtuse, the others must be acute.

CIRCLES.

110. Definition of Circle.—A circle is a closed figure, all the points of whose outline are at the same distance from a point within called the *center* (Fig. 68). The term *circle* is applied both to the curved outline of the figure and to the space enclosed by it; but the curved outline is more commonly called the *circumference* of the circle.

111. Radius and Diameter.—The distance from the center of a circle to any point on the circumference is called the *radius* of the circle.

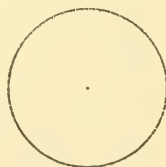


FIG. 68

A line through the center of a circle, and having its ends on the circumference, is called a *diameter*. In Fig. 69, O is the center of the circle, OB , OD , OA , and OC are radii, AB and CD are diameters.

Every diameter is equal to two radii, and divides the circle into two equal parts, or *semicircles*, and the circumference into two *semi-circumferences*.

Two diameters, perpendicular to each other as AB and CD , divide the circumference into four equal parts called *quadrants*.

112. A Curve.—A *curved line*, or a *curve*, is a line no part of which is straight; it may be imagined to be formed by the bending of a straight line. Any portion of a curve is called an *arc*.

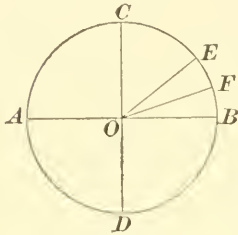


FIG. 69.

113. A Circular Arc.—A circular arc is any part of a circumference. Circular arcs having the same center, but different radii, are called *parallel arcs*. They are inside one another. They are also called *concentric*, which means “with the same center.”

ORNAMENTAL CURVES.

114. An Ogee.—An ogee is a line curved in two ways, having, approximately, the form of the letter S, either in its

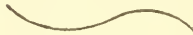


FIG. 70.



FIG. 71.

natural position, as in Fig. 70, or turned over, as in Fig. 71. The two parts of an ogee may be circular arcs, but arcs of other

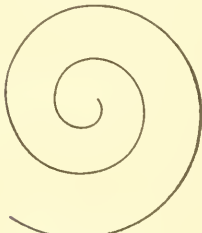


FIG. 73.

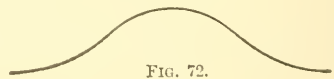


FIG. 72.

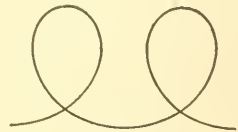


FIG. 74.

curves give a better effect. Fig. 72 is made up of two ogees, and is called a *swell line*.

115. A Scroll.—A scroll is a winding curve, such as shown in Fig. 73.

116. A Loop.—A loop (Fig. 74) consists of two curves similar to the corresponding parts of right and left scrolls, connected as shown.

THE ELLIPSE.

117. Methods of Describing an Ellipse.—There are many ways of making or describing an ellipse, some of which are quite complicated. For designing purposes, exclusive of architectural work, a knowledge of two or three methods will serve every purpose, and fill the needs of the average letterer and designer. The simplest method is by means of two tacks and a string; or, if needed for landscape gardening or other large-proportioned work, use hemp cord and nails or pegs. Draw a horizontal line, and intersect equally with a vertical line; point off on the horizontal line the length of ellipse desired; divide the horizontal line, from this point to the vertical line, into four equal parts, and place the tack on the third point from the vertical on either side; place the other tack also in a corresponding position opposite; place a string around both tacks, and tie the ends together at the point farthest from the vertical on the horizontal line; place lead pencil inside and follow around, and we have a perfect ellipse as a result, as shown in

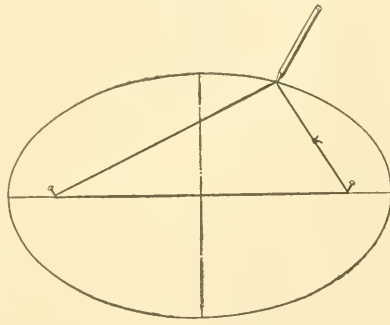


FIG. 75.

Fig. 75. By moving the tacks farther away from the vertical line, the ellipse is elongated, if the same string be used.

118. To draw the ellipse shown in Fig. 76, construct two squares, and draw lines from the corners intersecting in the center of each square; from this point of intersection, describe the

ares, with compass from a to b ; from the points c , describe upper and lower lines from a to a and b to b .

119. Another simple form of the ellipse is made by describing two circles, which together form the length of the ellipse, and drawing a horizontal line through the centers of both circles, as in Fig. 77; each semi-circle is then divided into three equal parts, as at a, a, a, a , and a line is drawn from each through the center of each circle,

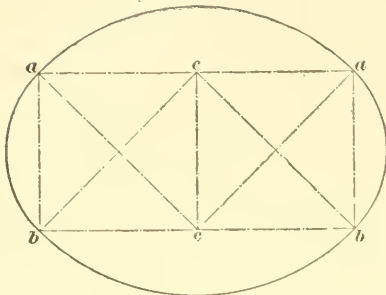


FIG. 76.

meeting at the point b ; from this point describe the curve from a to a , top and bottom, and the resulting figure will be an approximate ellipse. The ellipse is sometimes spoken of as an *oval*. This word, however, is a misnomer, as the oval derives its name from the Latin *ovum*, meaning "an egg," and its shape is the outline of an egg. Never refer to the oval therefore as an egg-shaped oval, for the statement would be equivalent to speaking of a round circle.

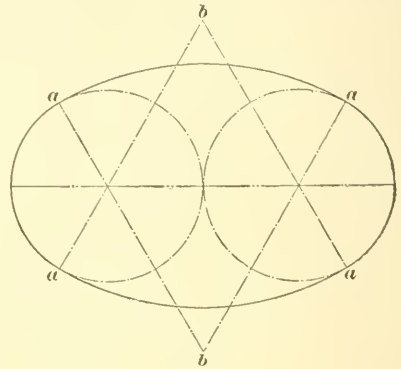


FIG. 77.

MODIFICATIONS OF THE FUNDAMENTAL STYLES.

120. The various styles of alphabet included in this course are known as the *fundamental* styles, from which arise other styles that, though they resemble the above somewhat, have so little characteristic modification that they are scarcely worth our present consideration. Moreover, these alphabets are of

little advantage to the student, but to avoid the danger of confusion, we will briefly refer to a few of the principal varieties.

121. Latin Roman.—The characteristic feature of the original Latin Roman alphabet was its irregularity, which is plainly shown on the Arch of Titus, Fig. 1. No space is allowed between the words, the separation being implied by a dot on a line with the center of the letter. The tail of the R and the Q often projects the full width of the letter. The letter V was also employed to express the sound of U, but its modern use in that capacity by some designers is erroneous. The other sound of this character in Latin resembles that of our W, having somewhat the sound of the V instead of the U. Hence, the origin of the W, which is not derived from U but from V, and originally written VV, expressed by two separate characters.

122. Ancient Roman.—The Ancient Roman is the prototype of our present French Roman, but in many ways is so departed from in modern practice that some of the modified forms of letters have become more familiar than the originals.

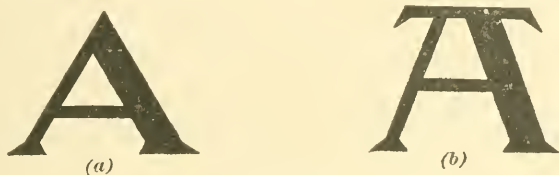


FIG. 78.

This can be readily seen in the letter A, Fig. 78, where (*a*) is the original form and (*b*) the modification.

123. Antique Egyptian.—There are several forms of each letter of the Antique Egyptian, which if seen by the student in connection with the regular or normal letter would tend to confuse him, or at least cause him to inquire why he should observe any system or regularity of form. The law of uniformity is, in lettering, what the *order* is in architecture; each must be closely followed, or to the skilled eye the work is subject to criticism. These styles, therefore, must not be confused. If one form is adopted there must be strict adherence

to that form throughout the lettering of the design. This may be more clearly shown by two or three of these forms of the capital letters and their corresponding lower case. When

FIG. 79.

the slanting stroke is used in such letters as H, M, N, and V, it also occurs in many of the lower-case letters, as a, d,

h, m, n, and u, as the letters N, a, d, in Fig. 79, will show. The letter o is sometimes used in this style, as here shown, and the letter t is crossed above the line.

124. Other Forms of Antique Egyptian.—Another form of the Antique Egyptian style is shown in the curved stroke, in place of the horizontal middle stroke, of many capital

FIG. 80.

FIG. 81.

and lower-case letters, as in the E and t in Fig. 80; while a change in the spur of the horizontal strokes changes the character of the entire letter, as shown in the letters L and T, Fig. 81. There are many other slight departures from the normal style, one of which occurs in the middle bar of the A and H, as shown in Fig. 82.

There is still another form of letter that belongs to the *Plain Egyptian* style. This form is simple in its construction, and does not bear sufficient distinction to classify it with the fundamental styles; but in one respect, this form of letter is closely allied to the French Roman, and the similarity is shown in its having the heavy and light line, as shown in Fig. 83.

FIG. 82.

A few letters of this style are therefore shown to give the student an idea of the comparative width of the stroke and fine line. The latter should not exceed $\frac{1}{3}$ that of the stroke. There is almost unlimited license granted in forming these

THE BANDITS

FIG. 83.

letters, as shown in the two letters T and E. In making these letters never place a spur on any part of the letter, as this at once throws the characteristic feature of the style in favor of the French Roman; and to widen the fine line to nearly that of the stroke brings it within classification limits of the Egyptian. Never show a suggestion of a straight line on the inside of the round letters, but always make a perfect ellipse or a symmetrical curve. This letter holds an important place with our modern designers, but a knowledge of the Egyptian and French Roman only is necessary to produce this modification. This is likewise true of all letters used. By a thorough knowledge of the few fundamental styles, the student can readily trace all variations arising from these to their parent style.

125. Boston Roman.—The Boston Roman has a slight variation from the normal form shown in Plate 14 which occurs in the spur only, but which gives it a marked difference in appearance from the regular style. The spur, instead of being finished on the end, as shown in Plate entitled Boston Roman, is cut off on an angle of about 45° , as shown in Fig. 84.



FIG. 84.

126. Antique Half Block.—A third style, known as the Antique Half Block, has two or three varieties. Such of the capitals, as well as the small letters, as possess a middle stroke have this stroke changed to an angle of 60° . In one

variety the short strokes of the lower-case letters are cut on the same angle as the middle stroke, as shown in Fig. 85, the angle

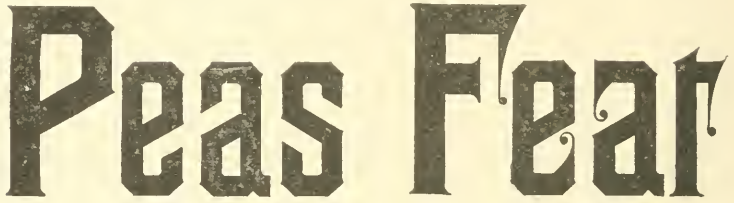


FIG. 85.

FIG. 86.

of the s being directly opposite. Another variety of this letter is the same as Fig. 85, except that the short strokes are altered in appearance, and are finished with a fine line and a dot, as

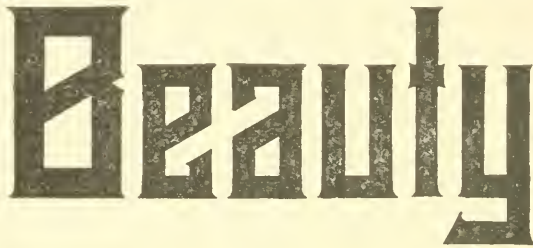
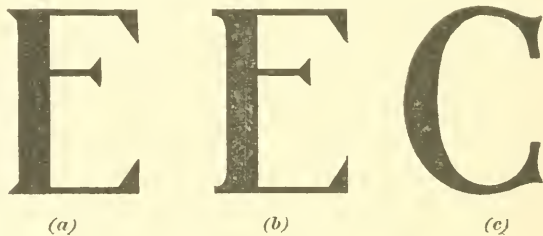


FIG. 87.

shown in Fig. 86. This form of letter can be spaced more closely than the regular style used in condensed spaces, and the variety shown in Fig. 87 requires even less space than either



(a)

(b)

(c)

FIG. 88.

of the others ; and, as the corners are not cut off, the letter possesses a square, compact appearance, somewhat relieved of severity by the finishing of the corners with a slight spur. The

same rule of formation applies to capitals as well as to lower-case letters, except the middle bars of E and F, which are always horizontal.

127. French Roman.—The French Roman is also in turn slightly changed, giving rise to several distinct varieties, as shown in Fig. 88. In the letter E, shown at (a), the only difference from the Ancient Roman style is the spur that projects at a right angle from the horizontal lines top and bottom. In the letter shown at (b) the spurs are the same as at (a), except those of the main upright strokes, which are finished with a flat end. The round letter of this style is shown at (c).



FIG. 89.

128. The Flemish.—The Flemish or Dutch, so closely resembling the German Text, is another style that will not be considered in this course. The characteristic feature of this alphabet is the diamond, dot, and plain vertical stroke and fine line, as shown in Fig. 89, its other features being practically the same as the German style. In the lower-case very little change



FIG. 90.

occurs except the ball, which is added to many of the long-stroke letters, as shown in the figure.

129. Variations.—There are so many styles of letters, arising from some simple idea, that any student of lettering may apply to a fundamental style; and such ideas are so numerous, that it will be impossible to call attention to more than one or two of these in conclusion.

The curved stroke is one such style, and is shown by the letters D, R, U, G, in Fig. 90. Another of these styles is pro-



FIG. 91.

duced by curving the spur and horizontal strokes forming the block letters, especially the full block, as shown in Fig. 91.

NOTE.—*The modifications considered in the foregoing pages of this Instruction Paper refer to fundamental styles, many of which the student will not have occasion to refer to, or make comparisons with until well advanced in his course, we would advise, therefore, that a study of these variations be deferred until the plates mentioned in this connection have been received, and the fundamental styles have become familiar to the student.*

MECHANICAL LETTERING.

130. When instruments such as the T square, triangles, compasses, etc. are used to execute lettering, it is called *mechanical lettering*, as distinguished from *freehand lettering*,

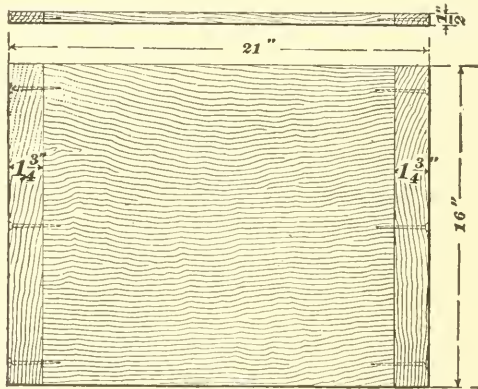


FIG. 92.

which is executed with the pen or brush, unaided by anything except the judgment of the eye.

131. All the instruments and materials required for this course in lettering are mentioned in the following descriptions :

The **drawing board** should be made of well-seasoned straight-grained pine, the grain running lengthwise. For this course, the student will need a board of about the following dimensions : length over all, 21 inches ; width, 16 inches ; the thickness may be made about $\frac{1}{2}$ inch. There should be two end-pieces $1\frac{3}{4}$ inches wide, as shown in Fig. 92, which are fastened to the board proper by means of nails or screws. One or both of these pieces should be perfectly straight.

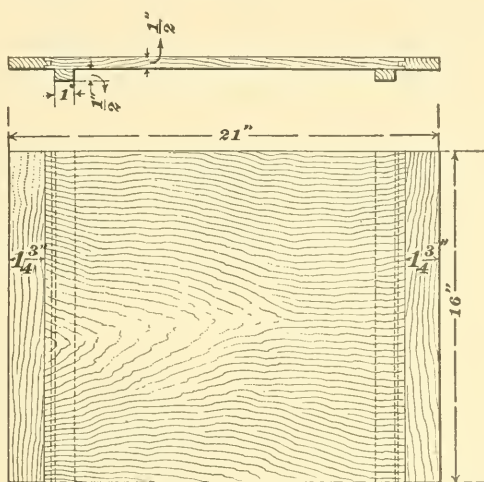


FIG. 93.

A better board is shown in Fig. 93 ; here the end-pieces are fastened to the board by a glued matched joint in addition to the nails or screws, and there are two cleats on the bottom 1 inch by $\frac{1}{2}$ inch, extending the whole width of the board. The cleats raise the board from the table and make it easier to change in position. The board is placed so that a straight end-piece is at the left of the draftsman, as shown in Fig. 93.

132. The **T square** is used for drawing horizontal straight lines. The head *A* is placed against the left-hand edge of the

board, as shown in Fig. 94. The upper edge *C* of the blade *B* is brought very near to the point through which it is desired to pass the line, so that the straight edge *C* of the blade may be

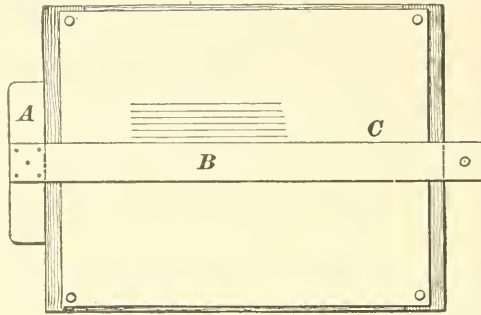


FIG. 94.

used as a guide for the pen or pencil. It is evident that all lines drawn in this manner will be parallel.

Vertical lines are drawn by means of triangles. The triangles most generally used are shown in Figs. 95 and 96. Each has one right angle, marked 90° in the figures. Fig. 95 has two

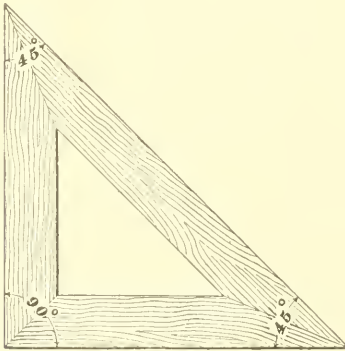


FIG. 95.

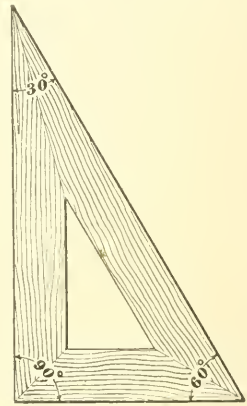


FIG. 96.

angles of 45° each, and Fig. 96 one of 60° and one of 30° . They are called 45° and 60° triangles, respectively. To draw a vertical line, place the T square in position to draw a horizontal line, and lay the triangle against it, so as to form a right angle.

Hold both **T** square and triangle lightly with the left hand, so as to keep them from slipping, and draw the line with the pen or pencil held in the right hand, and against the edge of the triangle. Fig. 97 shows the triangles and **T** square in position.

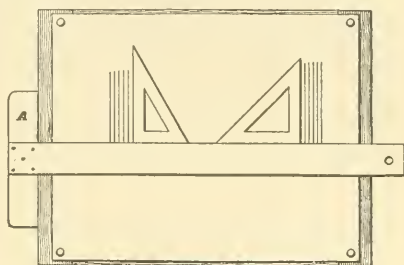


FIG. 97.

133. For drawing parallel lines that are neither vertical nor horizontal, the simplest and best way, when the lines are near together, is to place one edge of a triangle, as *ab*, Fig. 98, on the given line *cd*, and lay the other triangle, as *B*, against one of the two edges, holding it fast with the left hand; then move the triangle *A* along the edge of *B*. The edge *ab* will be parallel to the line *cd*; and when the edge *ab* reaches the point *g*, through which it is desired to draw the parallel line, hold both triangles stationary with the left hand, and draw the line *ef* by passing the pencil along the edge *ab*. Should

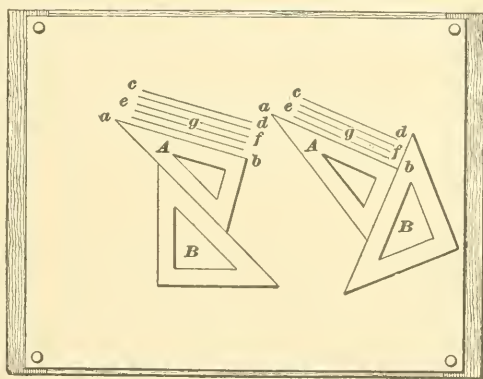


FIG. 98.

the triangle *A* extend too far beyond the edge of the triangle *B* after a number of lines have been drawn, hold *A* stationary with the left hand and shift *B* along the edge of *A* with the right hand, and then proceed as before.

134. A line may be drawn at right angles to another line which is neither vertical nor horizontal, as illustrated in Fig. 99. Let cd be the given line (shown at the left-hand side). Place one of the shorter edges, as ab , of the triangle B so that it will coincide with the line cd ; then, keeping the triangle in this position, place the triangle A so that its long edge will come against the long edge of B . Now, holding A securely in place with the left hand, slide B along the edge of A with the right hand, when the lines hi , mn , etc. may be drawn perpendicular to cd along the edge bf of the triangle B . The dotted lines

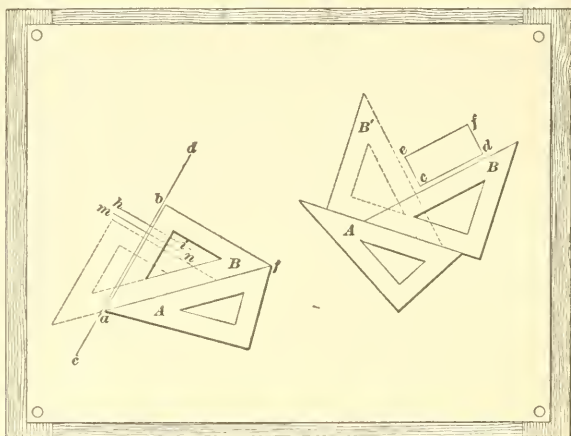


FIG. 99.

show the position of the triangle B when moved along the edge of A .

135. The right-hand portion of Fig. 99 shows another method of accomplishing the same result, and illustrates how the triangles may be used for drawing a rectangular figure, when the sides of the figure make an angle with the **T** square such that the latter cannot be used.

Let the side cd of the figure be given. Place the *long* side of the triangle B so as to coincide with the line cd , and bring the triangle A into position against the lower side of B , as shown. Now, holding the triangle A in place with the left hand, revolve B so that its other short edge will rest against the long edge A ,

as shown in the dotted position at B' . The parallel lines ce and df may now be drawn through the points c and d by sliding the triangle B on the triangle A , as described in connection with Fig. 98. Measure off the required width of the figure on the line ce , reverse the triangle B again to its original position, still holding the triangle A in a fixed position with the left hand, and slide B upon A until the long edge of B passes through e . Draw the line ef through the point e , and ef will be parallel to cd . The student should practice with his triangles before beginning drawing.

136. The **compasses**, next to the **T square** and triangles, are used more than any other instrument. A pencil and a pen point are provided, as shown in Fig. 100, either of which may be inserted into a socket in one leg of the instrument, for the drawing of circles in pencil or ink. The other leg is fitted with a needle point, which acts as the center about which the circle is drawn. In all good instruments, the needle point itself is a separate piece of round steel wire, held in place in a socket provided at the end of the leg. The wire should have a square shoulder at its lower end, below which a fine, needle-like point projects. The *lengthening bar*, also shown in the figure, is used to extend the leg carrying the pen and the pencil points when circles of large radii are to be drawn.

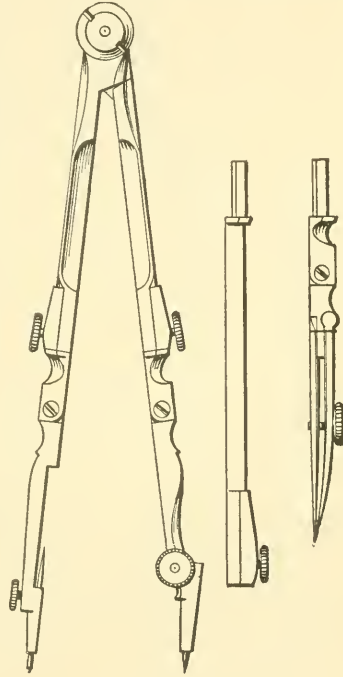


FIG. 100.

The joint at the top of the compasses should hold the legs firmly in any position, and at the same time should permit their being opened or closed with one hand. The joint may be

tightened or loosened by means of a screwdriver or wrench, which accompanies the compasses.

It will be noticed in Fig. 100 that each leg of the compasses is jointed; this is done so that the compass points may always be kept perpendicular to the paper when drawing circles, as in Fig. 102.

137. The following suggestions for handling the compasses should be carefully observed by those that are beginning the subject of drawing. Any draftsman or letterer that handles his instruments awkwardly will create a bad impression, no

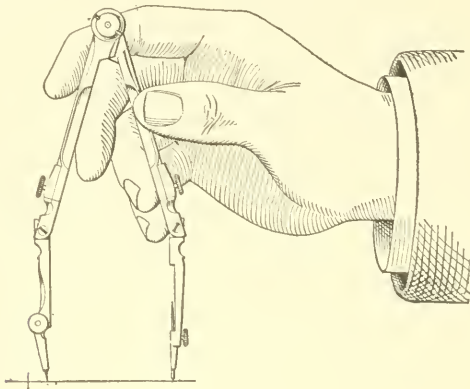


FIG. 101.

matter how good a workman he may be. The tendency of all beginners is to use both hands for operating the compasses. This is to be avoided. The student should learn at the start to open and close them with one hand, holding them as shown in Fig. 101, with the needle-point leg resting between the thumb and the fourth finger, and the other leg between the middle finger and the forefinger. When drawing circles, hold the compasses lightly at the top between the thumb and forefinger, or thumb, forefinger, and middle finger, as in Fig. 102. Another case where both hands should not be used is in locating the needle point at a point on the drawing about which the circle is to be drawn, unless the left hand is used merely to steady the needle point. Hold the compasses as shown in Fig. 101, and

incline them until the under side of the hand rests upon the paper. This will steady the hand so that the needle point can be brought to exactly the right place on the drawing. Having placed the needle at the desired point, and with it still resting on the paper, the pen or pencil point may be moved out or in to any desired radius, as indicated in Fig. 101. When the lengthening bar is used, both hands must be employed.

138. The compasses must be handled in such a manner that the needle point will not dig large holes in the paper.

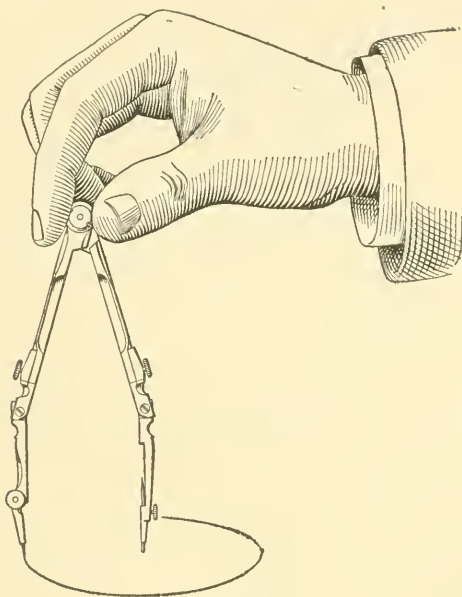


FIG. 102.

Keep the needle point adjusted so that it will be perpendicular to the paper, when drawing circles, and *do not bear upon it*. A slight pressure will be necessary on the pen or pencil point, *but not on the needle point*.

139. The **dividers**, shown in Fig. 103, are used for laying off distances upon a drawing, or for dividing straight lines or circles into parts. The points of the dividers should be *very sharp*, so that they will not punch holes in the paper larger

than is absolutely necessary to be seen. Compasses are sometimes furnished with two steel divider points, besides the pen and pencil points, so that the instrument may be used either as compasses or dividers. This is the kind illustrated in Fig. 103. When using the dividers to space a line or circle into a number of equal parts, hold them at the top between the thumb and the forefinger, as when using the compasses, and step off the spaces, turning the instrument alternately to the right and left. If the line or circle does not space exactly, vary the distance between the divider points and try again; so continue until it is spaced equally. When spacing in this manner, great care must be exercised not to press the divider points into the paper; for, if

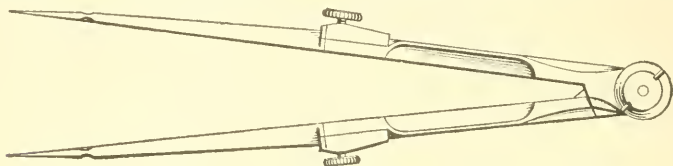


FIG. 103.

the points enter the paper, the spacing can never be accurately done. The student should satisfy himself of the truth of this statement by actual trial.

140. Drawing Paper and Pencils.—The drawing paper required for this series of lessons is Whatman's hot-pressed $\frac{1}{2}$ Royal, the size of which is 12 in. \times 19 in. It takes ink well, and withstands considerable erasing. The paper is secured to the drawing board by means of *thumbtacks*. Four are usually sufficient—one at each corner of the sheet. Place a piece of paper on the drawing board, and press a thumbtack through one of the corners about $\frac{1}{4}$ or $\frac{3}{8}$ of an inch from each edge. Place the **T** square in position for drawing a horizontal line, as before explained, and straighten the paper so that its upper edge will be parallel to the edge of the **T**-square blade. Pull the corner diagonally opposite that in which the thumbtack was placed, so as to stretch the paper slightly, and push in another thumbtack. Do the same with the remaining two corners. For drawing in pencil, a Dixon's Artists' H pencil, No. 217 (commonly called a No. 4 Dixon's Artists') may be

used. The pencil should be sharpened to a medium point. Cut the wood away so as to leave about $\frac{1}{4}$ or $\frac{2}{8}$ of an inch of the lead projecting; then finish the point by rubbing it against a fine file or a piece of fine emery cloth or sandpaper that has been fastened to a flat stick. The lead for the compasses should be sharpened to a flat or chisel-shaped point. *Be sure that the*

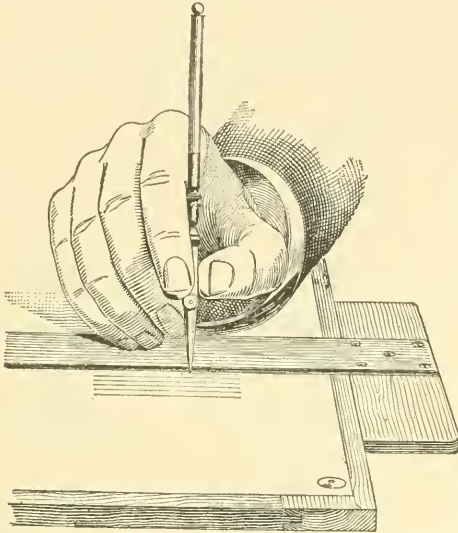


FIG. 104.

compass lead is so secured that, when circles are struck in either direction, but one line will be drawn with the same radius and center.

141. Inking.—For drawing ink lines other than arcs of circles, the **ruling pen** (or *right-line pen*, as it is sometimes called) is used. It should be held as nearly perpendicular to the board as possible, with the hand in the position shown in Figs. 104 and 105, bearing lightly on the **T** square or triangle, against the edge of which the line is drawn. After a little practice, this position will become natural, and no difficulty will be experienced.

142. The beginner will find that it is not always easy to make smooth lines. If the pen is held so that only one blade bears on the paper when drawing, the line will almost invariably

be ragged on the edge where the blade does not bear. When held at right angles to the paper, as in Fig. 105, however, both blades will rest on the paper, and if the pen is in good condition, smooth lines will result. The pen must not be pressed against the edge of the T square or triangle, as the blades will then close together, making the line uneven. The edge should serve simply as a guide.

In drawing circles with the compass pen, the same care should be taken to keep the blades perpendicular to the paper

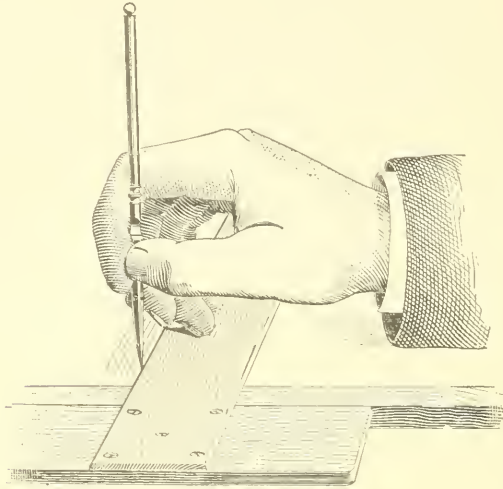


FIG. 105.

by means of the adjustment at the joint. In both the ruling pen and the compass pen, the width of the lines can be altered by means of the screw which holds the blades together.

143. Drawing Ink.—The ink used should be Higgins' waterproof liquid India ink. A quill is attached to the cork of every bottle of this ink, by means of which the pen may be filled. Dip the quill into the ink, and then pass the end of it between the blades of the drawing pen. Do not put too much ink in the pen, not more than enough to fill it for a quarter of an inch along the blades, otherwise the ink is liable to drop. Many draftsmen prefer to use stick India ink; and, for lettering

purposes, this is to be preferred to the prepared liquid ink recommended above. In case the stick ink is bought, put enough water in a shallow dish (a common individual butter plate will do) to make enough ink for the drawing; then place one end of the stick in the water, and grind by giving the stick a circular motion. Do not bear hard upon the stick. Test the ink occasionally to see if it is black. Draw a fine line with the pen, and hold the paper in a strong light. If it shows brown (or gray), grind a while longer, and test again. Keep grinding until a fine line shows *black*, which will usually take from fifteen minutes to half an hour, depending on the quantity of water used. The ink should always be kept well covered with a flat plate of some kind, to keep out the dust and prevent evaporation. The drawing pen may be filled by dipping an ordinary writing pen into the ink and drawing it through the blades, as previously described when using the quill. If Higgins' ink is used, all the lines on all the drawings will be of the same color, and no time will be lost in grinding. If stick ink is used, it is poor economy to buy a cheap stick. A small stick of the best quality, costing, say, a dollar, will last as long, perhaps, as five dollars' worth of liquid ink. The only reason for using liquid ink is that all lines are then sure to be of equal blackness, and time is saved in grinding.

Trouble will probably be caused by the ink drying between the blades and refusing to flow, especially when drawing fine lines. The only remedy is to wipe out the pen frequently with a wet cloth. Do not lay the pen down for any great length of time, when it contains ink; wipe it out first. The ink may sometimes be started by moistening the end of the finger and touching it to the point, or by drawing a slip of paper between the ends of the blade. *Always keep the bottle corked.*

144. To Sharpen the Drawing Pen.—When the ruling, or compass, pen becomes badly worn, it must be sharpened. For this purpose a fine oilstone should be used. If an oilstone is to be purchased, a small, flat, close-grained stone should be obtained, those having a triangular section being preferable, as the narrow edge can be used on the inside of the

blades in case the latter are not made to swing apart so as to permit the use of a thicker edge.

The first step in sharpening is to screw the blades together, and, holding the pen perpendicular to the oilstone, to draw it back and forth over the stone, changing the slope of the pen from downward and to the right to downward and to the left for each movement of the pen to the right and left. The object of this is to bring the blades to exactly the same length and shape, and to round them nicely at the point.

This process, of course, makes the edges even duller than before. To sharpen, separate the points by means of the screw, and rub one of the blades to and from the operator in a straight line, giving the pen a slight twisting motion at the same time, and holding it at an angle of about 15° with the face of the stone. Repeat the process for the other blade. To be in good condition the edges should be fairly sharp and smooth, but not sharp enough to cut the paper. *All the sharpening must be done on the outside of the blades.* The inside of the blades should be rubbed on the stone only enough to remove any burr that may have been formed. Anything more than this will be likely to injure the pen. The whole operation must be done very carefully, bearing on lightly, as it is easy to spoil a pen in the process. Examine the points frequently, and keep at work until the pen will draw both *fine* lines and *smooth* heavy lines.

HOW THE WORK SHOULD BE SENT.

145. For the letter plates of this Course, copies of the plates will be sent you as you need them. The tube we send you with this Paper should be used by you for sending us your drawing of Plate I upon finishing it. Send one plate to us at a time. Thus, after you finish the first plate, send it to us, and then start on the second plate. In the meantime we will return the first plate to you. On your receiving back the first plate from us, you should carefully note all corrections and suggestions that may be sent with it, and observe them when drawing the succeeding plates. On no account send us the second plate until you have received the first one back. Upon

finishing the second plate, send this to us and start on the third plate, and in the meantime we will return the second plate to you. Do this with all the drawing plates in the Course.

It is very essential that you strictly comply with these directions ; since, otherwise, it will be impossible for us to point out your mistakes to you. This procedure should be strictly adhered to while you are drawing the first plates of the Course—it will enable you to make rapid progress. Do not be discouraged if there are a large number of corrections on your early plates ; we are merely pointing out ways in which the drawing or lettering can be improved, so that your later plates may be as nearly perfect as they can be made. No one can attain proficiency unless the work is criticized, and we are doing our best to help you to succeed. We should not be doing our duty if we did not point out the defects. The *number* of corrections is no indication of our appreciation of the merits of the drawing.

On all plates that you send to us, write your name and address in full in lead pencil on the back of the plates. This should in no case be omitted, as delays in the return of your work will otherwise surely occur.

PLATES.

146. Preliminary Directions.—The size of each plate over all will be $11\frac{1}{2}$ in. \times $18\frac{1}{4}$ in. Whenever any dimensions are specified, they should be laid off as accurately as possible. All drawings should be made as neat as possible, and the penciling entirely finished before inking in any part of it. The hands should be perfectly clean, and should not touch the paper except when necessary. No lines should be erased except when *absolutely* necessary ; for, whenever a line has once been erased, the dirt flying around in the air and constantly falling on the drawing will stick to any spot where an erasure has been made, and render it very difficult, if not impossible, to entirely remove it. For this reason, all construction lines that are to be removed, or that are liable to be changed, should be drawn lightly, that the finish of the paper may not be destroyed when erasing them.

LETTERING AND SIGN PAINTING.

INTRODUCTION.

1. Scope of Subject.—Sign painting does not consist merely of painting letters on sign boards or windows, but includes all classes of work, from the plain black lettering on the glass of an office door to the most artistic pictorial designs used on banners and other elaborate gold and silver signs. The sign painter must also be prepared to execute all manner of designs for the carver and stone cutter, and even portraiture enters into his industry for such purposes as campaign and society banners.

2. Qualifications Necessary.—The sign painter should be a master of the art of designing, for, as we have already stated, under this head is embraced a general knowledge of all that is considered artistic. He should be thoroughly familiar with the use of colors, having due regard for their harmony and contrast, and also the many effects that can be produced by their unlimited combinations; he should also be familiar with the result of applying one color over another, when one has been prepared so as to dry slowly, and the other prepared to dry quickly and with the results produced by the varied preparation of the priming, groundwork, and finishing coats, the mixing of colors for certain backgrounds, or the treatment of the material on which he is to letter. These and a great many other subjects, which constantly arise, must be met and fully understood, to fulfil the demands made on the successful and up-to-date sign painter.

3. Experience and Theory.—While theoretical knowledge is the basis of all proficiency in the arts, yet much remains to be learned from experience. The physician is graduated from his college with a full knowledge of his profession, but his

year or two of hospital service is incumbent on him before he is fully qualified to engage in private practice. We have therefore given in the *Elements of Lettering* the knowledge necessary to qualify the student that desires to become a practical letterer. But the instruction contained in the following pages is of such a practical nature as to advance him in lettering; so that he may enter the sign shop beyond the year or two of servitude required, and, by a complete knowledge of the methods and formulas employed, be fitted to become at once of practical assistance to his employer.

PRACTICE AND MATERIAL.

4. Brush Work.—It is necessary that the student desiring to apply his knowledge of lettering especially to sign painting should become accustomed to the use of the brush and paint, by confining his practice to these materials as much as possible. It is only by constant practice that the hand becomes skilled in the use of the brush in forming straight lines and curves with accuracy, in order to give to each letter its proportionate width and uniform stroke.

5. Brushes Required.—The brushes for practice work should be as follows: the small brush, capable of making a letter from 3 to 6 inches in height, having a quill $\frac{1}{8}$ inch in diameter, and hair $\frac{3}{4}$ inch long; and the large brush, with a quill $\frac{1}{2}$ inch in diameter, and hair $\frac{7}{8}$ inch long. Cut off $\frac{1}{2}$ length of quill, after softening in warm water to prevent it from splitting. This will allow the handle (which must be carefully fitted in quill) to turn freely in the fingers without touching the quill with the ends of the fingers, which would, on account of the imperfect quill, roll unevenly in the fingers and thus destroy a perfect line or curve. The brush should be cleaned in turpentine before, as well as after, using; and, to prevent it from drying or hardening when not in use, it should be dipped in kerosene oil after cleaning.

6. Card Black.—The color known among letterers as *card black* will be found to be a good preparation for practice

work. This color flows freely from the brush, is an intense black, and dries with a glossy surface a few moments after the application. It may be prepared by the student as follows: Use a vessel that will hold at least $\frac{1}{2}$ pint; in this put coach black (ground in japan), in bulk, equal to a large English walnut; add three times this quantity of best asphaltum, also about a tablespoonful of best coach japan. Stir until thoroughly mixed, and thin this with a small quantity of turpentine until it becomes equal to the consistency of cream, or so that it will flow freely from the brush. Put this mixture in a large-neck bottle with screw-cap or cork top. This should always be well shaken before it is used. Another preparation known as "Letterine" is also an excellent mixture.

7. Paper.—The light Manila paper, white cardboard, or the ordinary white flat papers will serve the purpose for practice work. With the exception of cardboard, these should be securely fastened to the drafting table before beginning to practice.

METHODS USED IN SIGN PAINTING.

TOOLS NECESSARY.

GENERAL TOOLS AND APPLIANCES.

8. Principal Tools Necessary.—The principal tools necessary for sign painting and lettering are the **T** square, boxwood square, the compass with pencil attachment, straight-edge, yardstick, 30° and 45° triangles, easel, and drafting table. With these tools, one is prepared to letter all ordinary signs that may be executed within the shop; while those on the sides of buildings, too high to be reached with an ordinary ladder, require the use of a swing scaffold, tackle blocks, and ropes. Trestle horses and plank are also used for work above the reach of the step-ladder. The **T** square with swivel top and thumbscrew can be adjusted to any angle, and will be found a very useful tool. Three compasses, at least, should be used;

the largest (the wood compass) should be capable of an expansion of 3 feet. The sign easel should be made of extra-heavy material, as the weight put upon it is sometimes very heavy. The drafting table should be constructed high enough to avoid the necessity of the letterer getting into a stooping position when working. This table should be built 3 feet 2 inches high in front, and with the view of the letterer always standing up while working on it. For close work, which can be done as well, or better, while sitting, a lower table should be used, adjusted accordingly; in either case the incline should not exceed 6 inches rise in 20 inches width.

9. Improvised Appliances.—There are many tools and contrivances used in a sign shop that an inventive brain can always improvise, such as the arm rest, which is a strip about 3 inches wide by 1 inch thick, with blocks underneath each end, thick enough to raise this rest above the sign on which the letterer is working; the adjustable frame, on which cloth signs are stretched while being lettered, which is a frame usually fastened at each corner by setserews; the glass sign racks, used to hold glass signs and insure their safety during the process of lettering; or the adjustable frame used to hold finished work, etc. The ordinary tools necessary in a sign shop, such as palette knives, palettes, etc., are too well understood to need any description. A solid table, with a firm, level top, about 18 in. \times 24 in., covered with plate glass, will be found very useful in mixing colors; if made light and portable, this can be used conveniently by placing it beside the work on which the letterer may be engaged.

BRUSHES.

10. Camel's-Hair Brushes.—We will first consider the brushes to be used for lettering. Of those used exclusively for this purpose, the most common variety is the ordinary camel's-hair brush. These are the least expensive, and range in size from the $\frac{3}{4}$ -inch, known as No. 7, to the "swan quill," which is the most stocky quill brush in use for lettering. The "goose

quills" are made in four sizes, Nos. 7, 5, 3, 1. No. 1 is a $\frac{1}{4}$ -inch quill with hair $1\frac{1}{4}$ inches long.

11. Ox-Hair Writers.—The "ox-hair writers" are similar to the camel's hair in size and numbers, but are harder to "break in," or bring into perfect working order, and are used to best advantage in heavy color, such as white lead.

12. Superfine Brown-Sable Writers.—The "superfine brown-sable writers" are also of four sizes. Their numbers are 1, 4, 6, 8, and their lengths correspond with the camel's-hair brushes. These will be found excellent brushes, and when thoroughly broken in will give good service; while the camel's hair are unreliable in lasting quality, but serve the purpose where the brown sable are of no use. This is especially true when used for lettering on japanned tins, glass, or other smooth surfaces.

13. Red-Sable Brushes.—For lettering in water colors as well as oil, the long-handled red-sable brushes are preferable. These range in sizes numbered from 1 to 12, successively. The hair of No. 1 is $\frac{1}{4}$ inch long, while that of No. 12 is $\frac{1\frac{1}{6}}$ inch long. These brushes are well made, and generally give satisfaction. The flat red-sable brushes are chisel-shaped, and for use in making a letter, such as the Old English, will be found of great advantage.

14. Swan Quill.—The swan quill (camel's hair) referred to, will be found invaluable, both in lettering and striping, on account of the great amount of color it can be made to retain. These brushes are used with light flowing color only, and to use them in any color made with white lead would ruin them at once. They are made especially for sign painters, in two sizes, $\frac{3}{4}$ inch and 1 inch long, and one size made for carriage stripers is 2 inches long.

15. Other Brushes.—The fitch and bristle varnish brushes are used for lettering on cloth signs, and other large letters; and, on account of their size and chisel shape, can be used with great rapidity, and will give the work an appearance of neatness and cleanliness. The only other brushes used by

the sign painter are the *pound* brush, which is necessary to coat sign boards or other plain surfaces ; the round and flat sash tools ; the *fitch*, or flat bristle brush ; and the flat *bear's-hair* brush (made exclusively for varnishing purposes). These constitute all the brushes required for sign painting and lettering, except the round *duster*, the several varieties of gilding brushes, blenders, stipplers, etc.

THE T SQUARE.

16. On all signs having either a square top or bottom, the **T** square can be used, not only for marking out the letters, but also for guiding the hand in using the brush, though to accomplish this perfectly requires much practice. It will be advisable, therefore, that the student take pains to acquire this method, and become accustomed to the position of the hand, and the manner in which the brush should be held. Fig. 1 shows this position. The brush is held between the thumb and the first finger, the handle pointing towards the letterer, allowing the three fingers to guide the hand along the edge of the **T**-square blade. The left hand is used to secure the square in position, either by holding it firmly at the head when working on a narrow sign, or at the end of the blade when working on a wide sign, which will prevent the square from slipping if the forefinger is rested against the bottom of the sign board as shown. By the use of the **T** square and this method of striping, the letterer can draw all vertical and angle lines, having first, by the same method, striped all horizontal lines, using a straightedge for this purpose instead of the **T** square, but maintaining the same position of the hand and brush. The block, half-block, and all straight-line letters of any style can be made with great rapidity in this manner.

POSITION OF HANDS.

17. The left hand should rest in an easy position, projecting the little finger, to steady it ; this also gives a greater scope in making a stroke. The right hand should rest comfortably

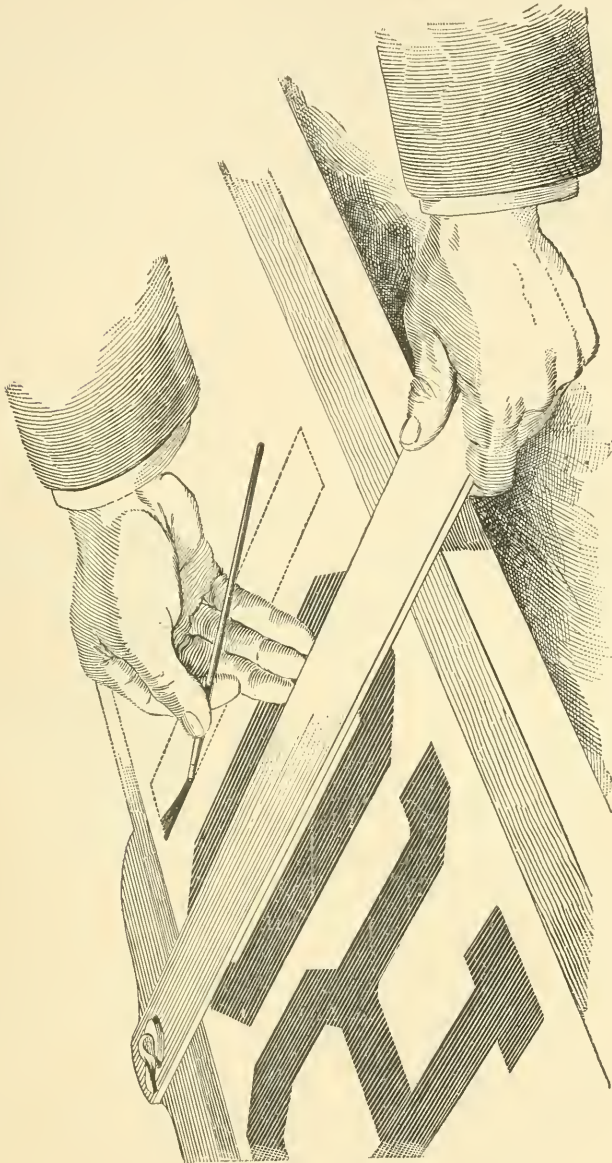


FIG. 1.

on the left, and be arranged in such a manner that the little finger of the right will come between the thumb and the forefinger of the left hand, holding the brush in the same position as in writing, as shown in Fig. 2.

18. Although this may seem somewhat awkward at first, it will be found, on practicing a little, that it is the most natural and comfortable position, as well as the one by which the best work can be accomplished. It allows perfect freedom of the hand in making all strokes of the letter, giving a greater scope in making large letters than any other position or method ; it

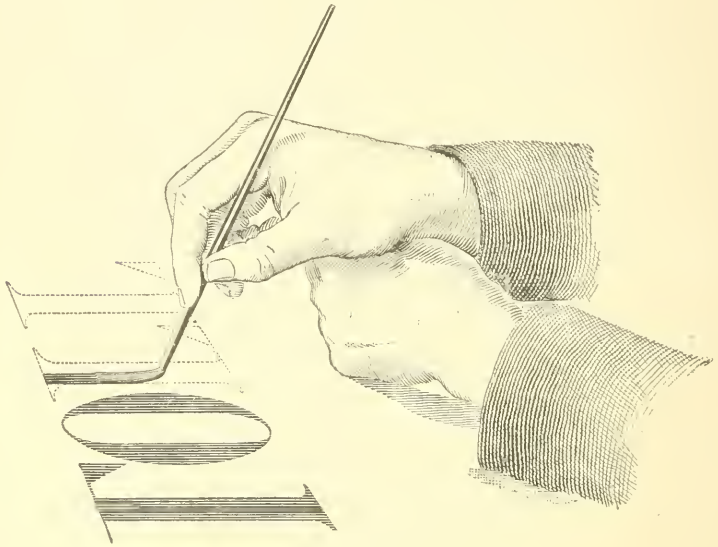


FIG. 2.

also forms a rest, giving the letterer entire control over his brush. By constant practice, a perfectly straight line may be drawn with the brush, either vertically or horizontally. When making letters under 1 inch in height, it is best to use but one hand in the position used while writing ; and a red-sable brush, from No. 1 to 5, according to the size of letter, will be found to fill the requirements for small lettering.

STRIPING.

19. There are but two methods of striping with a brush, both of which are employed by the sign painter. The first of these, and the one most generally used, is shown in Fig. 1. By this method, the brush is drawn over the surface, spreading its hairs somewhat, and touching with almost the entire brush length, the letterer at the same time being careful to keep the width uniform. In some cases, when striping by this method,

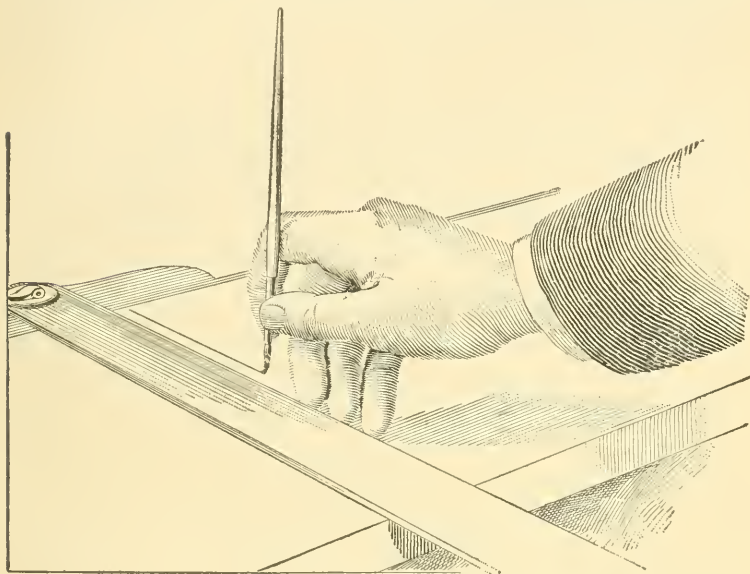


FIG. 3.

it is necessary only to observe the line made by the brush on one side, as in lettering or striping to the edge of the letter. This system the carriage painter uses exclusively, and for a brush he uses the one known as the *sword pencil*, a long flat brush with which he can make the stripe called the fine line, which is almost a hair line.

20. To accomplish the same results, the sign painter employs an entirely different method, producing equally as fine and perfect a stripe, but using the point of the lettering brush, or pencil, called also the *writer*, by holding the brush at

a right angle with the surface on which he is working, and allowing the fingers to guide the hand. The brush used for this method must be one that is either drawn to a slight chisel-shaped end, and turned edgewise to produce the finest line possible, or one that possesses a good point, which will not allow any of the hairs to spread while using.

21. Great care should be used in the selection of brushes for any class of work, either lettering or striping. Fig. 3 shows the other method of striping referred to. It will be good practice for the student to lay a straightedge on a sheet of cardboard, and draw the fine line, by observing the position shown in Fig. 3, until the perfectly straight hair line has been mastered. This will require considerable practice. Use the same brush, well filled with water or oil color, and practice the broad stripe by the method shown in Fig. 1. The brush for this purpose should be rather large, as a small one will not spread the color to the full width of the stripe desired. The effort to accomplish this by means of a brush that is too small will cause an irregular or wavy stripe; while the large brush will make the broad stripe with the hair in its normal position, and no great pressure, therefore, is required.

COLORS.

CLASSIFICATION OF COLORS.

22. The Primary, Secondary, and Neutral Colors. Colors are divided into three classes, namely: primary, secondary, and neutral. The semineutral, holding a place between the secondary and the neutral, is classed with the latter.

The primary colors are red, yellow, and blue. By a mixture of any two of these the secondary colors can be produced; and, by the addition of white and black in combination with the primary or secondary colors, all neutral colors, shades, and tints are produced. A combination of red and yellow produces the secondary orange. A combination of yellow and blue produces green. A combination of red and blue produces purple. The union of black and white produces lead color.

A combination of the three primary colors produces a *neutral* color, by using a proper quantity of each in proportion to its strength. A combination of the three primary in unequal proportions produces colors known as *tertiary* colors.

23. Color.—The trade term *color* always refers to any mixture that will produce each separate hue by compounding the primary and secondary colors ; while the spectrum shades of the colors always refer to the blending of the primary and secondary colors, in the following order : red, orange, yellow, green, blue, indigo, and violet. These colors make twenty-one distinct shades.

24. Producing Shades.—The various shades of a color are formed by mixing a strong primary or secondary color with white, making several shades of different strength until the color has become indistinct, when it is termed a *tint*. A combination of red and green produces brown. Of this color there are many shades. The burnt and raw umber, and burnt and raw sienna, when in their natural, or raw, state are brown pigments, but, by chemical treatment, the burnt, or darker, shade of each is produced.

25. Semineutral Colors.—Brown, gray, and maroon, also the color produced by mixing blue and green neutrally, give rise to the other classification, called the *semineutral* colors. From the six principal colors come the great variety of colors into which each principal color is subdivided.

26. Warm and Cold Colors.—Colors are in harmony with each other when they partake of the same general effect, such as the chrome yellow and sienna, chrome yellow and umber, or such colors or tints partaking of the red or yellow, called *warm* colors, or those of the opposite nature, which partake of gray, lead color, green, blue, etc., producing colors or tints that are called *cold* in their effect or tone.

27. Contrast.—Colors are in contrast when warm and cold colors are used in connection with each other, although all such colors may not be so used without producing a heterogeneous effect, as certain shades of red and green, blue and green,

blue and red, etc. are most discordant to the eye when placed close together. Coloring, therefore, is a study that can be accomplished only by close observation and experiment. Just as the professional musician produces some combined sounds that thrill us, so the professional colorist produces effects that are beyond the comprehension of the unskilled. More particularly is this true of the coloring displayed by the artist that imitates nature. He may, by the art of coloring, not only deceive the eye but produce combinations that will be most pleasing to it.

HANDLING OF COLORS.

HARMONY AND CONTRAST.

28. Scope of Subject.—The handling of colors, in the full sense of the word, does not mean simply the knowledge of the many ways colors can best be applied to a surface, but involves a knowledge of the nature of the colors themselves, the effect of the elements on each, and the relation they bear to one another. This relation in colors classifies them as either harmonizing or contrasting with one another. A colorist should understand the result and drying effects of placing one mixture on another, each having as a base an entirely different medium or liquid. All of these details must be considered by the painter, and many annoyances and serious complications can be avoided by bearing in mind the following important instructions.

29. The Drying Qualities of Colors.—Colors mixed with slow-drying liquids, such as oils or varnishes, can be covered with a coat of the same color, when the first is dry, even though quite tacky. But to cover this surface, if not perfectly dry, with a color mixed with some quick-drying japan or varnish, will produce a crackled, pebbled, or uneven surface when it does dry. One color should be perfectly dry, therefore, before another is applied. The same result will be produced should a slow-drying color be placed over a quick, if the first coat is not perfectly dry before the second is applied. This can easily be understood, as the quick color possesses a

contracting or shrinking character in drying, while the slow color, mixed with oil or varnish, is of a flowing or expanding nature. As the under color continues to dry out after being covered over, its contraction causes the result described above.

30. Durability.—Colors mixed with the best coach varnish will stand longer when exposed to the weather than when mixed with any other material, and raw or boiled linseed oil stands next in value for the same purpose ; but japan or turpentine as a mixture will produce colors with little durability. English vermilion is a color that cannot be used for outside purposes with any assurance of its remaining long or holding its original brilliancy. This color is a pigment of mercury and sulphur, and when exposed to the elements bleaches out to a dull pink, about the strength of flesh color. The American, or aniline, vermilion is one of the many products of coal tar, and its effect is directly opposite to the English vermilion, for after exposure to the elements this vermilion turns a very dark brown. These effects may be somewhat compensated by mixing the two together in relative proportions to render them neutral, but at best the color is not one to be used freely for outside work.

31. Lampblack will outwear all colors. It is often seen on signs that have stood many years of exposure, where the black has remained with a good surface, while the three or four coats of ground color have entirely disappeared, together with portions of the weather-beaten wood, giving the sign an embossed appearance. Blues as a rule are not lasting, while all other colors may be considered of about equal durability.

GROUND FINISHES.

SMALTING.

32. Preparation.—Smalting consists of covering over a freshly painted surface with fine sand that has been dyed a suitable color. This process, though simple, is of the greatest importance to the sign painter, as he can thereby produce a ground that gives a most finished appearance to his work,

causing rough or uneven sign boards to present a smooth surface. The success of smalting depends largely on the color upon which the smalt is to be placed. This color is called the "cutting-in color," and should always be mixed fresh and prepared as follows: The best refined lampblack is mixed with boiled linseed oil, and ground on a marble or plate-glass table, with a palette knife, until all lumps and specks have disappeared. The mixture should be thick enough to grind easily, and not flow or spread out on the table surface. To each half cup of color, add a lump of white lead equal in size to an English walnut, and add to this equal parts of boiled oil and coach japan, so as to give the mixture a consistency that will allow it to flow freely from the brush, but still retain a good body. This mixture can be used for black, blue, or dark-green smalt without changing. For brown smalt, twice the quantity of white lead should be added, colored strongly with Indian red. For light-green smalt, green or yellow should be used in place of Indian red.

33. Method of Application.—After the letters are cut in on the sign, this color is spread evenly over the ground, care being exercised not to allow any ridges of color to form at the edge of the brush. A small pencil brush can be used to cut in the letters, no matter how large they may be, and a flat soft brush is afterwards used for filling in the background, the latter varying in size according to the sign. After the sign is filled in, strips of Manila paper or enamel cloth are spread on the table or floor, and the sign is so laid over them that one edge is on the paper or cloth. The smalt is then sifted on evenly over the entire surface through a small-mesh wire sieve. After remaining a few moments, all the surplus smalt is removed by tipping the sign edgewise and shaking the smalt on the paper.

Black smalt is used more than any other color, but is more likely to show defects. The use of smalt that has been kept in a damp place for some time without first drying thoroughly, will cause streaks of gray to appear in the finished sign, for which there is no remedy. In smalting, care should always be

exercised not to cover the sign thickly enough to break the edge of the letter by its weight, when the surplus is tipped or thrown off.

The edge or band of a smalted sign should invariably be painted with colors mixed with varnish, giving a glossy finish to it. Black is usually used for this purpose, especially on signs smalted with black or dark blue.

34. Flock.—On signs exposed to the weather, smalt is the only material that can be used for this purpose. For inside signs, however, a material known as “flock” is used; this is a ground cloth that can be obtained in several colors, although the maroon and black are most commonly used. Flock is applied to signs in the same manner as smalt, but the cutting-in color on which the maroon is placed must be made to match the color of the flock as nearly as possible.

VARIEGATED GROUNDS.

35. Variegated grounds are often used on large advertising signs, as well as on many kinds of stenciled signs. The color of the background when the sign is finished must govern the selection of the variegating colors. If the ground when finished is to be blue, cream and lemon tints, with possibly a touch of sienna or orange, may be used. If the ground is to be black, two or three shades of green, or, in fact, almost any color can be used. A maroon ground, with a variegated blue letter, makes a most pleasing combination.

36. Two coats of white lead are applied to the ground before the variegating colors are applied, and then three colors are laid on lengthwise of the line to be lettered, giving equal surface to each color. The top is white, the bottom is a medium shade of the variegating color, and the intermediate shade is placed between these, and is then blended where the colors come together, beginning with the lightest. When the sign is “cut in” and finished, each letter will appear as though it were shaded separately.

PREPARATION OF SURFACES.

37. Foundation Work.—There are many kinds of surfaces to be dealt with in lettering, for the letterer may be called on to place letters upon any solid material known. A sign board when first turned over to the sign painter from the sign carpenter may possess solid knots or streaks of pitch, either of which will show through many coats of color unless their penetrating quality is destroyed. This is done with orange shellac, applied after the board has been thoroughly dusted off. When the shellac is dry, the sign is ready for the first coat of paint, called the *priming* coat. This must invariably be white lead mixed with boiled linseed oil only. When this has been dried and the board has been run over lightly with sandpaper and dusted, all nail holes or other defects are filled with putty, after which the second coat is applied, and should be mixed with one-fourth turpentine to three-fourths boiled oil. This coat is sandpapered also, and the third, or finishing, coat is then applied, which is a mixture quite reversed from that used for the second coat. The third coat should consist of about two-thirds turpentine to one-third boiled oil, and will insure a flat- or dull-finished surface to work on.

38. Defects.—A glossy surface might cause trouble, if allowed to stand some time before being lettered, as the placing of one oil color upon another is liable to cause the second one to creep, that is, to leave the ground surface, causing large or small pitted spots to appear. This may be avoided by rubbing the surface with curled hair, or with pumice stone and water, or by dusting a small quantity of whiting over it. White enameled oilcloth is used extensively for lettering purposes; to insure against the above difficulty, benzine or turpentine should be rubbed on the surface with cotton cloth or batting.

39. French Enamel White Finish.—If a French enamel white finish is desired, the sign should be painted evenly with three coats as above, followed with three coats of white "rough stuff," applied as paint. A coat of lead color, known as the *guide coat*, should then be applied. This should

be rubbed down with white lump-pumice stone and water until the lead color has entirely disappeared, the day following its application. For finishing this surface, equal parts of Florence and zinc white are mixed in special light rubbing varnish, prepared especially for white. One coat of this mixture is applied, and the day following is again rubbed with the ground pumice. If not evenly covered, a second coat of the zinc and Florence white is necessary and also another rubbing, after which one coat of light English finishing varnish, colored well with the zinc and Florence white, is flowed on, enough only of the white being used to change the color of the varnish, but not enough to make it a solid color.

40. Carriage- or Piano-Body Finish.—To make a carriage- or piano-body finish, the sign should be painted with three coats of white lead, as previously directed, adding black enough to produce a lead color, after which the surface is given several coats of ordinary “*rough stuff*.” At least four coats of rough stuff should be applied before giving it the *guide coat* of black or red. It is then rubbed down with *lump pumice* and water, after which the sign is ready for the finishing coats. If a black finish is desired, the surface is given a coat of coach black ground in japan. This is followed with two coats of rubbing varnish, colored well with black, each coat being rubbed with ground pumice and water (using the curled hair for the rubbing). One coat of best coach finishing varnish is then flowed on in a room of high temperature and free from dust or draft. When the sign is dry, it possesses the finest finish possible to produce, if the work has been properly done. Should any color other than black be desired, the color may be substituted in place of the black on the first coat after rubbing down the rough stuff. The rubbing varnish should also be colored accordingly. This process can be used on all sheet-metal or iron surfaces, on which the roughness may be overcome by filling well with a putty made of white lead and whiting laid on with a wide-blade putty knife.

41. Frosting on Glass.—This is a process by which lettering is made to show in a conspicuous manner, and also

serves the purpose of a door transparency, or it is often placed on windows opening into a hall or area. By the use of sour beer and Epsom salt, a frosting may be produced that closely resembles the fantastic marking of the natural frost on the window pane; but the frosting usually applied by the sign painter is produced by the use of sugar of lead (in tube) or white lead. The former, having less body (or substance), is made to imitate more closely the frosting produced by the *sand-blast process*, and is applied with a brush as thin and evenly as possible, and stippled with a brush made especially for this purpose, or with a pad of unsized cotton cloth filled with cotton batting. White lead used for this purpose should be mixed with 2 parts boiled oil to 1 part turpentine, and applied in the same way as sugar of lead. When it is desired to show the lettering most prominently, the white lead is used, it being when applied opaque, and much whiter than sugar of lead.

SIZES FOR GILDING.

GILDING WATER.

42. In the preparation of size for gilding on glass, the greatest care must be observed to avoid the existence of the smallest particle of oil in the vessel in which it is made. In fact, the most scrupulous cleanliness is necessary throughout the preparation of the size, as the faintest trace of any foreign matter will materially injure the gilding.

Size for glass gilding is prepared by dissolving, in a pint of pure water, a piece of Russian isinglass about the size of a silver dime. The vessel containing the water is then placed over a gas stove, coal fire, or other device that will heat it rapidly to the boiling point. After boiling about thirty seconds it is removed from the fire, and allowed to cool; it should then be strained through a perfectly clean piece of muslin, after which it is ready for use. This gilding water or size must be prepared fresh every day, as it is practically useless after twenty-four hours, and should always be made with distilled, rain, or melted-ice water, the first being preferred.

SIZE FOR OIL GILDING.

43. Sizes for gilding on wood or metal are of two kinds, known as *slow* size and *quick* size. The former is used when the sign or surface to be gilded is large, and will require considerable time to complete the gilding; while the latter is used on small zinc or japanned iron signs, where the letters are small and the entire gilding can be completed in from one to five hours.

44. **Slow Size.**—Slow size is made from boiled linseed oil. The oil is allowed to stand in a warm place until it is of about the consistency of molasses, and is then called *fat oil*. Equal quantities of fresh boiled oil and coachmakers' japan are mixed together; this mixture and the fat oil are then united in equal proportions, together with a sufficient quantity of chrome yellow to render it easily seen during its application to the surface to be gilded. These, when thoroughly stirred together, will form a size that will stand from fifteen to twenty-four hours. The drying qualities of the slow size are influenced by the temperature in which it is allowed to stand.

45. **Use of Slow Size.**—In using this slow size, it must not be allowed to flow thickly over the surface, but should be brushed out evenly to cover the entire surface, to which it is applied to an even depth. If one part is more thickly coated than another, it will not dry to the surface of the sign, and will afterward break through the gilding when the surplus gold leaf is being removed, or when the gold is burnished. This size will keep ready for use for a long period if placed in a corked bottle or tightly capped jar.

46. **Quick Size.**—Quick size is made in several ways, according to the length of time required for it to dry. This is of course governed largely by the amount of work ahead of the letterer to be gilded. About 30 drops of boiled oil added to $\frac{1}{2}$ ounce of Hedden & Wheeler's japan gold size will prepare a size that will dry in about two hours. This can be made quicker drying by reducing the quantity of oil. But to add oil in excess of the quantity prescribed above will produce an

unreliable mixture, so that another preparation is necessary for slower size. The above size should be colored with a little orange or lemon chrome yellow, well mixed together on a glass surface by the use of a palette knife.

47. A Medium-Slow Size.—Another size that will stand longer than the above is prepared by stirring, in $\frac{1}{2}$ ounce of coach finishing varnish, about 30 drops of coachmakers' japan. This will stand four or five hours. In all work of importance it is advisable to test the size upon a piece of the material to be gilded, in order that the length of time it will stand may be accurately known. Different surfaces require different sizes. Some work requires a size that will stand for twenty-four hours, while on another material it should be ready to gild in three hours or sooner. The reason for this is that slow size cannot be made to produce an even or sharp edge on smooth surfaces. This size may be preserved in a tight jar in the same manner as the one previously described, though it has a much stronger tendency to become thickened. Better work can be produced with quick size, freshly prepared, as it not only flows from the brush more freely, but is also more reliable in drying. Either of the foregoing quick sizes may be thinned, if necessary, with a little turpentine, but too much turpentine will destroy the luster of the gold.

48. Proper Materials Necessary.—It will be observed, by one familiar with the action of the elements on certain colors, that size used for signs on the exterior of buildings will show the effect of the elements very soon after its exposure to the weather, if it has been improperly prepared. A common mistake is the use of yellow size for aluminum leaf or bronze, which is likely to show through the face of this metal. Size for such materials should be made with about 2 ounces of light coach varnish, to which is added a piece of pure white lead as large as an English walnut, and about a spoonful of japan gold size and the same quantity of turpentine. The leaf or bronze should be applied while the size holds a strong tacky surface, and is just dry enough so that bronze will not show an uneven surface when applied. The bronze must always be put

on the surface in large quantities, with a chamois-skin pad filled with cotton. If used too sparingly, the surface will present a clouded appearance, which cannot be overcome or remedied.

49. The size for gold bronze should be the same as that used for gold leaf, but colored with lemon chrome yellow. For copper bronze, use orange chrome, darkened with a little Indian red, which produces a color resembling somewhat the copper bronze.

GILDING.

GILDING ON GLASS.

50. Gold Leaf.—The gold leaf used for this purpose should be of the best quality. The gold beater usually prepares two grades of leaf; that used for this purpose is not beaten as thin as the ordinary leaf used on wood. The thin leaf will break easily in the process of laying on glass, not only causing considerable annoyance, but also involving extra expense. It is therefore desirable that the leaf made especially for this purpose should be obtained direct from the manufacturer.

51. Tools and Materials Necessary.—To lay gold leaf on glass several things are necessary: *first*, the tip, which is a long-hair brush, capable of holding a full-sized leaf of gold; *second*, the gilding brush, which is a soft camel's-hair brush, about $1\frac{1}{2}$ inches wide; and *third*, a handful of soft well-carded cotton batting for rubbing the gold. The tip will not pick up the leaf from the book unless prepared first to do so. This is done by drawing the tip across the head, at the same time pressing the hair of the tip so as to allow some of the natural oil of the human hair to adhere to it. Gold leaf being extremely sensitive to the touch, the most trifling amount of adhesive is all that is necessary, as too much will give rise to serious trouble by causing the leaf to adhere to the tip too persistently, or by the oil coming in contact with the surface of the glass, and destroying the luster of the gold, or even by

preventing it from adhering to the glass at all. Gold leaf is very frail material to handle, and therefore great caution is necessary in its application.

52. Method of Procedure.—The design or inscription to be gilded is placed on the reverse side of the glass by means of a perforated pattern, through which whiting is pounced, thus showing the outline of the letters or parts to be gilded; or the design may be marked out with ordinary white chalk or the lithographer's black crayon pencil, which will readily leave a mark on a glass surface. The surface on which the gilding is to be done must be perfectly cleaned by removing all possibility of oil or even finger marks. The book of gold leaf is laid on a flat surface, with the opening toward the right. One leaf of the book is folded back and creased with the left hand, thus exposing the gold. The cutting of the leaf is then accomplished with the little-finger nail of the right hand, by running the nail along on the gold, using the folded book leaf for a guide. The piece of gold so cut is picked up with the tip (which is held in the hand during the cutting process) and laid on the glass lightly, after having first covered the part to receive the gold with a copious coat of the size, the preparation of which is treated under heading "Gilding Water." The brush used in the size is usually a $1\frac{1}{2}$ -inch flat camel's-hair. All letters should be covered with a liberal supply of gold leaf, allowing it to overlap the marking. When the size under the gold is perfectly dry, the surface should be well rubbed with cotton batting, which will remove all scrap leaf that has not adhered or that has overlapped, and will expose to view any spaces or parts that have not been properly covered. The size is then flowed all over the work (beginning at the bottom), and gold is laid on all spaces that have not been previously covered. When this is dry, a second rubbing with the cotton will remove the surplus. A third or fourth washing of size does no harm to the gold, and when diluted with warm water, produces a brilliant burnished effect.

53. Sheet-Glass Signs.—If gilding has been done on a sheet of glass to be used for a framed sign, the pattern must

again be pounced with whiting over the gold leaf, which furnishes a guide, showing the place occupied by the letters. To prepare a paint to letter over gold leaf on a window that is exposed to frost (the great enemy of window gilding), a slow-drying varnish, colored well with lemon or orange chrome yellow, should be used, and when dry the gold leaf extending beyond the letters can be cleaned off easily with water, a little whiting, and cotton batting. For a backing or lettering color for framed glass signs, a quick-drying varnish or asphaltum black can be used. As these signs are not exposed to the elements, almost any color can be used on them. A color is preferable, however, that is made the shade of the gold leaf, and that will not be seen when the sign is finished, should any small cracks or spots have been left in the gilding that would be considered too small to regild.

GILDING ON WOOD OR METAL.

54. Method of Procedure.—Having considered the use of the tip and handling of gold leaf for gilding on glass, we will now consider its application to a wood or metal surface.

The manner in which the gold is laid on these materials differs. The slow size will allow us to cover the whole sign with gold leaf, before rubbing down to a burnished surface; and, if the letters are large enough to take the whole leaf without much waste, the letters can be gilded from the book without the use of the tip, by turning the leaf back and placing the book face downwards on the size, rolling the leaf on gradually, so as not to break it. When the sign is entirely covered, a 2-inch bear's-hair brush is used to remove the surplus, and the whole gilded surface is well rubbed. This will take the superfluous scrap, carrying it along the letters, filling in all cracks or small spots that may have been overlooked, and, if these are not too large, will not show when the gold is burnished. After rubbing with the brush, a handful of cotton batting should be used, and the gold rubbed with this until no laps or spots are seen.

55. Gilding on Quick Size.—To gild on quick size, gild the first two letters rapidly, rubbing down the first letter only;

proceed immediately to gild the third, afterwards rubbing down the second, and so on until the sign is gilded. The reason for doing this is that, if the gold were allowed to remain too long on quick size before burnishing, it would have a wrinkled appearance, caused by the action of the size while drying, and thereby drawing the gold, which is prevented when the surface is covered evenly with gold and burnished. Aluminum leaf, which is considerably tougher than gold leaf, can be applied on several letters before burnishing.

56. Outside Gilding.—For outside gilding, or gilding in places where the wind is strong enough to prevent both the use of the tip and the process of gilding from the book, another method is followed. This is accomplished by cutting wax paper in sheets large enough to leave a margin of $\frac{1}{2}$ inch beyond the edge of the gold leaf, which is applied to the wax paper by carefully laying the wax paper on it and pressing it evenly. The waxed gold leaf is then placed in an empty book and is ready for use. The size being more tacky than the wax surface of the paper, the leaf of gold will leave the paper and adhere to the size by pressing the waxed leaf with the hand. After the letters have been entirely covered, they should be rubbed down as described, using the bear's-hair rubbing brush and cotton batting, as in other gilding.

PEARL FILLING AND ETRUSCAN GILDING.

57. Pearl Filling.—The pearl filling often seen in the most elaborate window lettering is not in such general use today as in former years, as it has been supplanted somewhat by the Etruscan gilding, which consists of a dull or chased filling within an outline of bright gold. The material used for pearl filling must be the best quality mother of pearl in perfectly flat and thin pieces, and applied after the letters are gilded, shaded, and otherwise finished. The open strokes of the letters are coated with a light-colored coach varnish (to which a few drops of japan gold size have been added), overlapping the edge of the strokes, but without covering the shade,

especially if the shade is of semitransparent colors. The varnish is then allowed to stand a few moments until it will take the pearl without danger of slipping. The pieces are then fitted to fill the space within the letters as nearly as possible. After one letter is covered, and before beginning on another, well-crumpled tin-foil is taken and covered over the entire back of the letters, and is pressed in well with the fingers, so as to force the foil in contact with the varnished surface of the glass. Do not finish more than one or two letters at a time, unless, however, there is positive surety of the drying qualities of the varnish. The tin-foil filling gives the appearance of a solid pearl letter.

58. Etruscan Gilding.—The Etruscan gilding produces a chased-gold or silver effect, and is accomplished by a simpler method than the foregoing. There have been many kinds of size suggested for this purpose, but the one producing the best results is sour beer, although either glucose water that has been allowed to stand some time, or a few drops of turpentine in ordinary gilding water may be used. The beer size is applied in the same manner as regular gilding water size, but the gilding must not be rubbed with cotton. To cover all places that may have been left in the first gilding, the part already gilded is covered with a second application of the beer size after the former has thoroughly dried, and any open spaces are then gilded over. When dry, this should be painted over with a varnish color, somewhat of the same shade as the gold.

59. Finishing Coat.—All lettering on glass should be well backed with a varnish color as a finishing coat, both to protect it from frost and from the wear caused by cleaning the glass. It is impossible to protect lettering on glass from eventually peeling off, especially when certain conditions obtain; but with extra caution, window-glass lettering may be made to stand for years. A coat of best coach varnish, overlapping the edge of the letters about $\frac{1}{16}$ of an inch on the clear glass, will prevent frost from penetrating underneath the edge of the letters, and thus hastening their tendency to peel.

EMBOSSING.

EMBOSSING ON BRASS PLATES.

60. Importance.—This work requires a greater amount of caution than any other branch of sign painting. Not only are the materials expensive and mistakes costly, but the chemicals with which the work is done are dangerous, and any improper use of them would be likely to impair the health or even destroy the eyes of the operator. Embossing on brass includes not only the preparation of the plate, but the etching and finishing of the brass. The best grade of engraving brass is required for this process, and gauge No. 16 is the thickness in most frequent use. This is $\frac{1}{16}$ of an inch thick. The plate must be well buffed before lettering. The design should be made on medium-thick Manila pattern paper, and transferred to the brass plate by means of carbon transfer paper. After the design is transferred on to the plate, it is ready to cut in, preparatory to the etching process.

61. Material Used for Resisting Acid.—Asphaltum black is used to protect the plate while in the acid bath, and must be applied with an even, solid surface, and not thinned more than is absolutely necessary. Use only the best quality of asphaltum, and thin with equal parts of coachmakers' japan and coach finishing varnish. The letters and other designs are cut in with this color, leaving the letter and stripes clear. The entire sign is then covered evenly to the edge, and allowed to dry twenty-four hours at least. The marks made by the tracing should then be removed with water. A new cotton cloth is then used to rub the entire surface, which is done to destroy the glossy surface of the first coat, in order that the second may be seen, after which a second coat of the asphaltum is applied with care, to keep as close to the edge of the first one as possible. The second coat is allowed to stand forty-eight hours, after which the sign is ready for the etching bath.

A coating of beeswax is also used as a resist, and is applied to the brass, silver, or white-metal plate when hot. When this material is used, the design is traced through it on the surface

of the metal by means of a stylus. The wax is used only when a line etching is desired, and is therefore more especially adapted to small work, on which the letters are of miniature size.

62. Etching.—The etching should be done in a room set apart for this exclusive purpose, as the fumes and gases given off during the process are extremely unwholesome, and in fact very poisonous, and should never be inhaled. The sign to be etched is laid on a table, the top of which has been rendered

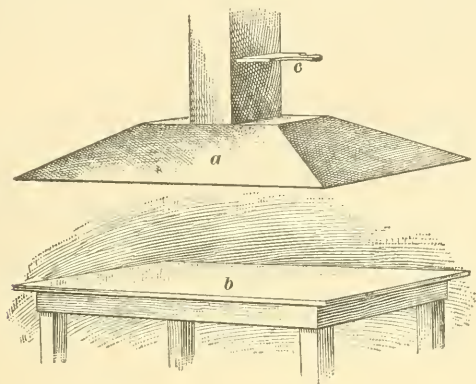


FIG. 4.

perfectly level, and over it is suspended a funnel-shaped hood, to collect the fumes and carry them off to the outside air or to a chimney flue. This arrangement is shown in Fig. 4, where *b* is the etching table under the hood *a*. At *c* is shown the vent that carries off the obnoxious vapors.

63. Beeswax Dam.—The sign is now prepared by banking up the edges with beeswax, all around the four sides, so as to give it the form of a shallow tray. The beeswax is prepared by melting together over a slow fire $\frac{1}{2}$ pound of beeswax and $\frac{1}{2}$ pound of rosin, and adding about 3 fluid ounces of boiled oil. When thoroughly melted, this mixture is poured into a vessel of cold water, and is then ready for use. Should the mixture become too hard, by standing, to work easily (it should be about the consistency of putty), it may be remelted and a little more oil added.

64. Use of the Acids.—Within the rim of wax, and over the entire surface of the sign, a mixture of 1 part nitric acid to 2 parts water is now poured to a depth of about $\frac{1}{4}$ inch. The liquid will immediately begin to effervesce, and strong pungent fumes of a yellowish color will rise from the surface. The hood should now be adjusted to receive and carry off these fumes, and the action of the acid be permitted to continue until the letters are “eaten into” the plate about $\frac{1}{32}$ to $\frac{1}{16}$ of an inch, according to the depth desired. The depth of the letters may be determined by feeling their edges with a pointed tool of any kind, though care must be exercised not to scratch the asphalt surface.

Should the action of the fluid for any reason be too slow, it may be hastened by pouring a small quantity of the pure acid on the surface of the plate, and stirring it around carefully with a whisk broom, or, if too strong, the acid may be diluted with water. Strong acid has a tendency to undercut the letters and destroy the sharpness of their edges. The etching, therefore, should not be done too quickly, for it should take three or four hours for the acid to eat the brass to a proper depth.

65. Cleaning the Plate.—After the etching is complete, the plate is removed from the table, the acid is poured off (by breaking a small piece of the wax dam out of the end), and the whole plate thoroughly washed in cold water. The bath tray, previously prepared, is usually built of wood; it should be large enough to receive the entire plate, and deep enough to hold 3 or 4 inches of water. The wax is then removed from the edges and saved for future use, and the asphalt coating wiped off after it has been thoroughly softened with turpentine. Should there be any slight imperfections in the surface of the plate, due to the action of the acid through an exposed place in the asphaltum, they can easily be removed (if they are not more than surface marks) on an ordinary buffing machine.

66. Filling.—The etched letters are usually filled with black japan, which is afterward baked until it has the appearance of a vitreous mixture. This, however, is a separate business, and outside the province of the letterer. The etched letters are

sometimes filled by the letterer with gutta percha or a black made with patent dryer, though the results are not as good as with the other material. Gutta-percha filling is made and applied as follows: Take equal parts gutta percha and asphaltum, and melt together in an iron pot, with about one-quarter their bulk of finely powdered gum shellac, and while the mixture is still hot it is penciled in the letters. Should a red or blue filling be required, the asphaltum can be replaced with vermilion or cobalt blue, according to the one required.

EMBOSSING ON GLASS.

67. Bifluoric Acid.—The preliminary details and arrangements for embossing on glass are precisely the same as previously described for etching brass, with the exception of the acid. Bifluoric acid is an intensely corrosive compound that will dissolve every glassy substance it comes in contact with. It is usually put up in lead or rubber flasks, and can be purchased only in the original packages. For use, the acid is diluted to the proportion of 2 parts acid to 3 parts water, though, if this is not strong enough, the proportion of acid may be increased. If the etching fluid is too strong, the edges of the letter will be undercut and the plate destroyed. The object of glass embossing in lettering is to show a richness in gilding by contrast. This is accomplished by gilding the etched letter and surrounding the edge so as to show an outline of bright gold. The gilding on the etched center of the letter is mottled, and shows the thickness of the etching, presenting a decidedly rich effect, especially when designs are executed with the pencil brush within the outline of the letter.

68. Testing the Acid.—The strength of the acid may be tested, in order to know when the sign is etched to a proper depth, by the use of the same sharp tool as before, which must be used with great care, however, as a slight scratch on the edge of the letter or surface of asphaltum would show the effect of the acid after the sign is finished. It is not necessary that etching on glass should be of greater depth than will show the

edge of the letter and produce the mottled effect. This acid is removed in the same manner as the nitric acid, and the asphaltum dissolved with turpentine, after which the plate is well cleaned with whiting and water, and the embossed glass sign is ready for the finishing process, or the gilding and coloring.

It is always desirable that the best results may be obtained; and, to insure this, the time should not be considered lost in testing the strength of the acid on various glass surfaces. Plate glass offers less resistance to the acid than sheet or crown glass. The acid is influenced, therefore, by the metallic oxide contained in the glass.

LETTER SHADING.

COLORS USED.

69. Combinations in Shading.—There is a great variety of methods by which the shading may be added to a letter by the use of colors. A law exists in nature that is very forcibly shown in combining colors when shading, and this must be regarded, or the work will not produce satisfactory results. A color apparently of a suitable shade when mixing, if placed on a *black* ground, will appear many shades lighter; and the reverse is likewise true. If the same color be placed on a *white* ground, it appears many shades darker. Letter shading may consist of several shades of one color, or several distinct colors may be used together, either blended or separated by outline.

70. Transparent Shading.—This method is of service to the letterer, in that it both saves time and gives most satisfactory results. A transparent shading mixture is made by stirring a few drops of well-ground black in a medium-drying varnish, adding also a few drops of turpentine. This mixture forms a shade for all light colors and tints, and, if properly applied, produces what is known as the *natural shade*, or the same strength and shade as would be cast from a projected object on the same ground.

71. Glaze Shading.—Transparent shade is used in the form of a glaze shade on such colors as vermilion, green, blue, yellow, etc. by adding a color corresponding with that with which it is combined. For example, the glaze shade applied on vermilion should be mixed with carmine (in tube). For green or blue, Prussian or some other strong blue is used, and sienna on yellow, etc. The glaze shade is always placed on another shade when the latter is thoroughly dry, and covers one-half of this nearest the letter, as shown in Fig. 5 at *c* and *e*.

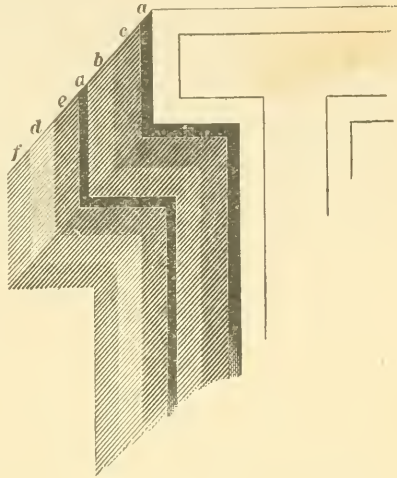


FIG. 5.

72. The Double Shade.—This is also illustrated in Fig. 5, in which *a* shows the black line used to divide the shades; *b* shows the block, usually some bright color, as vermilion, blue, etc., on which the glaze shade *c* is placed; *d* and *e* represent some neutral color, as gray, brown, etc., of which *e* is the transparent shade; while *f* is the natural shade on the ground color, made with the same as *e*, but giving an entirely different shade.

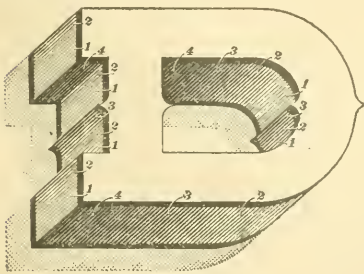


FIG. 6.

73. The Spectrum Shade.—This is produced by blending shades together, and its use is confined almost exclusively to the gilded and

silvered letters on glass, although the same colors cannot be used on both. The natural color of the gold is warm, and therefore harmonizes with almost every color; while the silver

is cold in tone, and suitable colors to combine with it must therefore be selected. Five colors are usually blended, when vermilion is used for the spectrum shade, as follows: (1) cream; (2) lemon yellow; (3) orange; (4) vermilion; (5) carmine. In all other cases, four shades of one color are used. In Fig. 6 is shown the proper position the four shades should occupy. It will be observed that the darkest shade 4 comes against 1 the lightest which is usually a tint of the color, while 2 and 3 are equally divided in strength between these extremes. The shades always occupy the same relative position shown, except on letters having a horizontal stroke, in which case but two colors, 3 and 4, are used underneath these strokes.

THE PREPARATION OF COLORS.

APPLICATION TO VARIOUS MATERIALS.

74. Proper Use of Mixtures.—Much rapidity is gained in lettering by a knowledge of the color, or combination of colors, that can be used to the best advantage on a particular material. Suppose, for example, we have an elaborate silk banner on which a design is to be executed; unless the proper mixture were used, the oil or other medium would be absorbed by the silk and so spread as to ruin the material at once. This condition may arise in the use of colors and their application to the many materials, where a successful design will depend on the kind of mixture used.

75. Lettering on Cotton Sheeting.—Cotton sheeting must be wet before being lettered, and while quite damp the lettering may be applied. Color for this purpose can be mixed with equal parts of boiled oil and japan, and thinned with turpentine. A 1-inch flat varnish brush will be found convenient in order to spread the color on the cloth with great rapidity, if the letters are large; and for small letters the camel's-hair swan quill is used. Shading colors thinned well with turpentine can, without danger of spreading, be applied when the cloth is almost dry.

76. Cardboard and Enamel Cloth.—Cardboard must always be lettered with water color or card black. Enamel cloth will also take this latter color, and it will be found to be the only color that can be used on this material with absolute certainty that it will not creep.

77. Silk.—On silk, different preparations must be used under different circumstances; for instance, if the design is in the form of a large panel on which a picture is to be painted, a paint must be used that will render the material pliable. An outline of hard-drying color may be used, and the center of the design filled in with any oil color to which has been added melted beeswax to the amount of one-fifth of the color. Ordinary orange shellac is used for a lettering preparation, and will be found a very reliable one. The shellac is used clear, but not too thin, though when too thick to flow easily from the brush it may be diluted with alcohol. Letters on silk must have two or three coats of this, according to the grain of the material, before it is ready to size for gilding, otherwise the size will not bear out, and the gold will appear mottled. Another preparation for the same purpose is the clear asphaltum, which should be thinned out with gold-size, japan, and a few drops of turpentine; this will be found much better to use on close-grained silk than the shellac. All shading colors used on silk or satin should be mixed with naphtha to prevent them from spreading.

78. Black-Surface Cardboard.—On black-surface cardboard, the white used for lettering should be water color, which can be mixed by filling a tumbler two-thirds full of zinc white, and adding enough water to dissolve it, and, when well mixed, about a tablespoonful of mucilage. This should be well stirred and allowed to stand a day or so before using, then thinned to flowing consistency and kept in an air-tight jar. Either Florentine white or Kremnitz white (unsized) will be found to be an excellent color also, but these must be mixed with a little mucilage to keep the color from rubbing when dry.

79. Glass.—For glass, the color used mostly is black, especially for outlining, shading, and lettering. To mix this color, use dry lampblack, best quality, grind thoroughly with a palette knife, and add only best coach varnish. Thin with equal parts of coach varnish and turpentine. Dry colors mixed with water and glue are used for temporary lettering on window glass. Many beautiful effects are produced by their use, as they flow freely and dry quickly.

80. Brick or Stone Panels.—For lettering on brick or stone panels, the white lead should be mixed with nothing but boiled oil. The black used is lampblack of an inferior grade, as it will answer for this purpose as well as the best quality. Mix the lampblack, boiled oil, and a cupful of japan to a gallon of color.

81. Plastered Surfaces.—For lettering on plastered surfaces, a light flowing color, such as the card black, will cover the surface and will not spread or run. If colors are desired, mix them thick with coach varnish, and thin freely with turpentine. These colors will dry flat (or without a gloss). If oil colors were used on this surface, the oil would flow from the color into the white plaster and show a yellow line surrounding the letter. The nature of the mediums, regarding their drying qualities and the application of colors, is therefore a constant study with the sign painter, and requires his careful consideration.

RELIEF LETTERS.

WOOD, METAL, AND GLASS.

82. Wooden Letters.—Relief letters are those that are raised above the sign surface, and are usually made of wood, unless the sign plate itself is of metal, in which case the letters are of brass cast from wooden patterns. The manufacture of wooden letters is such a simple matter that many sign painters undertake the whole process. The outline of the letter is drawn with coach black on thin Manila paper which is glued

on the surface of the lumber and then sawed out, and only the best kiln-dried pine plank should be used. The edges may then be beveled or rounded as desired. If the latter, the only tools necessary are a chisel and a rasp to round the letters, after which they should be finished by using very coarse sandpaper, and a smooth surface is then produced with fine sandpaper.

83. Large Wooden Letters.—Large wooden letters used on the roof of buildings or other elevated places are made and put up so as to stand out in relief against the sky, and consequently must be much larger than they actually appear from the ground. These letters, although reaching in some cases a height of 8 or 10 feet, are simply constructed and easily put in place. They are usually made of $1\frac{1}{4}$ - or $1\frac{1}{2}$ -inch lumber, which must be well seasoned, and each stroke of the letter mortised and tenoned to give strength, as shown on edge of letter in Fig. 7. At least two angle irons should be used on the bottom of each letter, of sufficient length to raise the letter from the roof, and two round braces behind; the size of the latter would vary according to the size of the letter. A $\frac{1}{4}$ -inch rod, extending over all the letters, is fastened on the tops by means of staples, and protects all single-stroke letters, such as the I, J, L, etc., and gives the whole sign sufficient strength and stiffness to withstand a violent wind storm. These letters, in order to show to the best advantage, should always be painted black, and the irons lead color.

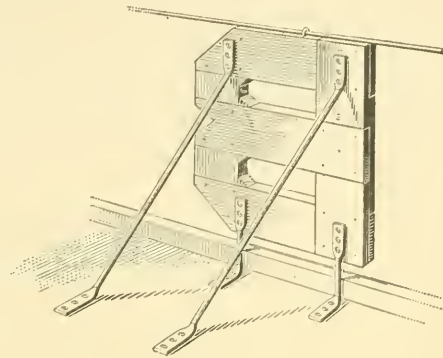


FIG. 7.

84. Metal Letters.—The metal letters, usually fastened on the brass or white-metal sign plates, are cast from wooden patterns, as before stated, and are afterwards filed, buffed, and plated with gold or nickel, to protect them from the weather.

They are fastened on the plates with screws, holes for which are drilled in the center of the letter and through the sign plate. To locate the points for the holes, the letters are carefully placed on the plate where desired, and whiting is dusted around the edges, thus outlining each letter. Two holes are drilled through the plate in the center of the space covered by the letter, after which the letter is again placed on the plate, to locate exactly the space where holes are to be drilled in the letter. The letters are then drilled, tapped, and screwed on from the back of plate.

85. Compo Signs.—Compo signs, the letters of which are also in relief, are molded signs made by pressing a wooden-pattern design into “compost,” or composition, which may be either the material used for stucco work (a sized plaster) or the compo used in the manufacture of picture-frame moldings. These signs when colored are made very attractive, especially for advertising purposes.

86. Wire Signs.—Wire signs may also be of an artistic design, the character of which will depend entirely on the shape of the framework. Ribbons and panels can be fastened back to back on wirework, and such a sign will not catch the wind, and may be made to read from two opposite directions.

87. Gas-Pipe Frame Signs.—The gas-pipe frame signs, generally used in London, England, are easily constructed, and for advertising purposes are valuable, as they can be read several miles away. The size of this style of sign is limited only by the amount of the roof surface to which the braces or wire can be fastened. The frame may be the extreme width of the building, as the wires or braces are fastened in two opposite directions only. The letters are of wood, and are hung between the sections of the frame, as shown in Fig. 8. This sketch shows a sign 45 feet in width by 36 feet in height (the average length of the gas pipe is 15 feet), made to read from one direction only. A wire brace extends from every intersection of gas pipe to a staple in the roof or wall.

88. Advertising Signs on Brick Walls.—These sometimes reach immense proportions. It is not unusual to see the sign painter begin his design at any part of the work, as the panel may be a hundred feet or more in length or height. The work is executed, therefore, from a miniature design or scale, which in this case could be either $\frac{1}{8}$ or $\frac{1}{4}$ inch to the foot; and to insure against mistakes it is divided into blocks 10 feet



FIG. 8.

square, and lined off on the sketch with red ink. Two or three plumb-lines dropped from the roof of the building from points 10 feet apart, with tapes tied around them at every 10 feet of their length, will locate each square on the building, and work can be carried out with as much certainty, at any part of the design, as though the whole sign were but 10 feet square.

89. Transparent Signs.—Electric lighting has done much to develop this branch of sign painting, and signs that would otherwise be unseen after dark can be so arranged as to serve the twofold purpose of advertising and illuminating. The materials usually employed for transparent signs are common sheeting, white Holland shade cloth, and frosted and stained glass. Many beautiful designs are made of the stained glass, framed in sheet metal surrounded with scrolled ironwork.

90. Unlimited Glass Signs.—It is not an uncommon thing in Europe to see the name of some periodical, or of a business firm, stretched across a three- or four-story building, covering almost the entire front and reaching from the lower left corner above the store front to the roof. This style of sign is usually constructed of the heavy-line script letter, and is made of any rough lumber, of uniform thickness, sawed to the design required. The whole design is firmly secured together, and opal glass is cut to cover the face, after first coating the wood with white lead. The opal glass is fitted so as not to leave too wide an opening where joined, nor to project beyond the edge. The sign is then covered along the edge with zinc, firmly tacked or nailed, and turned over on the face in the form of a half-round molding, which serves to hold the opal glass in position.

91. Hanging the Sign.—The value of a sign depends on its finished appearance when placed in position, on the outside or inside of a building, and the sign painter should not allow his artistic taste or ability to cease with the production of a piece of work that may indicate his skilled eye and hand; but he should study the relation of his sign to its surroundings, and arrange its final fastenings accordingly. These should, first of all, be the securest possible, and be capable of resisting the severest windstorms, but they may also be attached without causing the legibility of the sign to be impaired or its neatness marred. Therefore, in hanging signs, do not allow the work or trappings used to show more than is absolutely necessary, unless they are of an ornamental nature. Architectural ironwork is used for swinging signs, either as an ornamental crane, or in scrollwork conforming to some characteristic design, such as a heraldic shield or panel.

THE FORMATION OF LETTERS.

ALPHABETS.

PLATE, TITLE: FULL BLOCK.

1. Take a sheet of drawing paper 15'' wide and 20'' long and fasten it on the board with thumbtacks, being careful to keep the edges of the paper parallel with those of the drawing board. Then, with a sharp-pointed lead pencil, draw a rectangle 15'' long and $8\frac{1}{4}$ '' wide, which allows a margin of $2\frac{1}{2}$ '' on either side, and $3\frac{3}{8}$ '' above and below the figure. These pencil lines will be erased when the work of drawing the plate is completed. Beginning on the left vertical line, at the base of the rectangle, measure off the height of the letters, making four spaces $1\frac{1}{4}$ '' high, allowing a space of $\frac{3}{4}$ '' between the four lines of letters. This brings the top of the first line of letters 1'' from the top pencil line. The height of the title is $\frac{1}{2}$ '', and is $\frac{1}{2}$ '' above the first line of letters.

Horizontal lines are then drawn with the T square from the points marked on the left vertical border line, and extended to the right border line. Each of the $1\frac{1}{4}$ '' spaces is now divided into 5 smaller spaces of $\frac{1}{4}$ '' each, and vertical lines are drawn through the space, dividing them into a number of $\frac{1}{4}$ '' squares, as shown.

2. On this plate the stroke of each letter and numeral occupies the width of 1 square (or $\frac{1}{4}$ ''), and in giving the proportions of any part of a letter it is measured in strokes and fractions of a stroke. For instance, the letter *A* is 5 strokes wide, and the spurs project beyond the width of the letter $\frac{1}{2}$ a stroke (or $\frac{1}{8}$ '' in this case) on each side.

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The lines forming the vertical sides of the square are assumed to be numbered separately for each letter, according to its width. Thus, the lines between which the letter *A* is drawn, exclusive of spurs, are numbered from 1 to 6; *W* occupies 7 spaces, and is limited by lines 1 and 8; *M* lies between lines 1 and 7; etc. All the letters being of the same height, they are included between the same horizontal lines; therefore, the spaces between the lines *a*, *b*, *c*, etc. to *f* are each $\frac{1}{5}$ the height of a letter. Now, in referring to any particular point in a letter, it is necessary simply to name the two lines that intersect at or near that point. For example, *6d* would be the intersection of vertical line No. 6 and horizontal line *d*, and would refer in the letter *L* to the extreme upper right-hand corner of the lower extremity of the letter; while in the letter *W* it would refer to the intersection of the interior slanting outlines of the right portion of the letter. The student must bear these matters in mind as he studies the plates.

3. The Full Block shown on this plate, and the Half Block, which is the title of the next plate, are the only styles of letters in this Course that can be classified as strictly mechanical. Nearly all letters are somewhat mechanical, as their straight lines are drawn with a ruling pen, though the curved portions may be drawn freehand with the point of the red sable brush. The style shown on this plate, however, is strictly mechanical, as no curves or irregular lines enter into its construction, and it can be drawn exclusively with a straightedge and pencil. The slightest curve or irregular line would require the free use of the hand, and call upon the judgment of the eyes to make the lines symmetrical and true. The plate before us is a simple one, but to remember the comparative width of all the letters and the exact position of every detail of each letter will require close attention and study.

The Full-Block letter is made square, occupying, exclusive of the spurs, 5 spaces in width and 5 in height. The middle bars of all the letters and numerals occupy the middle space between the lines, excepting those of the letter *A* and the numeral 4, which, in each case, is dropped $\frac{1}{2}$ a space (or $\frac{1}{3}$ ").

The width of the letter is always measured between lines *I* and *G*, thus excluding the spur. Of all the slanting strokes in the various letters, those of the *N*, *V*, and *W* are the only ones that extend to the bottom line, and are finished without a spur on the lower extremity.

Full-Block letters do not possess any rounded corners, but such letters as would possess rounded lines in other styles, as *B*, *C*, *D*, etc., are beveled on the angles with a line drawn diagonally through the corner block (as shown in the letter *S*) from point *a 2* to a point $\frac{1}{4}$ the width of the stroke (or $\frac{1}{16}$ ") above *b 1*, and from *f 5* to a point $\frac{1}{4}$ of the stroke below *e 6*. With few exceptions the width of the stroke should be the same in all parts of the letter. A slanting line is therefore drawn on the inside of the letter, parallel with the outside beveled corner, and never more than the width of the stroke from it, and occasionally less, as shown in the letter *B* at *c 5* and *d 5*, where the thickness of the slanting line is only $\frac{1}{8}$ ", which makes it appear better than to give it the full width.

4. There are many irregular features in letters of every style, and it is well that the student should become familiar with them, as they will assist him in learning the characteristic features of each letter. The extremities of the *C* are longer than those of the *E* or *F*, on account of the inside bevel line of the *C* which would make the extremity of that letter appear too short, while the corresponding point on the *G* is the same length as the *E* and *F*, in order to allow as much space as possible between this and the lower extremities of the letter. The lower extremities of the *J* and *L* are carried up to line *d* on account of the open space within these letters.

5. To determine the proper slant of the strokes in such letters as *N*, *V*, *X*, and *Y* when two given points are on opposite sides of the stroke, as well as on opposite ends, as in the letter *N*, for example, at *2 a* and *5 f*, carry an imaginary line, as nearly the proper slant as possible, in opposite directions from each of these points and $\frac{1}{4}$ " apart. Point off, to the left of *2 a* at right angle with the imaginary line drawn from *2 a* to a corresponding point at the right of *5 f*, the width of the stroke,

and we have the true line from this point to $5f$. After the first line is established, measure the width of slanting stroke at the point opposite $5f$, and draw a line to $2a$ which gives both lines for the slanting stroke.

6. The four points of contact, which give the position of the slanting strokes of the letter K , are as follows: From the point half way between c and d on 2 to $4b$, also from $6e$, to a point half way between 4 and 5 on c . The slanting strokes of the letter M are joined at the base line f , and are $\frac{1}{2}$ a stroke in width at base, equally divided by vertical line 4 . The tail, or projection, of the Q is $2\frac{1}{2}$ times the width of the stroke, and begins in its right outline at line 4 and passes through the intersection of lines 5 and f .

The letter R is 5 strokes in width, but the tail is properly located $\frac{1}{2}$ a stroke to the left of line 6 , and is beveled less than other letters, or from a point $\frac{3}{8}$ of a stroke below e .

The letter V occupies a full-stroke space on the bottom line, while the lower extremities of W are but $\frac{3}{4}$ of a stroke, $\frac{1}{4}$ on the left and $\frac{1}{2}$ a stroke on the right of line 3 , and $\frac{1}{2}$ on the left and $\frac{1}{4}$ stroke on the right of line 6 . This letter occupies in width 7 strokes, while the M occupies but 6, with the effect of being the same or of even greater width. The other letters are of regular width, except the single stroke I and the numeral 1 .

The points that govern the construction of the character $\&$ are simply the position of the points on line d $\frac{1}{2}$ stroke to the left of line 1 that gives the extension of the lower part of the character, also the points at $4e$ and $6c$ that give the position of the slanting stroke.

7. The numeral 4 is 1 stroke wider than the other numerals, the middle bar being $\frac{1}{2}$ a stroke longer on the right of the vertical stroke than the spur at the bottom. From the point where it touches line 1 in the middle of the side of the block, to the point where it touches line 2 in the middle of the side of the block below, gives the slant of the stroke, forming the numeral on the left end of the middle bar.

The numeral 5 is not cut off or beveled inside of the stroke

on the upper portion of the figure. The line from 1 *d* to 2 *d* is dropped at 2 *d* about $\frac{1}{4}$ of a stroke (or $\frac{1}{16}$ "').

The figure 7 is the full width, although this may be sometimes shortened $\frac{1}{2}$ a stroke. The slanting stroke is from points 4 *f* to 6 *b*.

After studying carefully the instructions and characteristic features of each letter, practice these letters on Manila paper, using only the horizontal lines *a* and *f*. This will familiarize the student with the relative width of the letters, before attempting the plate to be sent in for correction, and also show how much of the instruction he has retained.

After drawing all the letters on the plate, outline the letters of the title Full Block and then proceed to ink in the work, using the T square and triangles to ink the horizontal and vertical lines, and the two triangles together for the parallel diagonal lines, as explained in *Elements of Lettering*.

8. The small squares forming the guides for the lettering may be inked with clean fine lines, perfectly uniform in thickness throughout the entire plate. The outlines of the letters may be inked with a rather heavy line, as it will then be simpler to fill them in with a brush. The outline of the title Full Block will not be blacked in, and the pencil lines or squares that were drawn to aid in forming the letters will be erased.

After all the outlines and other work has been inked in, and the pencil lines and other marks have been erased, take a No. 4 red-sable brush and black the letters in solid. The utmost care is here required so as not to run the brush over the lines. Take plenty of time, and see that the ink in the brush is not too thick, and that there are no hairs or pieces of lint to catch and smear the plate. Fill in each letter carefully, and complete it before you start the next. By paying careful attention to these points, the student saves himself a great deal of future trouble. *Do not hurry your work.*

9. First ink in all of the light lines and light dotted lines (which have the same thickness); then ink in the heavy required lines after the pen has been readjusted. The student's

name, followed by the words "Class" and "No.," and after this his *class letter and number* should be printed in the lower right-hand corner $\frac{3}{8}$ " below the border line, as shown. Thus, John Smith, Class No. 4529. The date on which the drawing was completed should be placed in the lower left-hand corner below the border line. *All of this lettering is to be in capitals $\frac{1}{8}$ " high.* Erase the division lines, and clean the drawing by rubbing very gently with the eraser. Care must be exercised when doing this, or the inked lines will also be erased. *If any part of a line has been erased or weakened, it must be redrawn.* Then write with a lead pencil your name and address in full on the back of your drawing, after which put your drawing in the tube in which the plate was sent you, and send it to the Schools.

PLATE, TITLE: HALF BLOCK.

1. The Half-Block style of letter is, in many respects, similar to the Full Block, though the omission of the spurs necessarily changes the characteristic appearance of the letter. The Half Block is only 4 strokes in width, while its height is equal to the width of 5 strokes, as was the Full Block. Another detail of difference, particularly noticeable in the letters *C*, *G*, and *S*, and in the numerals *2*, *3*, and *6*, is the finish of the extreme corners of certain letters. The Full-Block letter *C*, for instance, is carried to the point *ca*, while in the Half Block it is cut off at an angle corresponding with the opposite side.

On this plate are also given the small, or "lower-case," letters of the alphabet, to draw which it will be necessary to divide the space occupied by the letters into $\frac{1}{8}$ " squares, instead of $\frac{1}{4}$ ", as with the capital, or "upper-case," letters. *Upper case* and *lower case* are technical terms used in the printing trade to designate the capital and small letters, respectively, of any style. The partitioned tray in which the individual pieces of type corresponding to each letter are kept is called a "case," and the one containing the small letters is set in front of the compositor, while the case containing the capitals is placed above and back of this. Hence the names upper case and lower

HALF

a
b
c
d
e
f

1 2 3 4 5 6 1 2 3 4 5

A B C D E F

M N O P Q R

1 2 3 4 5 Y

a b c d e f g h i j k l m n

o

JUNE 25, 1893.

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All rig

BLOCK

GHIJKL

STUVWX

Z 6 7 8 9

opqrstuvwxyz

JOHN SMITH, CLASS N° 4529.

ry Engineer Company.

served.

case. The old technical names were *majuscules* for the capital letters and *minuscules* for the lower-case letters, but in this course we will confine ourselves to the simpler terms.

2. On a sheet of drawing paper $15'' \times 20''$ draw a rectangle $15''$ long and $8\frac{1}{4}''$ high as required in the previous plate. These pencil lines serve as the lines from which all measurements are to be taken. Begin at the lower left-hand corner of the border line and measure off on the left-hand line $1\frac{1}{2}''$ for the lower-case line, $\frac{3}{4}''$ space, and $1\frac{1}{4}''$ for the 3 lines of upper-case letters with $\frac{5}{8}''$ space between them. The title Half Block will then be $\frac{1}{2}''$ above the top line of letters and $\frac{1}{2}''$ high. Divide the space for upper-case letters into squares $\frac{1}{4}''$ each by means of the triangle and T square, and similarly divide the space for the lower-case letters into $\frac{1}{8}''$ squares.

The corners of the letters are beveled at the same angle as in the Full-Block style; that is, in the letter *B*, for instance, the bevel line extends from *4 a* to a point $\frac{1}{4}$ stroke above *5 b*, but the proportionate widths of some of the letters differ greatly from those in the previous plate. The letters *A*, *M*, *W*, and *Y* are each 1 full stroke wider, and the character *æ* and the numeral *4* are each $\frac{1}{2}$ stroke wider than the other letters of this alphabet, while the *L* is $\frac{1}{2}$ stroke narrower. It is well to bear these facts well in mind, to compare the two plates closely, and to study the points wherein these letters differ. The left extremity of the *J* is the same as the Full Block, while the *L* is left plain. The middle strokes of the *M* on line *f* are finished $\frac{1}{2}$ the width of 1 stroke.

3. The points of contact in the tail of the *Q* are $\frac{1}{2}$ stroke below and $\frac{1}{4}$ stroke to the right of *3 d* and *4 f*. The length of tail below the line, from *4 f*, is $\frac{3}{4}$ the width of 1 stroke. The tail of the *R* is $\frac{1}{2}$ stroke to the left of line *5*, and the bevel of the tail is $\frac{1}{2}$ that of other letters. A bevel also occurs in the tail near *3 d* to the vertical stroke. The vertical stroke of the *T* is $\frac{1}{2}$ on each side of line *3*. The middle strokes of the *W* are $\frac{3}{4}$ stroke wide on *a*, equally divided by line *3*. On *f* these strokes are also $\frac{3}{4}$ stroke wide, divided by line *2*, $\frac{1}{4}$ stroke to the right and $\frac{1}{2}$ to the left, and on *4 f* this is correspondingly reversed, as likewise

the outside strokes on *a* are 1 stroke wide, $\frac{1}{4}$ stroke within the letter at lines 1 and 5, and $\frac{3}{4}$ stroke outside these lines.

The horizontal bar in the numeral 4 is dropped $\frac{1}{2}$ stroke below the center, while the horizontal bar of the *A* is 1 whole stroke below. The two points that govern the left-hand outline of the numeral 4 are $\frac{1}{2}$ stroke to the left and $\frac{1}{2}$ stroke below 1 *d*. The character *c* is entirely different in outline from that of the previous plate, the points of contact being 1 *c* to 4 *f*. The upper cross-stroke is guided by points 1 *d* and 4 *c*. The other stroke, parallel with this, is made from points 4 *d* and 3 *f*.

4. The lower-case letters are $\frac{5}{8}$ " high \times $\frac{3}{8}$ " wide, and their stroke is $\frac{1}{2}$ the stroke of the capitals, in this case $\frac{1}{8}$ ". All letters that extend above line *a* are $\frac{3}{8}$ " higher, except the letter *t*, which is only $\frac{1}{4}$ " above; all other letters extend below line *f* $\frac{3}{8}$ ", except the *g*, which is $\frac{1}{2}$ " below *f*.

The beveled end, which occurs in the vertical stroke of the numeral 5, is also used on the lower-case letters *b*, *d*, *m*, *n*, *p*, *q*, *r*, and *u*. The same rule that applies to the capitals is also observed in the lower-case letters in regard to the beveled corners. The points of contact in the lower portion of the letter *g* are $\frac{1}{2}$ stroke below 1 *f* to 2 *f*, and 1 full stroke below 1 *f* to 2 strokes below 2 *f*. The points of contact in the letter *k* are $\frac{1}{2}$ stroke to the right of 3 *a* to 2 *c*, and from $\frac{1}{2}$ stroke to the right of 4 *f* to 3 *c*. The *m* occupies 5 stroke spaces. The *w* is identical with the capital letter. The *x* is equally divided on lines 1 and 3. The *y* occupies 4 stroke spaces; the points of contact in this letter are 5 *a* to 2 strokes below 3 *f*, and from there to a point $\frac{2}{3}$ stroke to the right and 3 strokes below 1 *f*, then from 1 *a* to 3 *f*, intersecting the other stroke.

After the student has drawn the letters of this plate, he should then proceed as previously directed in his first plate to ink and fill them in, observing the same directions regarding his name, class letter and number, and date, after which the work should be carefully cleaned from all pencil marks.

ANTIQUE

a 1 2 3 4 5 6
b
c
d
e
f
A B C D E

M N O P Q R

1 2 3 4 5

a b c d e f g h i j k l m n

JUNE 25, 1893.

Copyright, 1893, by

Al

LF BLOCK

GHIJKL

STUVWX

Z 6 7 8 9

opqrstuvwxyz

JOHN SMITH, CLASS N^o 4529.

Engineer Company.

ed.

PLATE, TITLE: ANTIQUE HALF BLOCK.

1. This style of letter differs from the simple Half Block in very few points, the principal one being the addition of a triangular spur to every corner on the side of each letter. The preparatory work of dividing the lettering spaces into $\frac{1}{4}$ " squares is identically the same as in the previous plates, with the exception of the line for the title, which is $\frac{7}{16}$ " high. The corners of the letter are beveled, following the same rule as in the previous plate, but the line of the bevel is carried to *b* and *e*, from which points it is brought back to the body of the letter at as sharp an angle as possible, thus forming an acute spur on those sides of the letter that are beveled.

2. The spurs on the strokes at lines *a* and *f* are carried $\frac{1}{4}$ stroke to the right and left of the stroke of the letter, and are brought back to the stroke of the letter $\frac{1}{4}$ stroke above the line *f* or below the line *a*.

The character of the letters *C*, *G*, and *S* and the numerals 2 and 3 is slightly changed, which gives rise to an important change in the classification of this style of alphabet. This change, though slight, causes the Antique Half-Block style to be classed in the list with freehand alphabets. These letters and numerals have a spur extending above the line *a*, and a spur on the *S* extending also below the line *f*. These particular spurs are curved back to the lines *a* and *f*.

The letter *C* is carried $\frac{2}{3}$ of a stroke below the point 5 *b*, from which point a line is carried toward 3 *d*, which gives the proper angle to the end of the spur. On this line point off about $\frac{1}{4}$ stroke to the left of line 5, which will give the width of the spur, and with a radius of $\frac{3}{4}$ of a stroke draw a quarter circle tangent to line *b*. The lower extremity of this letter is carried in the same manner to 5 *d*.

3. The spur on the letter *L* is $\frac{1}{2}$ stroke above line *e*, joining back to the stroke at an angle of 45° . The *M* is finished without the spur, at points 2 *a* and 5 *a*, as is also the *N* at 2 *a*, and the numerals 1 at 2 *a*, 4 at 4 *a*, 5 at 1 *a*, and 7 at 2 *f* and 3 *f*.

The character of the *R* is changed in this style, the change

occurring in the tail of the letter, the points of contact being $\frac{1}{4}$ stroke to the right of $\frac{1}{4} d$ and $\frac{5}{8} f$.

The lower extremity of the numerals 3 , 5 , and 9 , and the upper extremity of the figure 6 , are finished the same as were the simple Half-Block letters, and show a full width of stroke at this point.

4. The only difference in the lower-case letters from those of the plain Half-Block style is the spur, which is about $\frac{1}{4}$ stroke long, and the finish of the vertical stroke letters, which are not beveled on the end as on the previous plate. These letters, as well as letters m , n , o , p , q , r , and u , are not carried above line a or below line f , but are beveled parallel with the spur. The extremities of the lower-case letters a , c , e , and s are finished in the same manner as are the capitals C , G , and S .

5. The student, in drawing this plate, must bear all these points of comparison well in mind, and refer frequently to the previous plate, in order to note and compare the differences. Lay off the measurements from the lower left-hand corner of the border line, precisely the same as on the previous plate, and divide the lines for letters into squares, representing in each dimension the width of the stroke of the capital letters and the lower-case letters. Draw the letters in as usual, outline the letters of the title in the center of the plate according to the measurements given, and erase the border line or such parts of it as do not enter into the formation of the lower spaces.

Insert the date, name, and class letter and number as in previous cases, and send plate in to the Schools for correction.

PLATE, TITLE: RAILROAD BLOCK.

1. This style of letter, as its name implies, is designed to fill spaces such as the frieze and dado of railroad coaches, that are too long in proportion to their height to admit of the use of any other style. It is an elongated block letter, with only such changes in certain of its details as are necessary to make the elongated form practical. The height of the letters of this plate is $\frac{7}{8}$ ", while the breadth is $2\frac{3}{8}$ ", or $2\frac{1}{2}$ times its height,

RAILROAD

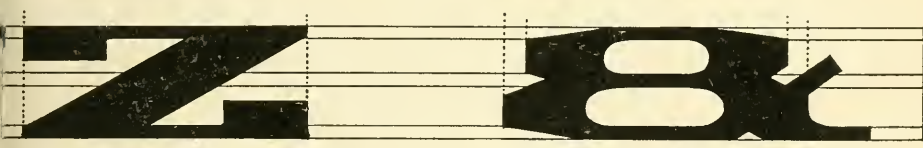
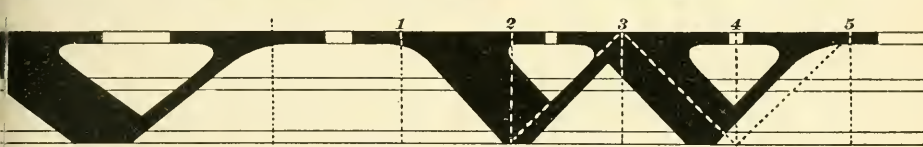
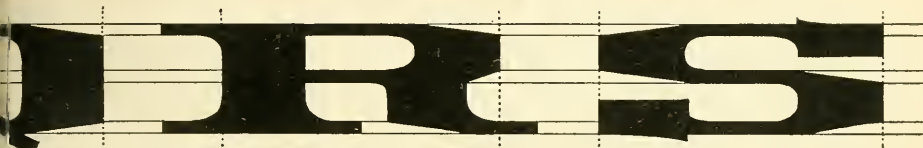
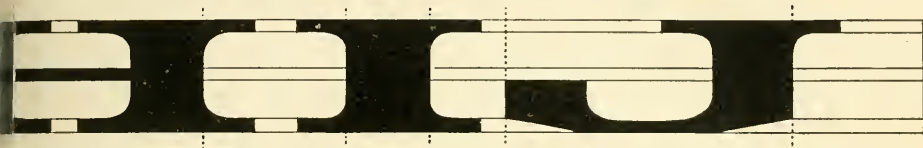
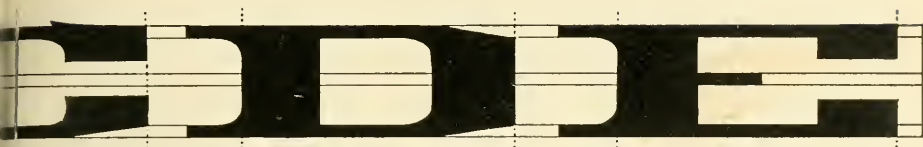


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BLOCK



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with the exception of the letters *A*, *I*, *K*, *M*, *V*, *X*, and *Y*; while the general characteristics of the letters are the same as those of the Full Block, assuming that the Full Block were designed in rectangles whose longitudinal dimensions were greater than their height in the same proportion as is the breadth to the height of these letters. Railroad-Block letters can be elongated to 3 and sometimes even 4 times their height without becoming distorted or badly proportioned.

2. To design this plate, begin at the lower left-hand corner of the border line, as before, and point off on the vertical line of the margin 6 spaces of $\frac{7}{8}$ " each for the lines of the letters, and 5 spaces of $\frac{7}{16}$ " each between the lines of the letters. The title is $\frac{1}{4}$ " high and $\frac{9}{16}$ " above the upper line of letters. The horizontal strokes of the letters in this style are $\frac{3}{32}$ " wide; in locating them, lay off $\frac{3}{32}$ " below line *a* and above line *f* and draw lines *b* and *e*; then locate line *c* $\frac{1}{2}$ " above line *f*, and draw line *d* $\frac{3}{32}$ " below *c*. The vertical strokes are all $\frac{5}{8}$ " wide, and the slanting strokes are all $\frac{1}{2}$ " wide; but, on this plate, when reference is made in connection with any part of a letter being proportional to its stroke, the $\frac{5}{8}$ " stroke is always intended. Each letter is drawn within a rectangle, the height of which is equal to the height of the letter, and the length of which is equal to the length of the letter between two vertical lines passing through its extremities, exclusive of the spur. With the exception of 9 letters, all of these rectangles are $3\frac{1}{2}$ strokes wide; of these, *W* is the widest, being $5\frac{2}{5}$ strokes, and *N* is the narrowest, being $3\frac{2}{5}$ strokes. The others are as follows: *K*, 4 strokes; *T*, $4\frac{1}{3}$ strokes; *A* and *V*, $4\frac{2}{3}$ strokes; *M*, $4\frac{1}{2}$ strokes; and *X* and *Y* are $4\frac{1}{3}$ strokes each.

3. Now, commencing on the first line of letters, draw a vertical line $\frac{1}{2}$ stroke to the right of the left-hand border line, and $4\frac{2}{5}$ strokes to the right of this draw another vertical line, thus completing the rectangle within which the letter *A* is to be drawn. Draw the rectangle for each of the other letters on the top line in the same manner, leaving a space of 1 stroke between the *B* and *C*, and spaces of $1\frac{1}{3}$ strokes between the *A* and *B*, and $1\frac{1}{4}$ strokes between the *C* and *D*, the width of all the other letters

on top of the line being $3\frac{1}{2}$ strokes. If these rectangles are proportioned properly, there should be a space of $\frac{1}{3}$ stroke between the right-hand end of the rectangle containing the *E* and the right-hand border line. In a similar manner draw the rectangles containing the letters in the second line, making the first vertical line of the rectangle containing the *F* $1\frac{2}{3}$ strokes from the left-hand border line. In spacing the other letters, leave 1 stroke between *F* and *G* and between *I* and *J*, $1\frac{4}{5}$ strokes between *G* and *H*, and $1\frac{4}{5}$ strokes between *H* and *L*. On the third line of letters, the rectangle containing the *K* is 2 strokes from the left-hand border line, while the space between it and the rectangle containing *L* is $1\frac{1}{2}$ strokes. Between *L* and *M*, and between *M* and *N*, are spaces of 1 stroke and 2 strokes, respectively. The rectangle containing the *O* and *T* on the next two lines below are each started $\frac{1}{2}$ stroke to the right of the left-hand border line. The space between *O* and *P* is $1\frac{2}{3}$ strokes; between *P* and *Q* a space of 1 stroke exists; the space between *Q* and *R* is $1\frac{1}{2}$ strokes; between *R* and *S* a space of $1\frac{1}{4}$ strokes; between *T* and *U* a space of $1\frac{1}{4}$ strokes; between *U* and *V* a space of $1\frac{2}{3}$ strokes; and the space between *V* and *W* $1\frac{2}{3}$ strokes. On the lowest line of letters a rectangle containing the *X* is started $1\frac{1}{3}$ strokes to the right of the left-hand border line, and between this and *Y* is a space of $1\frac{1}{3}$ strokes, while between *Y* and *Z* there is a space of but $\frac{1}{3}$ stroke. The character *&* is $3\frac{1}{3}$ strokes wide in its upper part and $3\frac{1}{3}$ strokes wide in its lower part. The rectangle containing it is, therefore, $3\frac{4}{5}$ strokes long, and is located $2\frac{1}{2}$ strokes to the right of the *Z*.

4. Now proceed to draw the letter *A*, making the top of it on line *a* $\frac{2}{3}$ of a stroke in width, and draw the outside slanting strokes to the lower right and left corners of the rectangle. The horizontal stroke of the *A* is equal in width to the other horizontal strokes of the letters, and its upper edge is on line *d*. The general length of spurs is $\frac{2}{3}$ the width of the stroke; equal to the distance from line *d* to *f*. Spurs on slanting strokes should be twice the length on the inside to that of the outside, and they should always be made in proportion to the length of spurs or vertical strokes, measuring on line *a* or *f*. Exceptions

to this rule occur in letters *K*, *W*, etc., which the student will overcome by proportion, in allowing proper space between spurs. In joining the strokes of *B* to the horizontal lines that form the spurs on the left-hand side, the compass may be used, and a quarter circle described, the radius of which is equal to half the distance between lines *b* and *c*, and the center of the quarter circle located below the top or above the bottom and to the left of the stroke of the letter a distance equal to the radius, as shown in the letter *B*. The bevel in this letter extends from *a* to *b* and from *e* to *f* the full width of the stroke. In drawing *C*, *E*, *G*, *S*, *T*, and *Z*, a full width of one of the horizontal strokes (which in this case is $\frac{3}{8}$ "') is left between the upper extremity of the letter and the line *c*. On the letters *C*, *G*, and *S*, a slight spur is extended above the line *a*, and on the *S*, below the line *f*. The letter *F* has its upper extremity resting on line *c*, and the lower extremities of the letters *J* and *L* extend to line *d*. The middle strokes of the letters *E* and *F* are equal in length to $\frac{1}{2}$ of the space inside these letters. The widths of *A*, *M*, *N*, *V*, and *W*, where their smaller extremity rests against the line *a* or *f*, vary considerably. In *A*, as we have seen, it is $\frac{2}{3}$ of a stroke; in *M* but $\frac{1}{2}$ a stroke; in *N* $\frac{2}{3}$, and *W* it is $\frac{2}{3}$ of a stroke; and in *V*, $\frac{4}{5}$ of a stroke. In drawing *K*, the light slanting stroke joins the body stroke midway between *d* and *e*. The heavy slanting stroke joins the light slanting stroke on the left side at line *d*.

5. The slanting strokes of *M* and *N* start on the left from a point on the vertical stroke the width of the narrow stroke above line *c*. The light slanting stroke of *M* is joined to the top of the letter at the intersection of the heavy stroke on line *a*. Observe that the heavy slanting stroke in all letters, with the exception of the *Z*, inclines in the same direction, and that where two slanting strokes come together, one of which is heavy and the other is light, that the heavy stroke is on the left side in the *U*, *V*, *W*, and *Y*, and on the right side in the *A*, *K*, and *M*. The tail of the *R* is nearly $\frac{1}{2}$ stroke to the left of the line of the rectangle enclosing the letter. The spaces between the heavy strokes of the letter *T* each equal the distance from line *d* to line *f*. The center of the letter *V* where it rests

on line f is the middle of the base of the rectangle containing the letter.

6. To draw the W , extend the rectangle containing it the width of the narrow stroke to the right, or to 4 times the height of the letter, and divide this increased rectangle vertically into 4 squares. A line drawn from points $\frac{1}{4}$ stroke to the left of $4f$ and $5a$ will give the right outline of right narrow stroke, and from points $3a$ to $2f$ will give the left line of the left narrow stroke. The only points to be observed are those of the three spaces within the letter, or the points where the narrow and heavy strokes intersect; the middle point is the width of the narrow stroke above c and the others are the same distance below d . With a knowledge of the width of the slanting strokes, these points are all that are necessary to complete the letter. The letter X is drawn so that the upper line of the heavy stroke and the lower line of the light stroke extend into the corners of the rectangle on the right side of the letter; and the lower line of the heavy stroke and the upper line of the light stroke extend into the corners of the rectangle on the left side of the letter.

7. The method of keeping the outlines of these strokes parallel is the same as in the case of the diagonal stroke of the letter N described in connection with the Full-Block alphabet. In drawing the Y , the upper point of contact between the diagonal heavy stroke and the vertical stroke is on line c , and the direction of the lower line of the heavy stroke carries it into the upper left-hand corner of the rectangle containing the letter. The vertical stroke is exactly in the center of the rectangle. The upper and lower width of the character $\&$ have already been given, but, in order to secure the correct outline of the character, observe that the lower left-hand stroke is $\frac{1}{2}$ the narrow stroke less in height on the end than the lines $d e$. The slanting stroke on the right-hand side of the letter begins on line f at a point equal to the width of the narrow stroke to the right of the inside of the letter, and the slant of this stroke is such as to render it parallel with the upper right-hand beveled portion of the letter and keep it distant the width of the narrow stroke from that

ROUND FUTURE

a 1 2 3 4 5 6
b
c
d
e
f
A B C D

J K L M

S T U V

1 2 3 4 5

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ALL BLOCK

E F G H I

N O P Q R

V X Y Z &

6 7 8 9

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rvd.

point. It is necessary to use much care in connecting the slanting stroke with the spur and to make the curves as small and symmetrical as possible, so that their apparent length is equalized.

S. Now, having drawn in all the letters in pencil, the title should be drawn to correspond with the letters of this alphabet, and should not exceed $\frac{1}{4}$ " in height. Ink in the whole plate carefully according to the rules laid down for drawing the body of the plate, leaving the inking of the title until the completion of the plate otherwise; using the drafting pen, T square, and triangle when inking the horizontal and perpendicular lines, and using the triangle alone for the bevel lines at the corners of the letters, but turning all the curves from the strokes to the spurs on the insides of the letters with the brush, freehand. The letters should then be filled in with a brush, as with the previous plates, and all construction marks erased from the plate, except the 6 horizontal lines *a, b, c, d, e,* and *f,* and the vertical lines closing the ends or each *line of letters.* In the left-hand corner the date, and in the right-hand corner the student's name and class letter and number, should then be carefully printed, as usual.

PLATE, TITLE: ROUND FULL BLOCK.

1. The letters of this plate are precisely the same as those on the plate entitled Full Block, except that the corners are round, instead of beveled. The proportions of the letter are identical with those of the first plate in this Course. With the exception of the letters *O* and *Q,* the curves should all be drawn freehand. To draw this plate, begin at the lower left-hand corner of the border line, and divide the space for the lettering lines and numerals in the same manner as for the plate entitled Full Block. The stroke of the letter will then be the same as in the first plate, and, though all letters are to be drawn, only such letters will be here described as possess in some of their parts curved outlines. Information for drawing straight letters, if required, can be obtained by reference to the Full-Block plate. The letter *A* on this plate is all straight lines, as in the Full-Block plate, but the letter *B* is rounded from the points $\frac{1}{4} a$ to

o b, overlapping line *b* slightly, in order to give full width to the rounded stroke. The bottom of the letter is rounded in the same manner to $\frac{1}{4} c$, where the curve stops. The inside of the letter is rounded from $\frac{1}{4} b$ to $\frac{1}{4} c$, conforming with the outline above described, in order to give equal width to the entire stroke. The middle bar of this letter is exactly in the center of its height, the lower rounded stroke thereby making a duplicate of the upper one. The letters *O* and *G* are not circular, but slightly elliptical, the points through which the curves of the *O* pass being θa , $\frac{1}{2}$ stroke to the right of βa , $\frac{1}{2}$ stroke below $1 c$, $\frac{1}{2}$ stroke to the right of βf to $\frac{1}{3}$ stroke below θd . The line from here to the finish of the letter at δd should be somewhat curved. The hollow curve at the top of the letter from θa to the point $\frac{1}{4} a$ should be but a slight depression, just sufficient to show that there is a curve there. At a point $\frac{1}{4}$ stroke above δc begin the inside curve, keeping it perfectly parallel to the line of the outside. In the letter *G* the rounded stroke intersects the lower half of the vertical straight stroke at θc . This is done in order to leave sufficient space on the inside between the end of the curve and the horizontal stroke.

2. The letters *O* and *Q* are perfect circles, and their entire outline can be drawn with a compass. The letter *R* and the letter *P* are precisely the same in their upper portion as the letter *B*. The tail of the *R*, however, is 1 stroke to the left of the right side of the letter, and extends to line *b* without curving away from the upper portion of the letter. The smaller curve, where it leaves the letter and bends toward line *b*, has a radius equal to $\frac{1}{2}$ a stroke; the larger curve in the under side of the tail of the *R* is an arc of a circle with a radius of $1\frac{1}{2}$ strokes. The curves of the *S* are joined at a point $\frac{1}{2}$ stroke to the right of βc and βd ; the upper and lower extremities of the letter are curved somewhat after the manner of the upper extremities of *O* and *G*, and the letter is carried slightly above the line, making it about $\frac{1}{10}$ stroke higher than the other letters. This is done to preserve an appearance of evenness, as it would otherwise look short. The inside curve of the letter *U* extends from a point $\frac{1}{2}$ stroke below βd to a point $\frac{1}{2}$ stroke below δd ; the outside curve of

a 1 2 3 4 5 6
b
c
d
e
f
A B C D E

M N O P Q R

1 2 3 4 5

a b c d e f g h i j k l m n

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GHIJKL

STUVWX

Z 6 7 8 9

opqrstuvwxyz

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d.

the letter extends from point *1 e* to point *6 e*, and is parallel to the inside curve, each curve being tangent to lines *e* and *f*, respectively.

The character *d* is somewhat distorted, in order to correspond in width with the other letters. The middle stroke is but $\frac{3}{4}$ stroke wide, and the outline of the upper half is parallel on its two sides, but tapers slightly as it approaches the middle stroke.

3. In the numerals the only figures that remain the same as those of the Full-Block plate are *1* and *4*. The lower left-hand side of the *2* is a quarter circle, and may be drawn with a compass, if desired, with the center at point *4 f*. The upper part, however, is not the arc of a circle, and must be drawn carefully freehand. In drawing the other curved figures, observe carefully points where they intersect the squares in which they are drawn, and follow the lines of the plate accurately.

Observe that the figure *5* terminates in the lower portion $\frac{1}{2}$ stroke to the left of line *1*. Figure *7*, instead of possessing a straight stem, has a compound curve, which at the top and bottom is perpendicular to the horizontal guide lines of the letter. The student will draw these letters out carefully and ink them in, using the **T** square and the triangle for the horizontal and perpendicular lines, and the triangle alone for the slanting lines. The *O* and *Q* should be inked with the compass, but the curves of the other lines must be carefully drawn freehand with pen, making each line form an even stroke without ragged edges or appearance of overlapping. Draw in the title as shown, blacking in the letters with a brush, as heretofore described.

Place the date in the lower left-hand corner, and the name, class letter and number in the right-hand corner.

PLATE, TITLE: EGYPTIAN.

1. This style of letter is very frequently referred to as Gothic—a name incorrectly given. The general formation of the letter is very similar to the Half Block, with the exception that all the Half-Block letters that are beveled on the angles are round in the Egyptian style.* These letters occupy 4 strokes in width, with the exception of *A*, *M*, *W*, and *Y*, and the numeral *4*,

each of which is 1 space wider, and the letters *L* and *I*, which are $\frac{1}{2}$ stroke and 3 strokes narrower, respectively. The plate is lined in the same manner as the Half-Block plate; the title $\frac{3}{8}$ " high is $\frac{5}{8}$ " above the top line of the letters. The round portion of all the letters partakes of the curve of an ellipse, and with the exception of a few special instances, the rules governing the letters *O* and *P* can be applied to the drawing of all the letters on the plate. The extreme outline of the letter *O* is a nearly perfect ellipse, the breadth of which is 4 strokes and the height 5 strokes. The curved portion of the letters *B*, *P*, and *R* are also elliptical, the curve starting at the top of line 3 in each letter. The middle bar of the *H* is raised $\frac{1}{2}$ stroke above the center. The left-hand portion of the entire curve of the *J* is a quarter circle, extending from point *2 d* to *3 e*. The right-hand portion of this curve is elliptical, joining the straight stroke about $\frac{1}{3}$ stroke below point *4 d*. The outside curve of the letter is parallel to the inside curve. The points of contact in the letter *K* are from *5 a* to $\frac{1}{2}$ stroke below *2 d*; the other slanting stroke is from point *5 f* to the line *c*. The letter *M* extends to line *f* with its slanting strokes, and is $\frac{1}{2}$ stroke wide on the line *f*, while the lower part of the slanting stroke of the *N* is slightly less than a full stroke in width. The curve of the tail of the *R* at *5 e* is a quarter circle, the radius of which is $\frac{1}{2}$ stroke, the outside line being made parallel to it. The inside curve of the *U* is a semicircle; the outside curve is elliptical, and joins the upright strokes at points *1 e* and *5 e*. The *V* and *W* are $\frac{3}{4}$ stroke wide where they rest on line *f*. The central portion of the *W* is $\frac{1}{2}$ stroke wide where it rests against line *a*. The angle of the left-hand portion of the numeral $\frac{1}{4}$ is 45° , passing through the point *1 d*, the upper slanting stroke of the figure crossing line *1*, $\frac{1}{2}$ stroke below the point *1 c*. The horizontal stroke of the figure is $\frac{1}{2}$ stroke each side of line *d*. In making the figure *8*, the stroke between line *c* and *d* is reduced about $\frac{1}{3}$ of its regular width in order to prevent the letter from looking top-heavy. The character *&* occupies 3 spaces in width above, and 5 spaces below its horizontal center line, and the middle stroke is reduced about $\frac{1}{3}$ of the regular width. The lower-case letters are to be drawn as shown, following the same

ANTIQUE

a 1 2 3 4 5 6
b
c
d
e
f
A B C D E F

M N O P Q R

1 2 3 4 5 Y

a b c d e f g h i j k l m n

o

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EGYPTIAN

GHIJKL

STUVWX

Z 6 7 8 9

k opqrstvwxyz

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general directions as were given in connection with plate entitled Half Block.

2. The lower-case letters are 3 spaces wide by 5 high; they are therefore more elliptical in form than the capitals, and are drawn from a point midway between 2 and 3 in all rounded letters, as the *o*. An exception to this occurs in such letters as *h*, *m*, and *n*, in which case the curve forming the top of the letter touches *a* at line 3. The horizontal strokes of the *f* and *t* extend $\frac{1}{2}$ stroke on either side of the vertical. The vertical strokes of the letters *m*, *n*, *p*, *q*, *r*, are extended above the line *a* $\frac{1}{3}$ stroke to the right, and are carried below the line in a corresponding manner on the letters *b*, *d*, and *u*. In the letters *a*, *h*, *m*, *n*, *u*, the curved outline of the letter joins the vertical stroke on lines *b* and *e*.

The letter *g* extends 4 strokes below *f*; the lower portion of the letter is $\frac{1}{2}$ stroke below *f* at its center, while the upper extremity reaches a point 1 stroke above *a*. The curved end of the vertical strokes of the letters *a*, *j*, and *t* occupy but $\frac{1}{2}$ -stroke space, while that of the *f* occupies a full-stroke space.

Having finished drawing the letters in pencil, ink the plate carefully, drawing all horizontal lines with the T square and all vertical lines with the triangle, but turning all curves freehand, using a No 3 red-sable brush, as none of the letters will admit of the use of the compass to advantage. Draw in the title; black in letters on the body of the plate; put the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner, as before.

PLATE, TITLE: ANTIQUE EGYPTIAN.

1. The form of this letter is almost identical with the plain Egyptian, the main distinction being observed in the addition of a spur at the angles of the letters, but no variation occurs in the proportion of the letter or its stroke. This style is very popular with sign painters and letterers, owing to the adaptability of the letter to a great variety of forms, to suit certain specific conditions. Some letterers make the spur much more exaggerated than shown on this plate, and others make it

scarcely perceptible. The examples given herewith, however, may be taken as an average, wherein the spur projects about $\frac{1}{3}$ stroke. All letters having a horizontal stroke, as the *E*, *L*, etc., have these strokes finished with a beveled end, on which the spur is added at the same angle. The ends of the strokes of the *C* and the upper stroke of the *G* and *S*, and figures 2, 3, 5, 6, and 9 are beveled at an angle opposite to that of the other letters referred to above. This bevel shown on the upper terminal of *C* is made by drawing a line from a point $\frac{1}{4}$ stroke to the right of *5a* to a point $\frac{1}{3}$ stroke to the left of *5c*. The middle bar of the *A* is 1 stroke below the center; the middle bar of the *H* is $\frac{1}{2}$ stroke above the center; while the middle bars of the *E* and *F* are exactly in the center. The *J* is finished with a spur at *5e*, as well as just above *1e*. The points which determine the inclination of the strokes of the *K* are from *5a* to $\frac{2}{3}$ stroke below *2d*, and from *4f* to the intersection of the upper slanting stroke with line *3* $\frac{1}{3}$ stroke above *d*. The 2 slanting strokes of the *M* meet in the center of the letter at a point on line *f*, and no spurs exist on the insides of the slanting strokes at the top. The end, though usually finished with a point at *5f*, as on this plate, is often finished the same as in the plain Egyptian, to which the spurs are added. The tail of the *Q* is cut on an angle of 45° , the shorter side being 1 stroke in length and the longer side being equal to the distance from *2e* to *3f*. The tail of the *R* is a slanting stroke; the points of contact are *4d* to *5f*. The strokes of the *W* come to a point on line *a* to correspond with the *M*. The corner of the *Z* is beveled off at about the same angle as the interior of the *5* and top of character *&*. The long slanting stroke of the character *&* is drawn from a point $\frac{1}{2}$ stroke to the left and below *1a* to a point $\frac{1}{2}$ stroke to the right of *4f*. The corresponding, or upper, slanting stroke, from its top to the beginning of the curve, is made from a point $\frac{1}{2}$ stroke to the right and below *4a* to a point *2d*. The other slanting stroke intersects the long stroke 1 stroke below this point, and is parallel with upper stroke, finishing on line *c*. The curve by which these strokes are united is $\frac{3}{4}$ stroke to the left of line *1* at *e*. The middle bar of the numeral *3* is beveled at a slight angle, as shown. The character of the numeral *5* is

ANTIQUE

A B C D E

M N O P Q

1 2 3 4 5 · X

a b c d e f g h i j k l m

JUNE 25, 1893.

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All r

PTIAN, (Light.)

F G H I J K L

R S T U V W

Z 6 7 8 9

o p q r s t u v w x y z

JOHN SMITH, CLASS N^o 4529.

Engineer Company.

sed.

changed at the point where the vertical stroke joins the curved bottom portion of the numeral 5. The point added below the line *d* is necessary to fill out the space to the line of the curve. The numerals 6, 8, and 9 are about $\frac{1}{3}$ stroke wider than the other characters, but are similar in other respects to the same numerals in the plain Egyptian alphabet.

2. The lower-case letters are in many respects the same as those in the plain Egyptian alphabet, although many exceptions occur. All strokes extending above the line *a* are cut at an angle of 60° , to which the spur is added at the same angle. This characteristic is also observable on letters of shorter height, such as the *i, j, m, n*, etc., but the ends of the strokes of all letters extending below the line are finished without this detail. Other information concerning the lower-case letters, as to their proportion, spacing, etc., will be found in the lettering plate, title: Egyptian.

Having finished drawing the letters in pencil, they should be inked carefully, drawing all horizontal lines with the T square and all vertical lines with a triangle, but making all curves freehand, using the red-sable brush, as none of the letters will admit of the use of the compass to advantage. Draw in the title, as shown; black in the letters in the body of the plate carefully, lettering the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner, as before.

PLATE, TITLE: ANTIQUE EGYPTIAN (LIGHT).

1. In drawing this plate, all guide lines will be omitted, except the lettering lines that limit the top and bottom of the letter. It will therefore be necessary for the student to count the number of letters in each line, and to divide his line proportionately, so that each letter will fill its proper space. The capital letters and figures in this plate are $1\frac{1}{4}$ " high, as in the previous plates, and the average width is 1", but the letters *A, M, O, Q, S, W*, etc. are wider than the average, and the letters *I, L*, and *N* are narrower, as will be pointed out hereafter.

On the top line are 12 letters, the widest of which, *A*, is $1\frac{1}{4}$ ";

the narrowest, the *I*, being but $\frac{3}{8}$ " or equal to the width of 1 stroke. Commencing at the lower left-hand corner, divide the plate as follows for the first line of letters: $1\frac{1}{2}$ " above the lower border line draw a line to limit the top of the lower-case letters; $1\frac{1}{8}$ " above the lower border line, draw a line to limit the top of the body of the lower-case letters; and $\frac{1}{2}$ " above the lower border line draw a line on which the bodies of the lower-case letters rest. The *g*, *j*, *p*, *q*, and *y* will then extend below this line on the lower border line. $\frac{3}{4}$ " above the top line of the lower-case letters draw a horizontal line on which the numerals shall rest. The numerals, like the two lines of letters above, are $1\frac{1}{4}$ " high, with a space $\frac{5}{8}$ " between them and the line above. The title is $\frac{5}{8}$ " above the top line of lettering, and its letters are $\frac{3}{8}$ " high. This style of lettering is an extreme form of the Egyptian letter, and in many respects is the most useful form it assumes. The lines are extreme and do not follow the conventional regularity of the lines of letters on the Full-Block or Half-Block plates, but are governed, nevertheless, by certain rules which the student must follow carefully to observe their proportions, particularly in this plate, as it is the first one to be drawn entirely freehand.

2. Begin this plate by drawing the letter *A*, which rests on the lower line, 5 strokes to the right of the left-hand border line. The width of the letter, exclusive of its spurs, is the same as its height, and the cross-bar is $2\frac{2}{3}$ strokes above the bottom line. In connection with this plate we meet with an entirely new detail in lettering, as seen at the top to the left of the letter *A*. This detail is called the *cyma*, from the Greek *κυμα*, *κυμα*, meaning "a wave." Its purpose, in most instances, is to fill the space between the slanting parts of the letter, or extremities, that are likely to cause wide openings when two letters are placed together. It is also used in some places to form the finishing stroke of a letter, as in the *Q* and *Z*. In subsequent plates its use in the construction of letters will be observed, as it forms a component part in many letters in the German Text, Old English, and Church Texts. The *cyma* on the letter *A* is 8 strokes in length and 1 stroke to the left of the point of *A*.

The vertical stroke of the *B* is about 3 strokes to the right of *A*, but the student should proportion the length of the line so that the letters are evenly divided, and not lay off each letter by measurements taken from its neighbor. The middle bar of the *B* is 8 strokes above the bottom line; the upper portion of the letter is 5 strokes from top line, and the lower part projects 1 stroke beyond the upper part. The curves of the *B* are carried into the middle bar independently of each other, and start from the horizontal bars at about the center of the letter.

3. The *C* is a perfect circle as far as it goes, and the spur on the inside is about 2 strokes below the top line; the lower extremity of the letter projects a full stroke beyond the top, and finishes in a point 3 strokes above the lower line. The curved portion of the letter *D* is semicircular, and becomes tangent to the horizontal top and bottom lines 3 strokes to the right of the vertical line.

The middle bar of the *E*, *F*, *G*, and *H* are all on one line, 4 strokes below the top of the letter. This bar in the *E* and *F* extends to within 2 strokes of the right extremity of the letter. The slanting stroke of the *K* begins 3 strokes above the lower line, and extends to the top line, where the end is beveled at an angle of about 60°. The *L* is 1 stroke narrower than the other letters, and the cyma is placed over it so that its lower extremity is even with the right-hand portion of the letter.

The *M* is 2 strokes wider than the other letters and starts $\frac{1}{3}$ stroke to the right of the border line, to leave sufficient room for the spur. In some cases the *M* is made precisely like an inverted *W*, except that at the union of the 2 slanting strokes the letter is finished flat with a spur, instead of being pointed, as in the *W*. On this plate, the middle slanting strokes of the *M* are brought to a point $\frac{1}{2}$ the width of the letter below the top line. The slanting stroke of the *N* commences on the vertical stroke, $\frac{1}{4}$ the width of the letter above the bottom line.

4. On this plate there is a difference between *P* and *R* which was not seen on previous plates. The loops are entirely different in style, the middle bar of the *P* being $4\frac{2}{3}$ strokes from bottom

line, while the same stroke of the *R* is $6\frac{2}{3}$ strokes above bottom line. The tail of *R* intersects the middle bar at a point where curve becomes tangent. The letter *S* begins to curve each way from a point in the center of the letter on a line with the middle bar of *R*. The letter is narrower at the top than at the bottom, the proportions being about the same as in the numeral 3, hereafter described.

The *W* is practically two *V*'s joined at a point $2\frac{2}{3}$ strokes below top line. The cyma over the *W* is so placed as to fill the space between its upper extremity in the same manner as the cyma is placed in the lower part of *M*. This is not a component part of the letter, however, and in many cases may be omitted with advantage.

The vertical stroke of the *Y* extends $6\frac{2}{3}$ strokes above the bottom line, the letter being 12 strokes wide on top. The *X* is 9 strokes wide on top and 4 strokes wider on the bottom. *Z* and the numeral 7 are of the average width on top, and the former may be finished in the same manner on the bottom, or with a cyma, as shown on the plate.

The character & is 10 strokes wide on the horizontal part of the letter, the longer slanting lines extending to the right 1 stroke beyond the line of top of letter. This line divided into 3 equal parts, will give about the location where the other two slanting strokes intersect the longer one. These 2 strokes are parallel and joined with a semicircle, as shown.

5. The figures differ somewhat from the letters on account of their elliptical form. The numeral 2 curves in each direction from a point $\frac{1}{2}$ its height. The numeral 3 is much narrower at the top than at the bottom, and its sides can be enclosed in an isosceles triangle, whose height is about 3 times the height of the letter. The middle bar of the figure 3 is 7 strokes from the bottom line, and is carried to the left and beveled off in line with the bevel of the top stroke. The middle bar of the 4 is 7 strokes from the top line, and extends $9\frac{1}{3}$ strokes to the left and 4 strokes to the right of the vertical line. The upper curve of 5 is $4\frac{2}{3}$ strokes from top line, and upper portion of the elliptical curve of 6 is $1\frac{1}{2}$ strokes below the top line, which

distance is the same between the lower curve of *9* and the bottom line, *6* and *9* being simply reversed.

The stem of the *7* extends below the line 4 strokes, and the figure is finished horizontally with a spur. The figure *8* is 12 strokes long on the top line, and the slanting strokes of the figure intersect $2\frac{2}{3}$ strokes below the top line and are joined on the loop, which is 12 strokes wide, and forms the lower portion of the figure.

6. The lower-case letters are similar in general outline to those of the Half-Block plate, but in some respects are very different. It must be remembered that the lower-case letters should always be made so that the long strokes are the height of the capitals, and the others $\frac{2}{3}$ this height, when they are used together. The letter *a* finishes on the bottom line by its vertical stroke coming to a point, as is also the case with the letters *d* and *u*.

In proportioning the lower-case letters, they should bear the same relations with reference to their height as do the capitals, that is to say, their width should be $\frac{1}{2}$ their height, as shown on this plate. In measuring the height of a letter, measure only the body, not counting the part that extends above the line, as in *b* and *k*, or extends below the line, as with *j* and *y*. The strokes of the letters should also be in proportionate width to the stroke of the capitals, and those strokes which extend above and below the line should all extend to the same height, which was not the case with the Half Block. The cross-bars of the *f* and *t* are longer in this than in the previous plate, and are on a line with the body of the letter. The top of the *f* is about $\frac{2}{3}$ the regular width of the letter. The upper portion of the *g* is identical with the letter *o*. The letters *c* and *e* finish their lower extremities with a point, and the right-hand portion of the *r* extends $\frac{2}{3}$ the width of the letter, and is the width of a stroke above the top line. The *s*, *v*, and *w* are precisely the same as the capitals, the only difference being the size. The student will space these letters by the eye, drawing every outline lightly in pencil, in order to get them in their required positions on the plate.

7. Having accomplished this, he should start with the letter *A* and draw exclusively, in pencil, each individual letter, making the lines freehand, and complete each letter before the following one is started, although in spacing the top line he may find it convenient to draw the *L* first, in order that the letters may be spaced evenly between them.

When the letters are completed, drawn in pencil, the student should ink them in, using the **T** square and triangle for the vertical and horizontal lines, but turning all curves, except the capitals *C*, *D*, *G*, *O*, and *Q*, freehand. The letters may then be blacked in, solid, as shown; the title drawn on the top of the plate; the date on the lower left-hand corner; and the name and class letter and number on lower right-hand corner.

PLATE, TITLE: ANTIQUE EGYPTIAN (HEAVY).

1. It would at first appear scarcely possible that the lettering on this plate is but a modified form of the style drawn in the two previous plates. This is the heavy extreme of the Antique Egyptian style, as the former plate was the light extreme, and it is fitted to fill certain needs in letter design that no other style can accomplish quite so effectively. The heavy Antique Egyptian, however, is rarely used as a solid black letter, as shown on this plate, and it is here so printed in order to preserve uniformity in the lettering plates. In designs for lithographic work, show bills, book covers, etc., it is largely used in a simple outline; and though extremely bulky on account of the weight of the stroke, it is extremely graceful and symmetrical when properly handled.

The three lines of letters and one line of figures in this plate are drawn between horizontal guide lines placed $1\frac{1}{4}$ " apart, as in the previous plates, with $\frac{3}{4}$ " between them. The title is $\frac{3}{8}$ " high, and $\frac{5}{8}$ " above the upper line of letters. On this plate the width of the letter is $1\frac{3}{8}$ ", and the stroke is about $\frac{1}{3}$ of the width or $\frac{7}{16}$ ". As in previous plates, many of the letters exceed this width and others are narrower, as will be pointed out.

2. The *A*, *B*, *C*, *E*, *G*, and *K* are 10 per cent. wider, and the *M* about 20 per cent. wider; the *W* is over 50 per cent.

ANTIQUE

A B C D

J K L M

S T U V W

1 2 3 4 5

JUNE 25, 1893.

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All

EGYPTIAN, (HEAVY)

E F G H I

N O P Q R

X Y Z &

6 7 8 9

JOHN SMITH, CLASS N° 4529.

Engineering Company.

ed.

wider, and the letter *Z* and the character & are about 25 per cent. wider. The numerals 2, 5, 6, 8, and 9 are each about 10 per cent. wider than the average width of the letters. It is not intended that the student shall carry all these dimensions and irregularities in his mind, but by paying attention to these proportions, as he draws the letter, and thereby accustoming his mind to nothing but letters of perfect proportions, he will soon be able to draw a letter which bears its proper relation of width to height and weight in stroke, without making any mechanical measurements to determine the stroke, and thus learn why each letter is given certain characteristic forms. The rapidity and ease with which he accomplishes this result will depend entirely on the amount of practice given to the work, with strict attention to the rules set forth.

3. The spurs of these letters are about $\frac{1}{8}$ " long, although in exceptional cases, such as the *E* or *L*, the spur is made much longer in order to balance the stroke. All vertical strokes are finished on their upper and lower extremities by a concave line. This line is the arc of a circle, the radius of which is $1\frac{1}{2}$ " above and below each vertical stroke. Letters having 3 parallel horizontal strokes must have these strokes somewhat reduced in width, in order to leave a space within the letter, as in the *B* and *E*. In the letter *S* and the character &, this is accomplished by carrying the stroke above the line and thereby drawing the letter open. In the letter *C*, the lower portion of the stroke extends $\frac{1}{3}$ of a stroke beyond the upper portion of the inside point, and on the *E*, *F*, *J*, and *Z*, a slight spur is added to the outer extremity, which carries the letter above the line. The lower portion of the horizontal stroke of the *E* is not a straight line but a compound curve, the center of which, on the upper side, is on a line with the middle bar of the letter; the length of this middle bar is equal to the width of the stroke, or $\frac{1}{3}$ the width of the letter. The middle stroke of the *H* is $1\frac{1}{4}$ strokes above the bottom line. The *J* is brought to a point at the left of its lower curve; the top of the curve rises to within 1 stroke of the top line of the letter. The upper slanting stroke of the *K*, and also the right strokes of *V* and *W*, are rested about

$\frac{1}{2}$ stroke above top line of letter. The right spur of this projecting stroke rests either on the top line, as in *K*, or $\frac{1}{7}$ of a stroke above it, as in the *V* and *W*. The points from which the slanting strokes of the *K* are drawn are $\frac{2}{3}$ stroke from the bottom line on the right side of the vertical stroke and the same distance from this point on the right side of the upper slanting stroke. The horizontal stroke of the *L* is a compound curve similar to that of the *E*, except that it is about $\frac{1}{2}$ stroke shorter. The cyma added to this letter is about $\frac{2}{3}$ the width of a stroke.

4. The letter *M* is brought to a point on the lower line. The letters *O* and *Q* are not perfect circles, as in the Light Egyptian plate, but are $\frac{2}{3}$ stroke wider than their height. The horizontal stroke of *G*, the tail of the *Q*, and character *&* are curved somewhat in the shape of a horn. The point in each case rests within the letter. The outside end is terminated with a concave form, similar to the vertical strokes in the letters. The tail of the *R* is carried below the line in the same manner as the top of the *K* is carried above the line. The slant of the stroke of the *R* starts at a point $\frac{2}{3}$ stroke from the vertical line, and is carried so that the outside of the stroke is directly below the curve of the letter.

The letter *S* is drawn by means of 4 vertical lines 1 stroke apart. The third line will mark width of letter to upper spur, and fourth line will mark width of letter at extreme right-hand curve. The first line will mark curve of letter on left-hand side. The letter *X* is equal in width to the letter *Y*, and the point of intersection of its slanting strokes is $\frac{2}{7}$ stroke above the bottom line, and that of the *Y* the same distance from the top line. The lower stroke of the *Z* is similar to the letter *E*, except that it is cut off on the lower left side of the letter to form a beveled end. The character *&* is drawn with 4 vertical lines similar to those of letter *S*; the first line in this case determining the curved portion of the left-hand side of the letter; the fourth line determining intersection of under side of lower curve of the character and horizontal horn stroke; the second stroke will determine the point where top of character begins to extend above top line.

5. In drawing the numerals, little need be said in explanation. Attention is called only to a few points, such as that the 2 is straight on the bottom line and curved on the upper portion, similar to the reverse of the upper terminal of the C; the horizontal stroke is a compound curve on top. The 3 extends $\frac{1}{2}$ stroke above line, the point of the strokes being in center of inside space of letter.

The middle bar of 4 is $\frac{3}{8}$ stroke from the bottom line, and extends the width of the stroke of the letter to the right, and is carried to the left only far enough to give a small opening inside the figure. The figure 5 is carried $\frac{1}{2}$ stroke below the line. The point of the vertical stroke is $\frac{3}{4}$ stroke above the bottom line. The 6 extends $\frac{1}{2}$ stroke above the line and is $\frac{5}{7}$ stroke from top line to upper side of curve.

The 7 extends $\frac{1}{2}$ stroke below line, and the right point is vertical below center of horizontal stroke. The figure 8 is composed of 2 ellipses, the lower one being $\frac{1}{4}$ stroke wider than the upper one. The 9 is just the reverse of 6.

6. In drawing the figures, it will be necessary in some places to diminish the width of a stroke in order to leave sufficient space within. The student will draw all these letters with pencil, freehand, in precisely the same manner as he did on previous plates; then ink them in, freehand, without the use of T square and triangle, other than to draw the pencil guide lines. The letters must then be filled in as in copy, the title drawn and blacked in, as shown, and the date, name, and class letter and number put in their proper places, as heretofore. The student is not expected to produce absolute duplication of the letters on these sheets. By this time he should have become familiar enough with the forms and proportions of the strokes, widths, and heights of all letters to vary them slightly from the dimensions given on this plate, without seriously impairing their proportions; therefore, in drawing this exercise, the proportions of the strokes may be varied slightly in some places, if in the student's judgment this will improve the appearance of the letter.

PLATE, TITLE: FRENCH ROMAN.

1. The letters on this plate possess the same general proportion as the Full Block, that is, they have a width equal to their height. This width varies in some letters, however, precisely as it did in the Full Block style, and the student will be instructed as to the details of such variation as the letter in question is discussed. The characteristic difference between the Roman, Egyptian, and Half Block styles of letters lies in the use of two separate but uniform widths of lines to form the letter. These are distinguished under the names of *stroke*, for the heavy portion, and *fine line* for the slender portions of the letter.

On this plate the 4 lines of letters and numerals are each $1\frac{1}{4}''$ high, and $\frac{3}{4}''$ apart, and the stroke is $\frac{5}{16}''$, or $\frac{1}{4}$ the height, and the fine line is $\frac{1}{5}$ the stroke. The title is $\frac{7}{16}''$ high and $\frac{9}{16}''$ above the line of letters. To draw this plate, divide the drawing paper above the lower border line, as in the previous example, and then lay out the letters lightly, in pencil (freehand), so as to space them equally along the lines.

2. The letter *A* is commenced $2\frac{1}{2}$ strokes from the border line, and is $4\frac{1}{2}$ strokes wide at the base. The apex of the *A* is the center of the letter (as is always the case in upright letters), and the top horizontal bar is $\frac{4}{5}$ stroke above bottom line. The spurs on the bottom make the foot of stroke 2 strokes wide, and the foot of the fine line 1 stroke wide.

The vertical stroke of *B* is about $1\frac{1}{4}$ strokes to the right of the *A*, and the intermediate bar is $2\frac{1}{4}$ strokes from bottom, as are also the intermediate bars of *E*, *F*, and *H*. The width of the top of *B* is exactly 4 strokes, but the lower curved portion projects $\frac{2}{5}$ stroke more on the right side, and the spurs, top and bottom, extend an equal amount to the left. A vertical line drawn $1\frac{1}{5}$ strokes to the right of the upper curve of the *B* will be tangent to the left curve of *C*, and $4\frac{1}{4}$ strokes to the right of this line another vertical line will limit the fine lines of *C*. The lengths of each of the spurs, on the ends of the fine line of the *C*, is 1 stroke, the top one of which touches the top lettering line, while the bottom spur is $\frac{1}{4}$ stroke above the lower lettering

FRENCH

A B C D

J K L M

S T U V W

1 2 3 4 5

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ROMAN

EFGHI

NOPQR

WXYZ &

6789

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erved.

line. One and one-half strokes to the right of *C* is the vertical stroke of letter *D*, which is 4 strokes wide. The curve of *D* commences $\frac{1}{2}$ stroke to the right of the vertical stroke and the fine line gradually expands in an elliptical curve until it is a full stroke wide at the center. The spurs on *D* are the same as those on *B*. The letters *E* and *F* are each 4 strokes wide, the vertical stroke of the *E* being 1 stroke to the right of *D*, and the vertical stroke of the *F* $1\frac{1}{4}$ strokes to right of *E*. The spurs on these letters are each 1 stroke long, and incline away from the letter at such an angle as would make either of them intersect the opposite lettering line about 1 stroke away from the letter; that is, if the line of the lower spur of *E* were carried to the top of the letter, it would intersect the top lettering line 1 stroke to the right of the letter. The intermediate bars of *E* and *F* are $1\frac{1}{2}$ strokes long. With the exception of the vertical stroke, *G* is precisely like *C*; this extends $\frac{1}{4}$ stroke to the right of the fine line. The lower fine line joins the vertical stroke, on the outside, $\frac{4}{5}$ stroke above the bottom, and the top of the vertical stroke is $2\frac{1}{2}$ strokes above the bottom line. There is a space of $1\frac{1}{2}$ strokes between *G* and *H*, and a space of 2 strokes between *H* and *I*. *H* is 4 strokes wide.

The letter *J* is 4 strokes wide, and its left extremity touches the left border line; the intersection of the curve and vertical stroke on the right is 1 stroke above the bottom line. The letter *K* is $4\frac{1}{4}$ strokes wide, and the fine line intersects the vertical stroke $1\frac{1}{5}$ strokes above the bottom. The slanting stroke intersects the fine line $1\frac{1}{5}$ strokes from the vertical stroke on the fine line. Excepting that the spur is $1\frac{1}{4}$ strokes in length, *L* is similar to *E*.

3. The letter *M* is 5 strokes wide. The intersection of the slanting stroke and fine line is on the bottom lettering line, exactly midway between the vertical stroke and vertical fine line. The lower side of the slanting stroke, where it intersects the vertical fine line, and the lower side of the slanting fine line, where it intersects the vertical stroke, is $\frac{4}{5}$ stroke below the top lettering line. The letter *N* is $\frac{1}{2}$ stroke narrower than the average 4-stroke letter, and the under side of the slanting stroke

intersects the left vertical fine line $\frac{3}{4}$ stroke below the top line, and the right vertical stroke at its intersection with bottom lettering line. In outline, the *O* and *Q* are complete circles. The middle line of the *P* is $1\frac{1}{2}$ strokes above the lower lettering line, while the middle line of *R* is 2 strokes above, and the slanting stroke intersects the fine line 1 stroke to the right of the vertical stroke of the letter. The *S* is $3\frac{2}{3}$ strokes wide at the top and 4 strokes wide at the bottom; on the vertical center line of the letter the double-curved stroke is $1\frac{1}{2}$ strokes below the top line, and the spur on the end of the lower fine line is $1\frac{1}{4}$ strokes in its vertical length. The *U* is 4 strokes wide, as is also the *Z*, and the *V* is similar to an inverted *A*. The *W* is $6\frac{1}{2}$ strokes in width at the top, and its two lower points intersect the lower lettering line, 3 strokes apart. The point where the middle stroke and fine line meet on the top line is an equal distance from the inside of the left stroke and the inside of the right fine line; a vertical from this point drawn to the bottom letter line will give the position of the points reached by the strokes and fine lines on the bottom line. The right point is 1 stroke from the vertical line and the left point is 2 strokes. The *X* is $3\frac{1}{3}$ strokes on top and $4\frac{2}{3}$ strokes wide at the bottom. The *Y* is $4\frac{1}{4}$ strokes wide on top, and the vertical stroke is exactly in the center of the letter and $1\frac{1}{2}$ strokes high on the left side. The character *d* is $3\frac{1}{4}$ strokes wide on top. The curved portion of the character extends $\frac{1}{5}$ stroke to the left of the top fine line, while the center of the slanting stroke, where it rests on the bottom line, is directly beneath the right end of the top fine line. One slanting fine line intersects the slanting stroke 1 stroke below the top, and the other intersects the slanting stroke $\frac{4}{5}$ stroke from the bottom line, and then terminates in a horizontal spur $1\frac{1}{4}$ strokes from the top line.

4. In outlining the numeral 2, the space within the top of the figure must be as large and full as possible, without curtailing the space below. The horizontal stroke is $4\frac{1}{5}$ strokes long and is finished with a concave end and spur, as are also the 5 and 7. In each of these numerals the point of spur is $\frac{1}{2}$ stroke from the end of the horizontal stroke to which it is attached.

FRENCH

A B C D

J K L M

S T U V

1 2 3 4 5

JUNE 25, 1893.

Copyright, 1890, by

Al

ROMAN, (Light)

E F G H I

N O P Q R

V X Y Z &

6 7 8 9

JOHN SMITH, CLASS N^o 4529.

by Engineer Company.

erved.

The numeral 3 is $3\frac{1}{5}$ strokes wide on top and $4\frac{1}{5}$ strokes wide on the bottom; the intermediate fine line is $2\frac{1}{5}$ strokes from bottom, and extends into the figure about $\frac{2}{5}$ of the inside space. The horizontal fine line of numeral 4 is $1\frac{3}{5}$ strokes above the bottom of the figure, and extends $2\frac{1}{5}$ strokes to the left of the stroke and $\frac{4}{5}$ strokes to the right. The horizontal stroke of 5 is $3\frac{3}{5}$ strokes long, and the top of the intermediate fine line is $1\frac{2}{5}$ strokes from the upper lettering line. The figure is 4 strokes wide on the bottom, and finishes $\frac{1}{4}$ stroke to the left of the vertical fine line.

The 6 is $4\frac{2}{5}$ strokes wide, and the intermediate fine line is $1\frac{1}{5}$ strokes from the top. The upper fine line, with the spur, finishes $\frac{1}{2}$ stroke short of the full width of the figure. The 7 is 4 strokes wide on top and $1\frac{2}{5}$ strokes on the bottom, and its foot rests $1\frac{1}{2}$ strokes to the left of the end of the horizontal stroke. The 8 is $4\frac{1}{4}$ strokes wide on the bottom, and is identical with the right half of the duplicate on two sides of a center line. The 9 is an inverted 6.

The student will draw these letters in pencil, carefully proportioning each letter of both the plate and the title, measuring each stroke. The inking in must be done freehand with a red-sable brush, and the letters carefully blacked, as before. Insert the date in the lower left-hand corner of the plate, and in the lower right-hand corner put the name and class letter and number.

PLATE, TITLE: FRENCH ROMAN (LIGHT).

1. This style of letter fills the same position in point of variation to the normal alphabet as does the light Antique Egyptian to the normal alphabet of that letter. It is also an extremely modified form of the normal letter, applicable to certain specific purposes, where the mother style would be less desirable. The stroke of this style of letter can be made even lighter than on this plate, although, with such lightening, the fine line should remain about the same, unless the reduction in the stroke is such that it makes them too nearly the same size. The curved strokes of the letters appear more slender than the straight strokes if made the same width as the vertical, on

which account some of the numerals, as well as the letters, are made heavier in stroke, and will be pointed out when the numerals are discussed. In making use of this style of alphabet the stroke should never be made heavier, in proportion, than on this plate, as an increase would tend to bring it back to the original style of plain French Roman, wherein the stroke is $\frac{1}{4}$ the height of the letter.

2. The cyma enters into the construction of some of the letters of this plate as it does in the light Antique Egyptian, and is also used in some instances to fill up the broad open spaces. It does not form a component part of any of the letters, except the *A* and *Q*, and under certain circumstances may be omitted entirely. Letters on this plate are the same dimensions in height and spacing as on the previous plate. The title is $\frac{3}{8}$ " high, and $\frac{5}{8}$ " above the top line of letters. The stroke is $\frac{3}{16}$ "; the fine line is $\frac{1}{3}$ the stroke. The thickest part of the curved strokes is equal to the width of a stroke plus the width of the fine line; the spur projects $\frac{1}{2}$ the stroke.

3. The letter *A* is $7\frac{2}{3}$ strokes wide and is started $3\frac{2}{3}$ strokes from the border line; the cyma, forming a cross-bar of the *A*, equally divides, and is itself equally divided by, the fine line.

The *B* is 2 strokes to the right of the *A*, and $6\frac{1}{3}$ strokes wide at the top and 7 strokes wide at the bottom. The intermediate fine line is 4 strokes above the bottom line, and the lower space within the letter is $\frac{1}{2}$ stroke wider than the upper space.

The *C* is $1\frac{1}{2}$ strokes to the right of the *B* and is 7 strokes wide to the spur on the top line, but the lower fine line extends the width of 1 stroke, and finishes 2 strokes above the bottom line. The vertical stroke of the *D* is $1\frac{2}{3}$ strokes to the right of the *C*, the letter being 7 strokes wide, and the fine line commences to curve at a point twice the width of the stroke to the right of the vertical stroke. The middle horizontal fine lines of the *E*, *F*, *G*, and *H* are 2 strokes below the top line, and in *E* and *F*, 4 strokes long. The spurs on *C*, *G*, and *S* are rounded from the fine line, giving it an extra thickness at this point. The horizontal middle bar of the *G* is 4 strokes in length. The space between the *D* and the *E* and the *E* and the *F* is 2 strokes;

between the *F* and the *G*, only $\frac{1}{2}$ stroke; and between the *G* and the *H* and the *I* and the *J* is $2\frac{2}{3}$ strokes. The letters *E* and *F* are 6 strokes and the *D*, *G*, and *H* are 7 strokes in width. The curve of the *J* intersects the vertical stroke 1 stroke above the bottom line. The fine line of the letter *K* intersects the vertical stroke 2 strokes above the bottom line, and extends 1 stroke above the top line; the slanting stroke intersects the fine line $3\frac{2}{3}$ strokes from its lower end. The middle slanting strokes of the *M* are brought to a point 3 strokes above the bottom line; the top of the letter is 3 strokes narrower than the bottom, the full width on the bottom being 8 strokes. The slanting stroke of the *N* joins the vertical fine line on the right $1\frac{1}{3}$ strokes above the bottom. The *O* and *Q* are 8 strokes wide; the *P* and *R* are 7 strokes wide; and their middle fine lines are $2\frac{2}{3}$ strokes from the top line. The cyma of the *Q* rests on the bottom line on the right side of the letter, and on the left is 2 strokes above within the letter.

4. The intersection of the slanting stroke of the *R* with the middle fine line is 2 strokes to the right of the vertical stroke, and its lower end is cut off at an angle of 45° , the right spur resting on the bottom line. On a vertical center line drawn through the *S*, the middle stroke is $3\frac{2}{3}$ strokes from the bottom line; the fine line on top is cut off 1 stroke shorter than the projection of the curve beneath it, while the fine line at the bottom projects 1 stroke beyond the curve above it. The full width of the *S* at the bottom is $7\frac{2}{3}$ strokes. The *T* is 7 strokes at the top, and the *U* is $6\frac{1}{2}$. The fine line of the letter *V* extends above the lettering line in the same manner as the fine line of the *K*. The intersection of the interior lines of the *W* is equally divided between the stroke and fine line, and is $1\frac{1}{3}$ strokes below the top line. The space between the points of the letter on the bottom is 5 strokes, and the cyma is drawn about $\frac{2}{3}$ of the space within the letter. In the letter *X* the fine line intersects the stroke $2\frac{1}{3}$ strokes below the top line, and the letter is 8 strokes wide at the bottom. The fine line of the *Y* intersects the vertical stroke $3\frac{2}{3}$ strokes above the bottom, and the letter is $7\frac{2}{3}$ strokes wide on top. The character & is

7 strokes wide at the bottom, and the lower end extends 1 stroke to the right of the upper portion. The middle bar is 4 strokes from the bottom line. The cyma is so placed as to extend $1\frac{1}{2}$ strokes outside, and $2\frac{1}{2}$ strokes inside, the letter, and its lower end is $1\frac{1}{2}$ strokes above the line.

5. The numeral 1 is beveled on its upper end at an angle of 60° , the line of the bevel being equally divided by the top line of the letters. The upper parts of the numerals 2 and 3 are sickle-shaped, and the horizontal stroke of the 2 is straight on the bottom and curved on the top. The lower fine line of the 3 is finished similar to the upper fine line of G. The middle bar of the figure 4 is $2\frac{2}{3}$ strokes above the lower line, and extends $5\frac{2}{3}$ strokes to the left and 2 strokes to the right of the vertical stroke. The middle bar of 5 is 4 strokes above the bottom line; the upper horizontal stroke is 6 strokes long, and finished in the same manner as the bottom stroke of the 2. The middle bar of the 6 is 5 strokes above the bottom line, and the upper part of the figure diminishes to a point 1 stroke above the top line, the point being on a vertical line from the inside of the right-curved stroke. The slanting stroke of the 7 extends 1 stroke below the line, and is cut off parallel with the lettering lines; the horizontal stroke of the 7 is similar to the top stroke of the 5. The figure 8 is 6 strokes wide on top and $7\frac{1}{3}$ strokes below. The horizontal middle stroke is $2\frac{1}{3}$ strokes below the top line. The numeral 9 is similar to the 6, reversed, the middle line being 2 strokes above the bottom line, and the point of the letter below the bottom line being vertically beneath the outside of the left-hand curved portion.

These letters and numerals should be drawn in freehand, according to the directions herewith given, and the letters blacked in ink. Then put the date in the lower left-hand corner, and in the lower right-hand corner the name and class letter and number, as before.

: FRENCH

A B C

H I J K

O P Q R

V W X

JUNE 25, 1893.

Copyright, 189

ROMAN: (HEAVY.)

D E F G

L M N

S T U

Y Z &

JOHN SMITH, CLASS N^o 4529.

Engineer Company.

ved.

PLATE, TITLE: FRENCH ROMAN (HEAVY).

1. In this plate we have the other extreme of the letter, as contrasted with the light style of the French Roman alphabet. The stroke in this style is increased to about twice what it was in the normal French Roman style, thus making the strongest contrast possible in the details of the letters. In general use, however, this heavy style of letter (as explained in connection with the heavy Antique Egyptian alphabet) is not usually blacked in solid as here shown, but is drawn in outline only, the outline being about the same weight as the fine line. In designing any particular variation of a form or style of letter, such as heavy French Roman, it is important to observe that in each variation the characteristics of the letters should be maintained uniformly throughout the alphabet. For instance, the lower fine line of the *E* is in this case not terminated with the regular spur, as before, and to be consistent, the lower fine lines of the *L* and *Z* are similarly terminated, as these letters in any plain alphabet are alike in the lower fine line and finish. The same idea may be observed in the carrying of the fine line of the *K*, *V*, *W*, and *Y* above the line.

2. The height of the letters in this plate, their size and position, the space between the lines, and also the title, are precisely the same as on the previous plate. The width of the stroke is $\frac{1}{2}$ ". The average width of a letter is 3 strokes, but the alphabet abounds in exceptions, so that it is not surprising to find that the number of letters of standard width are in the minority. The spur is about $\frac{1}{4}$ of the stroke, and is joined to the fine line with a curve, except as pointed out in connection with the *E*, *L*, and *Z*, and also in the other fine lines of the letters *E*, *F*, *T*, and *Z*. The letter *A* is $3\frac{1}{2}$ strokes in width. The middle bar is $\frac{3}{8}$ " from the bottom line, but the spurs at the top of the side end stroke are precisely the same as those at the bottom. The ends of the strokes are rendered concave by the arc of a circle whose radius is 4 strokes. The middle line of the *B* is $1\frac{1}{2}$ strokes above the bottom. The lower portion of the letter is $3\frac{1}{2}$ strokes wide and extends $\frac{1}{2}$ stroke to the right of

the upper portion. The bottom fine line of the letter *C* extends 1 stroke beyond the spur at the end of the top line, and the cyma is inserted, as shown, to fill the space within the letter. Observe that the curve of the cyma becomes tangent, as though it were a continuation of the inner curve of the letter. The outlines of the *B*, *D*, *E*, *L*, *P*, *R*, and *Z* are formed, not of a straight line on top and bottom, as in previous styles, but in the form of a compound curve, making, thereby, a wavy fine line, terminating in the *E*, *L*, and *Z* with a heavy curl. The horizontal fine line in the middle of the *E*, *F*, and *H*, and the top of the vertical stroke of the *G*, are $\frac{3}{4}$ stroke from the top line. The intermediate fine line of the *E* and *F* is 2 strokes in length, and extends $\frac{1}{4}$ stroke beyond the end of the fine line. The fine line of the *K* meets the vertical stroke $\frac{3}{4}$ of a stroke above the bottom line. The slanting stroke of the *K* (measuring on fine line) intersects the fine line 1 stroke from the vertical stroke. The left-hand stroke of the *M* is not given full width on the top line, in order to leave as much space as possible within the letter, and at the same time to avoid too great a projection beyond the left fine line. The intersection of the middle stroke and fine line is $\frac{1}{2}$ stroke from the bottom, and the letter is $5\frac{1}{4}$ strokes in width. The letter *N* is $\frac{1}{8}$ stroke narrower than the average width of the letters, and the slanting stroke intersects the fine line $\frac{1}{4}$ stroke above the bottom. The lower line in the slanting stroke intersects the left-hand vertical line 1 stroke below the top. The *O* and *Q* are $3\frac{1}{2}$ strokes wide. The tail of the *Q* is entirely outside of the letter in this style, and is somewhat of the form of a cyma, tangent to the outside of the letter below and to the right of the center line of the opening. The lower fine line of the *P* is $\frac{5}{8}$ stroke above the bottom line. Notice that the width of the stroke of the *S*, where it joins the fine line, diminishes very rapidly, and is not a gradual reduction, as in the previous slants. The upper fine line is $\frac{3}{16}$ " within the outline of the letter, and the lower projects $\frac{3}{16}$ ". The letter *U* possesses two very small spurs in its lower portion, and is thickened to twice the width of the fine line at the point where the vertical and curved fine lines come together. The *V*, *W*, *Y*, and also the *K* carry their fine lines

above the line, but $\frac{1}{2}$ a stroke, the spurs on the end of which are at right angles to the line of the letter. This feature is frequently added to the fine line of the letter *A*, carrying it below the line about $\frac{1}{2}$ a stroke and finishing its spurs at right angles. The width of the *W* is 5 strokes. To proportion the *W*, lay out its full width of 5 strokes on the top line, and from the right end of the letter lay off, to the left, 2 strokes on the top line, which will locate the point where the middle strokes meet; $\frac{3}{4}$ stroke to the right of a point vertically opposite this, on the lower line, will give the point where the right stroke and fine line meet, and $1\frac{3}{4}$ strokes to the left will give the other corresponding point. The stroke and the fine line of the *X* intersect at a point $\frac{2}{3}$ stroke from the top line, the letter being 3 strokes wide on top. The vertical stroke of the *Y* intersects the fine line $1\frac{1}{2}$ strokes above the bottom, and the letter is $3\frac{3}{4}$ strokes wide on the top line. The lower left-hand angle of the letter *Z* diminishes to a point that projects from the letter about $\frac{1}{2}$ stroke. The character *&* extends $\frac{1}{2}$ stroke to the left of a vertical line drawn tangent to its upper curve on the left side, and the cyma forming the lower right termination, on its fine line, is equally divided above and below the point where it is joined to this line, the lower curve of the cyma being tangent to the bottom line, and the upper curve reaching $1\frac{1}{2}$ strokes above it.

3. The instructions for drawing this plate are much less detailed than the other plates, as by this time the student should be sufficiently familiar with the letter forms to readily design any of the characteristics without detailed explanation. His attention is particularly called, however, to the careful spacing of the letters, particularly those of the top line, as by getting these in their proper places it is a simple matter to locate others beneath them in their proper relative positions. Having drawn the letters carefully in outline, they should now be inked in and then blacked, as usual, with a sable brush, after which the student should place the date in the lower left-hand corner, and his name and class letter and number in the right-hand corner, as before.

PLATE, TITLE: ROMAN (NEW YORK).

1. There are no styles of lettering more generally used, with more convenient application for various purposes, than the Roman letter. There are three general styles of the Roman letter that will be given in this course of instruction, and the student's attention is called, particularly, to the principal characteristic differences in the styles as well as to the general formation and construction of the letters. In the alphabet shown on this plate, the main characteristic is the thinness of the fine line, and the symmetrical proportions of the letters; for, though the upper and lower halves of such letters as the *E*, *H*, and *S* are not identically the same in size and proportion, they are arranged to appear so to the eye, and the actual difference is difficult to discern, unless the letter is turned upside down.

2. In drawing this plate, make the four lines of letters $1\frac{1}{4}$ " high, as before, with the spaces between them $\frac{3}{4}$ ", the main line of the title $\frac{5}{8}$ " high, and $\frac{5}{8}$ " above the top line of the letter; the second line of the title $\frac{1}{8}$ " high, and $\frac{3}{8}$ " above the top line of letters. The stroke of this letter is $\frac{5}{16}$ ", or $\frac{1}{4}$ of the height; the spurs are $\frac{4}{5}$ stroke on all letters, except the *E*, *F*, *L*, *T*, and *Z*, where they are larger, as will be described later. The curve of the spur from the fine line to the stroke is, in most cases, a quarter circle, the radius of which is $\frac{4}{5}$ of a stroke, and the center $\frac{4}{5}$ of a stroke from the vertical stroke and the fine line, to both of which the quadrant must be tangent.

3. The letter *A* is located at the foot of its fine line 2 strokes from the left-hand border; the middle fine line is $1\frac{1}{2}$ strokes above the bottom line, and the spurs on the end of the fine line increase its length to 2 strokes at the base, and that of the slanting stroke to 3 strokes. The lower portion of the *B* extends $\frac{1}{4}$ stroke to the right of the upper portion. The letter *C* is designed so that its interior outline forms a perfect ellipse 3 strokes in width and the height of the letter, the crescent-shaped portion of the stroke to the left of the letter being $\frac{1}{5}$ stroke thicker at its center than the vertical strokes in the same alphabet. The spurs on the *E*, *F*, *L*, *T*, and *Z*, extending

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A B C D

J K L M

S T U V W

1 2 3 4 5

JUNE 25, 1893.

Copyright, 1890.

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EFGHI

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XYZ &

6789

JOHN SMITH, CLASS N^o 4529.

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ved.

1 stroke at right angles to the fine line, are returned to the fine line at an angle of 45° , and are rounded into it with a slight curve. The middle fine lines of the *B*, *E*, *F*, and *H* are $\frac{1}{5}$ stroke above the center of the letter. The top of vertical stroke of the *G* is $\frac{2}{5}$ stroke above the center of the letter.

The letter *J* is terminated at its left extremity with a ball, or disk, the top of which reaches to the center of the letter, the small spur at the right extremity marking the intersection of the vertical stroke with the expanding curved fine line at a point $\frac{4}{5}$ stroke above the bottom line. The fine line of the *K* intersects the vertical stroke at a point $1\frac{1}{2}$ strokes above the bottom line, and the slanting stroke intersects the fine line $1\frac{1}{2}$ strokes from the latter starting point.

4. The space within the lower part of the *M* is equally divided on the lower lettering line by the intersection of the slanting stroke and the slanting fine line. The top of the vertical stroke is reduced $\frac{1}{4}$ its width where the fine line bevels its corner. The main point to be observed in this letter is to be sure that the intersection of the vertical fine line and slanting stroke, and of the vertical stroke and slanting fine line, are the same distance from the top of the letter. The *N* is $\frac{2}{5}$ stroke narrower than the other letters. The intersection of its slanting stroke and left fine line are the same distance from the top line as in the letter *M*. The ellipses that form the interiors of the letters *O* and *Q* are 1 stroke narrower than that of the *C*, owing to the fact that a heavy crescent-shaped stroke on either side of the ellipse so increases the letter as to give it proper proportions. The exterior outlines of the *O* and *Q* are perfect circles. The lower fine line of the letter *P* is $1\frac{3}{5}$ strokes from the bottom line. The tail of the *R* is located $\frac{1}{2}$ stroke to the left of the right outline of the letter, and is a perfect cyma equally divided by a horizontal line $\frac{1}{4}$ the height of the letter. The crescent above it is 1 stroke wide at a point 1 stroke from the top line. The middle bar is located exactly in the center of the letter.

5. A center vertical line through the letter *S* will divide the stroke $1\frac{3}{5}$ strokes above the bottom line. The finish of the left spur is vertically under the curve of the stroke above, but the

finish of the right spur is $\frac{1}{4}$ stroke within the latter, and but $\frac{2}{3}$ the length of the lower spur on the side. The letter *U* is drawn with the lower inside curve a semiellipse, and an increase in the thickness of the spur marks the point where the vertical fine line becomes tangent to the curve. The *W* is $6\frac{1}{2}$ strokes wide, its lower points being 3 strokes apart, 1 stroke to the right and 2 strokes to the left of a point vertically opposite the middle point on the top line, which divides equally the space between the inside of the left slanting stroke and the right fine line. The intersection of the stroke and fine line of the *X* is practically in the center of the letter, so as to make the enclosed triangles of equal area above and below. The fine line of the *Y* intersects the vertical stroke exactly in the center of the letter. The character & possesses, for its heaviest stroke, a compound curve, the inclination of which is the same as the slanting stroke of the letter *N*. The width of this character on top is 3 strokes, and its lower portion projects $\frac{1}{2}$ stroke to the left of the upper portion. The intersection of the right fine line and heavy stroke is $1\frac{3}{5}$ strokes above the bottom line, and the top of the ball terminating the fine line is $2\frac{2}{5}$ strokes above the bottom line and $1\frac{3}{5}$ strokes to the right of the point of intersection. The light strokes of the character are about $\frac{3}{5}$ the width of the heavy stroke.

6. The lower stroke of the numeral 2 is a perfect cyma, and the top is precisely the same as that of the 3. The stroke tapers off again to a fine line where it joins the left end of the cyma. The balls terminating the fine lines of the Roman figures are $\frac{2}{5}$ stroke wider than the straight strokes of the figures, while the curved strokes of all the figures are $\frac{1}{5}$ wider than the straight ones. The space between the two balls at the end of the fine line of the figure 3 is about $\frac{1}{2}$ their diameter. The top of the figure 4 is finished in the same manner as the right stroke of the letter *M*. The horizontal fine line of the 4 extends $2\frac{4}{5}$ strokes to the left and 1 stroke to the right of the vertical stroke, and is $1\frac{3}{5}$ strokes above the bottom line. The horizontal stroke of the figures 5 and 7 is different from that of any other alphabet, and consists of a double compound curve, the concave and convex portions

RO
(B)

A B C D

J K L M

S T U V W

1 2 3 4 5

JUNE 25, 1893.

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AN,
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EFGHI

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JOHN SMITH, CLASS N^o 4529.

ry Engineer Company.

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of which are opposite each other. The lower portion of the *5* is similar to the *3*, and the vertical fine line is $\frac{2}{3}$ stroke to the right of the left outline of the ball. The width of the lower stroke of the *7*, on the bottom line, is $1\frac{2}{3}$ strokes, and rests on the bottom line 1 stroke to the right of the end of the horizontal stroke. The top line of the lower portion of figure *6* is $2\frac{2}{3}$ strokes above the bottom line. The ball is about $\frac{1}{2}$ stroke within the figure. The stroke of figure *8* is precisely the same as that of the letter *S*, the fine line being reduced where it is brought around and intersects the stroke near the center of the figure. The maximum thickness of the lighter stroke in the *8* is about $\frac{1}{2}$ that of the main stroke. The figure *9* is a reversed *6*, except that the ball extends to the outside line of the letter.

7. This style of letter is used largely by some sign painters where the work is to be done in gold or in black letters on a



FIG. 1.

white ground, and the fine line is so thin that a strong contrast is required to bring it into prominence. Some designers vary the forms of the figures *2*, *3*, and *6* in a manner that, though not strictly classical, adds highly to the effect. Instead of

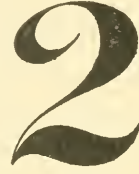


FIG. 2.

terminating the upper fine line with a ball, it is finished in a point, as shown in Fig. 1, or sometimes equal in width to the stroke, as shown in Fig. 2.

The student will draw these letters as on the previous plates, being careful to space the letters in the top line uniformly, and making the letters in the three lower lines of the plate proportionately; then place the date, name, and class letter and number in their proper places.

PLATE, TITLE: ROMAN (BOSTON).

1. This style of Roman letter possesses a much heavier fine line than does the New York Roman, the spurs of the letters being cut off on the end to form a fillet the thickness of a fine line. These spurs are $\frac{1}{4}$ circle as described in previous plate, the radius being the additional width of the fine line nearer

the center of the letter. In the earlier form of the Boston Roman (the style from which our present style sprung), the fine line was much longer on the spur, and triangular corners, instead of quarter circles, marked the connection of the spurs to the vertical strokes. The early form is now obsolete; only occasionally on a very old sign is seen an inscription making use of these letters. The application of this style of letter fills a field wherein the practice of the New York Roman would be impossible, such as the cutting of letters in stone or marble, and the working of letters in leaded glass or sheet metal, where the fine line of the New York style of letter could not be executed. The letters are in precisely the same proportion as those on the previous plate, and are placed $\frac{3}{4}$ " apart—the lettering lines being $1\frac{1}{4}$ " high, as before, the large letters of the title being $\frac{3}{8}$ " and small letters $\frac{1}{8}$ " high, and $\frac{5}{8}$ " and $\frac{5}{16}$ " above the top line of letters, respectively. The width of stroke in these letters is $\frac{5}{16}$ ", and though the fine line is here designed as $\frac{1}{5}$ stroke, it may be varied somewhat, according to the material in which the letters are to be worked. As, for instance, the marble, metal, or glass worker may use a heavier fine line on some special work than the normal text, while the sign painter often reduces the fine line, especially if the letters are to be gilded.

2. In the first line of letters there is no characteristic difference between this and the alphabet of the previous plate, except as already pointed out in the thickness of the fine line and the termination of the ends of the spurs. The top of the *A* and the bottom of the *V* and *W*, the middle strokes of the *M* and the slanting stroke of the *N*, are not terminated in a point, but in a fillet the width of the fine line, for the same reason as above described.

The spurs of the middle fine line of the *E* and *F* are joined to the fine line in a curve, as is also the spur on the end of the horizontal fine line of the figure 4. The other horizontal fine lines, however, do not join the spurs in a curve.

The letters *W* and *R* are somewhat different from those of the previous alphabet, as the middle of the top of the *W* is finished

MEDIEVAL

A B C D

J K L M

S T U V

1 2 3 4 5

JUNE 25, 1893.

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All r

ROMAN

EFGHI

NO PQR

XYZ &

6789

JOHN SMITH, CLASS N^o 4529.

Engineer Companys.

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a full stroke in width, with spurs, instead of being brought to a point, as in the previous plate.

The tail of the *R* is carried out in a slanting stroke from a point the width of 1 stroke from the vertical stroke, extending the width of 2 strokes from the vertical stroke, where it intersects the bottom line with a spur on the right side.

3. In the numerals there is little change from the other style of Roman letter, except in the horizontal strokes of the 2, 5, and 7.

The student will draw this plate under the same rules and conditions observed in the previous plate, as all the proportions and details of the letters are identically the same, except where herein pointed out as different.

The student will draw these letters as on the previous plate, inserting date, name, and class letter and number, as before, being careful to space the letters uniformly, and making the letters in the three lower lines of the plate proportionately.

PLATE, TITLE: MEDIEVAL ROMAN.

1. This style of Roman letter, termed by some authorities *Antique Roman*, belongs to the historic period that its name indicates. There are three distinct features shown in this style of letter. The first of these features is a small spur added above and below the lettering lines; another is a projection of the inside line of the stroke beyond the fine line a distance of about $\frac{1}{3}$ stroke, as in the top of the letter *A* and the bottom of the *N*; and the third is the rounding of every angle of the letter where two fine lines or a fine line and a stroke intersect. The width of the stroke of these letters is $\frac{1}{4}$ " or $\frac{1}{2}$ the height. The spur is 1 stroke long, and is joined to the letter 1 stroke above the bottom, or below the top line, thus making the curve on the inside an exact quarter circle. All letters on this plate are 5 strokes in width, with the exception of such letters as have been heretofore described as always exceeding or falling short of these limits.

2. In the letter *A*, the fine line intersects the stroke at the point of the letter, and though the stroke on its inside is carried

past the fine line, the intersection takes place precisely as though this peculiarity did not exist. The horizontal fine line of the *A* is $1\frac{1}{4}$ strokes above the bottom of the letter. The lower curved portion of the *B* extends $\frac{1}{4}$ stroke beyond the upper curve, and the middle bar is $2\frac{3}{4}$ strokes above the bottom line. The spurs of the *C*, *G*, and *S*, and of the numerals *1*, *2*, *3*, *5*, and *7*, are finished with a fine line or secondary spur above or below the lettering line. In these three letters this little spur is opposite the point of the main spur; it should not exceed $\frac{1}{4}$ stroke in length, and is not vertical, but nearly so. The middle fine lines of *E*, *F*, and *H*, and the top of the vertical stroke of the *G*, are $2\frac{3}{4}$ strokes from the bottom line.

The letters *E* and *F* are $\frac{1}{2}$ stroke narrower than the regular width of the letters. The *L* is one stroke narrower, the *N* $\frac{1}{2}$ stroke narrower, the *M* 1 stroke wider than letters of regular width, and the *W* is $3\frac{1}{4}$ strokes wider. The *Y* is $\frac{1}{2}$ stroke, and the character *&* is 2 strokes, wider than the average width of the letters. The vertical stroke of the letter *G* has a spur added at the point where the curved line and the bottom of the letter intersects with it. This spur is about $\frac{1}{4}$ stroke in length. The letter *J* is $4\frac{1}{2}$ strokes in width, and extends 1 stroke below the line, the ball being 1 stroke in diameter and crossing $\frac{1}{3}$ stroke over the line. The curved portion is tangent to the ball of the left-hand portion, and intersects with the vertical stroke of the letter on the right side 1 stroke above the bottom line.

3. The *K*, like the letter *A*, has the inside of the slanting stroke projecting across its fine line; the intersection of the slanting stroke of the fine line is 2 strokes from the vertical stroke, and the fine line joins the vertical stroke $1\frac{1}{4}$ strokes above the bottom. The spur on the end of the fine line of the *L*, as of all other horizontal fine lines of this alphabet, extends outwards as shown, though on this letter the incline is somewhat more than on the *E*, *F*, or *T*.

The slanting stroke and the fine line of the *M* intersect midway between the fine line and vertical stroke of the letter, both intersections of the fine line and stroke at the top of the letter being 1 stroke below the top line. The projection of the upper

side of the slanting stroke on the right fine line of the *N* makes this letter the full width of 5 strokes.

The letters *O* and *Q* are circles on the outside, and the ellipses within, instead of being vertical, are inclined to the left, so that the longitudinal axis of the ellipse is about 1 stroke to the left on the top line.

The lower fine line of the letter *P* is $2\frac{3}{4}$ strokes from the bottom line of the letter. The fine line of the *R* is $2\frac{1}{2}$ strokes above. The tail of the *R* begins $1\frac{1}{4}$ strokes from the vertical stroke of the letter, and extends to twice this distance on the bottom line.

The spurs of the letter *S* are unequal in length, and the lower one is largely under the upper curve of the letter, while the upper one is $\frac{1}{2}$ stroke within a line of the lower curve. The horizontal stroke of the letter is $2\frac{1}{2}$ strokes from the bottom line.

The letter *W* is $8\frac{1}{4}$ strokes wide on top and $3\frac{3}{4}$ strokes wide on the bottom, and the intersection of the inside fine line and the right side of the stroke is 4 strokes from the left side of the letter. The interior triangles of the letter should all be of the same area.

The fine line of the *X* intersects the stroke $\frac{1}{2}$ stroke above the center of the letter, and the fine line of the *Y* joins the stroke exactly in the center of the letter.

4. The character & is designed so that the interior of the upper and lower portions of the letter incline the same as the elliptical interior of the *O* and *Q*, and some authorities carry this feature in the inside line of the *C* and *G*, but it is difficult to accomplish this without producing a distorted appearance, and has therefore been here omitted. The top of the & is $\frac{1}{4}$ stroke wide above the top line, and the right fine line expands to a width $\frac{3}{4}$ stroke at a point almost on the top line. The fine line intersects the lower outline of the stroke half way between the top and bottom line. The horizontal line of the spur is $\frac{1}{4}$ stroke above the center of the letter.

5. The fine line forming the top of the numeral 1 is at an angle of about 60° , and the broadest point extends above the top lettering line about $\frac{1}{2}$ the width of a stroke, the fine line extending the width of a stroke beyond the vertical stroke of the letter.

The curves of the *2*, *3*, and *5* are somewhat sickle-shaped, the top of the *3* being the only one with a spur above the top line. The *3*, *5*, *6*, and *9* terminate in a point 1 stroke above or below the line. The characteristic feature of the figures *3* and *4* in this style is the fine line, which is inclined at an angle of about 50° . The curved stroke of the *3* begins on the fine line at a point about $\frac{1}{2}$ stroke above the center of the figure. The figure *4* extends 1 stroke below the bottom line, and the horizontal bar is 1 stroke above the bottom line, $\frac{1}{4}$ stroke in thickness, and extends $1\frac{1}{2}$ strokes to the right and $3\frac{3}{4}$ strokes to the left of the horizontal stroke. The vertical fine line of the figure *5* is $\frac{1}{2}$ the height of the letter.

The upper fine line of the figure *6* is $\frac{3}{4}$ stroke below the top line. The slanting stroke of the figure *7* extends 1 stroke below the bottom line, and its lower right end is vertically below the center of the horizontal stroke of the figure on the top line.

The lower inside space of the figure *8* is made as large as possible, in conformity with the other letters of its style, the lower portion of the letter being 6 strokes in width and $\frac{3}{4}$ stroke wider on each side than the upper portion. The horizontal portion of the stroke is $2\frac{3}{4}$ strokes above the bottom line. The figure *9* is a reversed *6*, the lower fine line being $\frac{3}{4}$ stroke above the bottom line.

The student will execute all the work on this plate as in the previous plates, paying particular attention to the distinguishing characteristics of the letter, completing the plate with the date, name, and class letter and number in their proper places.

PLATE, TITLE: LOWER-CASE ROMAN.

1. The lower case of the four varieties of Roman letter are given on this plate, in order to show the comparative differences in their general design. The plate is divided somewhat differently from the previous ones, the lowest line being $\frac{3}{8}$ " above the lower border line. Another line drawn $\frac{5}{8}$ " above will mark the space for the last five letters of the alphabet. A similar $\frac{3}{8}$ " separating space and a line $\frac{5}{8}$ " above this will mark the first letters of the alphabet. The upper strokes of these letters extend $\frac{3}{8}$ " above

Lower Case
NEW YORK

abcdefghijklmnopqrstuvwxyz
vw

FRENCH

abcdefghijklmnopqrstuvwxyz
vw

ROMAN NUMERALS

I II III IIII IV V VI VII

MEDIAEVAL

abcdefghijklmnopqrstuvwxyz
vw

JUNE 25, 1893.

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e Roman.

ON ROMAN

lmnopqrstu
yz rstu

MAN

lmnopqrstu
yz VIII IX X XX·L·C·D·M·

MAN

lmnopqrstu
yz

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this line, and $\frac{1}{4}$ " space is left between their tops and the numerals.

The line containing the numerals is $\frac{1}{2}$ " high, and the space between it and the first letters of the French Roman alphabet is $\frac{5}{16}$ ". The last five letters of the French Roman alphabet are drawn $\frac{5}{16}$ " below the first line of letters of this alphabet, and all letters above it, except the titles, are $\frac{5}{8}$ " high. The space between the top of the French Roman and the lower line of letters above is $1\frac{3}{16}$ ", the space between the upper letters is $\frac{2}{8}$ ". The projection of the letters above the top, or below the bottom, lettering line is the same as in all three alphabets.

2. Only eight letters of the Boston Roman alphabet are shown, as this alphabet is practically the same as the New York style in every respect, excepting the proportionate widths of stroke and fine line, and any such other details as would arise from a difference of fine line and the way it finishes. These details have been explained in connection with the plate containing the capital letters in previous alphabets, and need not be repeated here. The bottom part of the vertical stroke of the *a* curves to a point in the New York alphabet, and finishes with a fillet at the end of a quarter circle in the Boston. The same difference will be observed in the finish of the vertical strokes of all letters in these two alphabets.

3. In the French Roman this termination in the letters is different, branching off at an angle from the vertical stroke and carrying both sides parallel, making a spur on one side and a bevel on the other side of the stroke.

The curve of the *a* is the same in the New York and Boston alphabets, bending downward to its intersection with the vertical stroke, while in the French Roman alphabet it intersects with the vertical stroke in an upward direction.

In the New York and Boston alphabets, the ball on the terminal of the upper fine line of the *a* and other letters is the same, but in the French Roman these letters are finished with a thickening of the fine line.

The width of the stroke in the first three alphabets is $\frac{1}{8}$ ", but that of the Medieval Roman is $\frac{1}{8}$ less. The top stroke of the *b*,

as well as that of all vertical strokes, except the *t*, in the New York and Boston alphabets, is horizontal, while the bottom stroke in each case is the reverse of the letter *a*.

The top of the *c* is the reverse of the top of the *a*; the letter *d* is the reverse of the *b* in each alphabet, except the Medieval Roman, the fine line of which intersects the stroke at the top of the body of the letter. The stroke of the *e* is cut off at a bevel in the first two alphabets, and brought to a point in the fine line in the lower two. The curved stroke of the latter is crescent-shaped.

The cross-line of the *f* in the first two alphabets is finished as a spur, but in the lower two it is a bar $\frac{1}{2}$ stroke wide, extending $\frac{2}{3}$ the width of the letter.

The letter *g* of the first alphabet extends $\frac{1}{3}$ its height below the line. The top part of the *g* is equal to the *o* and the bottom is a cyma, the right point of which continues in a fine line to the line below. The extreme lower portion of the *g* is the same in the first two and in the Medieval alphabet, except as to proportion, the latter being broader and more elongated, while the French alphabet differs in this respect by the omission of the return of the fine line.

There is little variety in the *h*, *i*, or *j* of any of the alphabets, except as to width and weight of the stroke. The tail of the *r* in the first two alphabets is practically the same; in the third it forms a half cyma, but in the fourth one it meets the fine line, terminating in a ball. The *s* of the Medieval Roman alphabet thickens at the ends of the fine line, and terminates with a fine-line spur in the same manner as the capital letter of that alphabet.

The last five letters, with the exception of the *y*, are closely allied in design to the capitals of the same alphabet, and the letter *y* is similar to the letter *v* with its fine line carried below the bottom lettering line and finished as shown.

4. There are no set rules governing the width of the stroke, the space between the strokes in the Roman numerals always depending on the circumstances under which the characters are used. On a circle, such as a clock dial, the stroke is light and

Germ

A B C D E F

G H I J K

L M N O

a b c d e f g h i j k

l m n

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Text

B H T A L M

R S T U V

X Y &

m n o p q r s t

u v z

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the space does not greatly exceed the fine line in this case. The numerals *V* and *X* are condensed as much as possible. The line at the top and bottom of the letter in many cases does not extend across the points of the *V*, as shown in the plate, but are cut off in the form of a spur for each individual numeral.

The numeral $\frac{1}{4}$ in some cases is written *IIII*, and in others *IV*. There is no rule governing which shall be used, although custom has made the former almost universal in dialing. In nearly all cases where these letters occur to represent numerals, they are condensed much more than any other letters of the same style on the same tablet or in the same inscription.

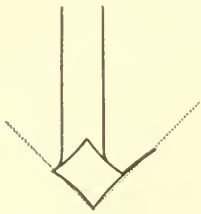
In the use of the Medieval Roman alphabet it was formerly customary to leave no space between the various words of the inscription, but to separate the words merely by a period, in the same manner as the numerals.

The student will draw this plate according to the directions given, proportioning the letters as directed, inserting the small titles over each alphabet, and observing particularly the characteristic differences existing in each one. After the plate is inked, insert the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: GERMAN TEXT.

1. The German Text is a style of letter originated toward the end of the Medieval period, and is closely allied to the Old English in many of its details. The identity of the letters themselves are somewhat more obscure than the Old English letters, as their general outlines are intended to conform more closely to the earlier styles. Some of the letters, such as the *O*, *Q*, *S*, etc., are scarcely recognizable as being the same characters with which we are familiar in the Roman type. This alphabet, like the Old English, is composed almost exclusively of combinations of cymas and crescents. The letters are not sufficiently regular to permit of a detailed description of each of their numerous proportions, and the student must use his judgment and measure by the eye to determine if the proportions of his letter are or are not in accordance with the plate.

Draw the lower line of the lower-case letters $\frac{5}{16}$ " above the lower border line. Make the lower-case letters $\frac{11}{16}$ " high, with a space of $\frac{1}{2}$ " between the bottom line and the line for the long strokes above, which is $\frac{5}{16}$ " from the bottom of the upper line of letters. The long letters extend above the line $\frac{5}{16}$ ". Between the tops of the long letters and the bottom of the last line of capital letters is a space of $\frac{3}{8}$ ", and the capitals are 1" high and $\frac{1}{2}$ " apart. The title is $\frac{9}{16}$ " above the top line of letters, its capitals being $\frac{7}{16}$ " high, while its lower-case letters are $\frac{5}{16}$ ", or in the same proportion as the lower-case letters below in the plate. In this alphabet the vertical strokes are $\frac{3}{8}$ ", and the curved strokes at the point of maximum width are $\frac{1}{3}$ stroke wider. The vertical strokes of nearly all the letters in the capitals and lower case are cut at an angle of 45° , their bottoms terminating in two spurs on the sides, to which is added a fine line on the right end, while the fine line is added to the left at the top. The proportion of this may be more clearly seen by a reference to the figure, which shows the vertical stroke together with the diagonal stroke, showing the relative position of each if they were separated. At *a* of the lower-case letters is shown the characteristic of the vertical stroke terminating on the bottom line with its point to the right of the



center of the stroke. It will be observed here that the points of this stroke, to the fine lines extending from them, are but the angles of a small rectangle, the width of which is equal to the stroke and the length of which is equal to about $1\frac{1}{4}$ strokes. This small rectangle is set with a point on the left of the center line of the stroke of the

letter, diagonally opposite the point resting on the lower line of letters and its sides inclined at an angle of 45° . This rectangle is changed to suit the width of letter and the part with which it is to be united. In the lower-case *i* and *j* it is set with its principal angle on the center line of the stroke; in the *p* it is set with its right angle on a line with the outside of the vertical stroke. This brings the projection of the stroke sufficient to the left to cause it to intersect with the vertical

stroke on the left of the letter, when the upper left-hand angle is slightly extended. In the capital letter *A*, it will be observed that the cyma and crescent-shaped stroke, forming its upper left side, are both repeated in several letters, while either one or the other stroke is to be found in all of the letters. The width of these capital letters is about equal to their height, with the usual variation in letters, which are always exceptions, such as the *M*, *W*, etc. The *M* and *W* are 50 per cent. wider than the other letters in both the upper and lower cases.

2. The principal thing in laying out this German Text is to give all the curved strokes the proper angle. Inaccuracy in proportion, either as to length or thickness, does not mar the appearance of the letter to such an extent as does the placing of the strokes at an improper angle. Many of the letters, when closely examined, will be found to be very much alike, and the stroke of the curved formations, once mastered, has only to be changed around and its size altered to make it a simple matter to combine it in any of the letters. Draw the vertical stroke of the *A* $\frac{1}{16}$ " to the right of the left border line. Draw the slanting part of the stroke, with its point and spur, as above described. Construct the half cyma of a sufficient length to make the letter 5 strokes wide, and draw the vertical cyma and crescent stroke, the latter to within $\frac{2}{3}$ stroke of the vertical and the former $\frac{2}{3}$ stroke from the latter. The upper left strokes of the *V* are similar in outline, but different in proportion, to those of the *A*. A half cyma forms the lower right curve of the *B*, and a full cyma, terminating in a ball, forms the lower stroke of the *B*. A short, thick cyma forms the top stroke of the letter, and finishes at a point directly over the extreme outside curve of the lower portion. The *C* is in outline a crescent, within which is hung from the fine line a cyma, the bottom of which is continued in a fine line and curved parallel to, and $\frac{2}{3}$ " from, the lower stroke of the letter. The top of the letter is finished on the top line with a half cyma. The lower stroke of the *D* is similar to that of the *B*, but longer and thinner. It rests on the bottom line and swings around to the left again, similar to the stroke of the *B*, but continues past the vertical stroke at the

top of the letter and curls up on the left side. The vertical stroke is then drawn as a cyma; its point pierces the top stroke, and its curved fine line is tangent to the bottom stroke. The letter *E* is similar to the *C*, except the addition of its ball and fine line. The letter *F* combines the two curves of the lower parts of two cymas, and is crossed at the top with a horizontal cyma, a ball and fine line similar to the *E* completing the characteristic of the letter. The left stroke and interior of the *G* is similar to the *C*, except that its interior cyma does not hang from the fine line, but crosses it, and its lower right fine line is continued around, deepening into a heavy semicyma, the inside line of which touches the vertical stroke and the top of which continues outward and upward, terminating in a ball at the top line. The letter *H* is composed of a vertical cyma, with a ball on its lower end and a semicyma on its upper end. The right stroke is a crescent, the left end of which terminates in a small hollow-sided rectangle. 1 stroke in each direction.

3. The letters *I* and *J*, combined in one character here, are very similar to the *F*, except that the lower strokes are much more inclined and there is no ball and fine line. In the letter *K* the left-hand vertical stroke does not begin with a ball, but starts from a small rectangle, and curves, tangent to the lower line, into a fine line and thence into a broad stroke at its center, and diminishes at its top line, where it again becomes tangent and returns to the front of the letter as a part of the fine line. Under this fine-lined arch, which is $\frac{1}{2}$ stroke above the line, is drawn a small semicyma, and under the semicyma are drawn the fine line and lower slanting stroke of the letter. The letter *L* is similar to the letter *J* reversed, but not quite so large. Its vertical cymas, too, are not inclined. The letter *M* is composed of the two crescent strokes terminating at the bottom in two semicymas, the points terminating below the line and finishing on the right side with a cyma and vertical stroke. The left stroke of the *N* is similar to the left stroke of the *A*, except that the crescent stroke is brought down full to the bottom line and the semicyma grows out of it to the left, as in the *M*.

4. The letter *O* combines the strokes of the letter *D* in a somewhat different manner. The vertical cyma inside the *D* is moved to the exterior edge, so that its center rests just to the right of the ball on the lower line. The right-hand top stroke is carried over, intersecting the vertical cyma at a point directly over the right-hand side of the ball of the lower stroke. The letter *Q* is precisely similar to this, except the tail. The letter *P* possesses a long vertical stroke, terminating below the line 2 strokes and tapering off to within $\frac{1}{3}$ of its width at the center. The upper left half of this stroke is precisely the same as that in the *N*, the upper right half supporting a semicyma, the lower point of which is tangent to the end of a semicyma resting on the lower line. There is considerable similarity between the letter *R* and the letter *K*, though careful observation shows that their details are entirely different in arrangement. The right lower stroke of the *R* is a vertical stroke terminating in a curve; the left stroke is a duplicate of the left stroke of the *N*, the difference being that where the vertical stroke intersects the top stroke the *R* reaches a horizontal line, which extends from its vertical stroke to its crescent stroke, while the *N* has no such detail. The stroke of the *S* is a horizontal cyma on top, a horizontal crescent at the bottom, and a horizontal cyma of reversed curves in the middle. The characteristics of the strokes in the *T* are readily understood, but a strong resemblance would be observed in the general outline of the *U* and that of the *A*, and on this account many German printers use a letter identical with the lower-case *u*. The *V* is also similar to the *B*, except that its right stroke is a cyma supporting a small cyma, and its bottom stroke is a cyma attached to a ball. The letter *W* is very irregular. The upper left stroke is the upper left stroke of the *A* and the lower left stroke is the lower left stroke of the *B*. The vertical, or nearly vertical, intermediate stroke is joined to the crescent after terminating into a looped fine line; the extreme right stroke is a cyma supporting another cyma similar to the right half of the *U*, but of different proportions. The middle stroke is then proportioned to conform itself to these other two. The *X* is simply a vertical stroke crossed by

a horizontal stroke. The *Y* is a combination of the left strokes of the *U* and *A*, with a vertical cyma and fine-line curve. The *Z* is composed of two crescents and a cyma, the middle stroke of which is 3 strokes above the lower line. The character *ſ* is shown in two forms, the first one composed of a vertical cyma, terminating in its upper end with a ball, and with two tangent cymas for its right stroke, being essentially the original German character, which is rarely used except in signs and inscriptions involving firm names essentially of a German character. The second *ſ* is a modification of the Old English form of the letter applied to this text for modern use in such places where the German text will be used to write English words or express English names.

5. The lower-case letters are similar in many respects, in regard to their formations, to the lower-case letters of the Old English alphabet. The stroke of these letters is $\frac{3}{4}$ that of the capitals, and the space enclosed between the vertical strokes of the *a*, *b*, *g*, *m*, *n*, etc. is about 1 stroke. The letters *p*, *v*, *w*, and *y* finish above the line with a semicyma; the top of the letter *f* finishes horizontally with a cyma, while a crescent-shaped stroke is inserted between the crossing of the *k* and the vertical line. The student will give the closest attention to the proportioning of these letters, comparing the details of each lower-case letter with those of the Old English alphabet and observing the strong points of similarity between different letters and this alphabet. For instance, observe that the *d* and *o* are precisely the same in outline, except that the former letter is continued above the line with a semicyma. The *c* and *e* are very nearly alike, with the exception of the fine line. The *r* and the *x* are identical, with the exception of the finish on the bottom line. The middle stroke of the *z* is in the center of the body of the letter, and the inclined stroke at the top is at an angle of 45° .

Having completed laying out the alphabet, the student will ink in this plate, as before, inserting the title in its proper place, and placing the date in the lower left-hand corner and the name, class letter and number in the lower right-hand corner.

A B C D E

F G H I J

K L M N

a b c d e f g h i

j k l m

JUNE 25, 1893.

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Text

F G H I J K

Q R R S

W X Y Z

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

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erved.

PLATE, TITLE: CHURCH TEXT.

1. This style of letter is seen in many of the old English cathedrals, and was originated in the monasteries of the Medieval period. It has been used in all church work, for stained-glass inscriptions and ecclesiastical decorations, and is seldom used for other purposes. It bears a strong resemblance to the Old English letter, which will be discussed later on, but in many respects it is simpler. In drawing this plate the first line is $\frac{5}{16}$ " above the margin line, and the lower-case letters are $\frac{11}{16}$ " high in the body and project $\frac{5}{16}$ " above and below the line. The space between the body line of the lower-case letters is $\frac{5}{8}$ ", and between the topmost line of the lower-case letters and bottom line of the capitals is $\frac{5}{8}$ ". The three lines of capitals are each 1" high and are spaced $\frac{1}{2}$ " apart. The title is $\frac{5}{8}$ " above the top line of letters, and its capitals are $\frac{3}{8}$ " high, while its lower-case letters are $\frac{2}{3}$ this height. It is practically impossible, in an alphabet of this character, to give a direct proportion of the various parts of the letter in terms of its stroke and fine lines. The vertical strokes are $\frac{5}{32}$ " in width and $\frac{1}{32}$ " wider in all curved strokes. In manuscript and inscriptions, either painted or drawn, the fine line is usually as thin as it can be made. In carved work and stained-glass work the fine line is governed by the material in which it is executed. The widths of these letters vary largely, but, like many of the more geometrical alphabets, the average width is about equal to the height. The letters *A*, *H*, *R*, *S*, and *T* are each shown in two forms, the choice of which is left entirely to the tastes and desires of the letterer, as either style belongs to this alphabet. The stroke forming the upper right-hand finish of the *B* occurs in a more or less curved form in the letters *H*, *N*, *O*, *P*, *Q*, and *R*, and is a combination of cymas and semicymas. The cyma has been used in the other alphabets, but forms an actual component part of the letter in this, as well as in the Old English and German Texts, and forms one of the most important characteristics of the letter. The student should therefore practice drawing the cyma separately until its form is so familiar to him that he can draw it in any position and in any direction.

2. In the first form of the letter *A* the cyma occurs 3 times, and each time, with but one exception, in a different position. The stroke at the bottom of the *B* is a cyma, the terminals of which are continued, to form a fine line, and again spread into semicymas, constituting the lower curved portion of the letter. The heavy curved stroke of the *C* is crescent-shaped, its interior vertical stroke being another reproduction of the cyma. In drawing these letters, gauge carefully by the eye the space between the strokes and also between the fine lines. The two vertical strokes of the *B*, and all other letters where vertical strokes are used together, are spaced about $\frac{1}{4}$ stroke apart, whereas the vertical cyma, as it occurs in the *C* and *G*, is 1 stroke from the inside of the crescent stroke, and the vertical strokes inside the *O* and *Q* are spaced 1 stroke away from the point on the top line forming the outline of the letter. The lower finishing stroke of the *D* is similar to the *B*, whereas the upper stroke, starting at the left extremity of the letter, sweeps down as an elongated cyma and diminishes to a fine line at the same point as did the same detail in the *B*. The two points, or spikes, that project from the left of some of the letters are located about the middle of the vertical stroke, except in the *A*, where they are raised to clear the fine line. The vertical strokes from which they project, as well as the fine lines that extend from these strokes in some letters, such as the *C* and *N*, are beveled off top and bottom at an angle of about 30° .

3. All except the curved lines of the letters should be drawn with the triangle; those being at the 30° angle can thus be easily rendered parallel. The letter *E* is a combination of vertical strokes, cymas, and, semicymas. The middle semicyma and the fine line that intersects it with the semicyma at the top, intersects the vertical stroke at the center. The lower stroke of the *F* carries this letter $1\frac{1}{2}$ strokes below the line. The letter *G* is very similar to the *C*, except that the crescent forming its left stroke is vertical, and its right stroke is brought around and finished as a semicyma with a like detail inside, as occurs on the bottom of *F*. The two styles of *H* are almost identical in their vertical strokes and top, the main difference

being in the character of the curve that forms the right projection of the letter. The letters *I* and *J* are combined in one character in this alphabet, the vertical strokes of which are similar to the *F*, except that the right one finishes with a curve at the bottom instead of a straight line, as in the former letter. The *K* is similar to other letters in detail, except in its right strokes, one of which is a compound curve and the other straight, inclining to the left at an angle of 60° . The lower stroke of the *L* finishes on one end with a curve, and on the other with a beveled and fine line at an angle of 45° . The vertical strokes are the same as those of similar letters, and two fine lines are attached to the horizontal stroke, which, with that of the *T*, by the way, are the only straight horizontal strokes in the entire alphabet.

4. The middle stroke of the *M* differs somewhat from the previous details of the alphabet, its upper end bending in full width to meet the fine line, while its lower end is finished with a spur on each side projecting $\frac{1}{2}$ stroke, coming to a point at the bottom. The extreme right stroke of the *M* is a cyma. The right stroke of the *N* is similar to the stroke of the second *H*, but with less curvature. The *O*, *P*, *Q*, and *R* project $\frac{3}{4}$ stroke above the top line, in the *O* and *Q* the point where this projection occurs being $\frac{1}{2}$ stroke to the right of the center of the letter. This gives the exterior of the letter a pear shape; the left stroke forms a crescent, and the right one a compound curve, between which the vertical stroke intersects the top of the letter with one of the lower fine lines. There are no new details in the letter *P*, the stroke being simply a combination of the previous curves. The first variety of *R* resembles the *B* in its upper portion, and the *K* in its lower portion. The second variety possesses that peculiarity of twist at the upper end of its right vertical stroke that somewhat resembles the middle stroke of the *M*, and finishes like the top stroke of the *D*. The letter *S* will be found a difficult one to make; the fine lines of the second one and the lower part of the first one, being at an angle of 45° , may be drawn first and used as guides to proportion the letter. The letter in either of its forms is

very similar; the first one is finished at the right of the half cyma with a ball, the lower fine line also terminating with a ball, somewhat after the manner of the Gothic style, though this and the *T* are the only two letters in the capitals of this alphabet that are so decorated. The first *T* is similar to the *C* in regard to its crescent stroke, while that of the second is carried its maximum width to the right, where it is cut off with a fine line and ball. The right stroke of the *U* is the reverse of the middle stroke of the *M*. The *V* is a combination of cymas and straight strokes directly proportionate, and the *W* is similar to the *V* in its right portion, with the addition of the vertical stroke on the left side. In drawing the *X*, make the compound-curved diagonal stroke first. Through its center draw the cyma. The fine lines will then intersect with the diagonal stroke at the angles between it and the cyma on the left-hand side, and are 1 stroke apart if carried parallel. The two strokes, or half cymas, of the *Y* are indentically alike, and are spread apart sufficiently to make their two points 4 strokes apart on the top line. The crescent finish of the letter extends 3 strokes below the line. The diagonal stroke of the letter *Z* is at an angle of 45° . Its full length over the break is $3\frac{1}{2}$ strokes. The break is 1 stroke wide on its inside, and the two fine lines intersect on the top line 2 strokes to the right of the diagonal stroke. The bottom of the letter, where the right point intersects with the bottom line, is directly below the corner of the lower side of the upper part of the diagonal stroke.

5. The stroke in the lower-case letters of this alphabet is the same as the vertical stroke of many of the capitals; the bottoms of the letters are in nearly every case terminated with two spurs extending to the right and left $\frac{3}{4}$ stroke above the bottom line. These lower spurs vary slightly in their projections, according to the letter, and are either a full stroke or a half stroke, the difference being readily discernible at a glance. The enclosed letters, such as *a*, *b*, and *g*, are 2 strokes wide on the inside. The letters *m* and *w* have their vertical strokes $1\frac{3}{4}$ strokes apart. The letters *r* and *x* are precisely alike, except the cross-bar of the *x* and curled terminal below the line. The letter *t* is crossed



6a

A B C D E

K L M N O

U V W

1 2 3 4 5

a b c d e f g h i j k l m

JUNE 25, 1893.

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H G H I J
P Q R S T
X Y Z
6 7 8 9 0
i o p q r s t u v w x y z

JOHN SMITH, CLASS N^o 4529.

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by a similar terminal, which extends from the upper line of the body of the letter to a point $1\frac{1}{2}$ strokes below the line. There is nothing about this alphabet that should cause the student any difficulty in its execution. Close attention should be given to each individual letter, noting all its peculiarities before an attempt is made to draw it. Then, if the student's design of the letter appears in any way unlike the original, he should study the above, learn the point of his error and correct it. In this letter, as in the previous alphabets, the curved strokes are somewhat heavier than the straight strokes, particularly the crescent-shaped strokes, the long compound-curved strokes not being so much so as the crescents, but at the same time heavier than the straight strokes. These variations are slight, but the fact that they exist must be noted in each case.

After drawing the plate, the student will insert the title, as shown, place the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: GOTHIC.

1. This style of alphabet was created during the closing centuries of the Medieval period, and is associated historically, as well as in its outline, with the ogival, or pointed arch, which at this time existed in the Gothic architecture. The letter in modern use is applied to church decoration, for the purpose of writing religious quotations, and in printing certain kinds of church literature, for which it is appropriate on account of its origin in the ancient monasteries. It is more legible than the regular Church Text, and therefore more often used, both for church work and in the province of the commercial letterer. In dividing the plate with lettering lines, the bottom line of the lower-case letters is $\frac{3}{8}$ " above the lower margin line, and the height of the body of the lower-case letters is $\frac{5}{8}$ "; the stroke of the long letters extends $\frac{2}{8}$ " above and below the line. From the top line of the body of the lower-case letters to the bottom line of the numerals is $\frac{5}{8}$ ", and the numerals are $\frac{1}{4}\frac{2}{8}$ " in height, with a space $\frac{1}{2}$ " between them and the lowest line of capitals. The capital letters are 1" high, with $\frac{5}{8}$ " between them, and the title is

$\frac{7}{16}$ " high; the lower case of the title is $\frac{3}{16}$ " from the top margin line. The stroke of the letters in this alphabet is $\frac{3}{16}$ ", and the fine line is $\frac{1}{4}$ stroke. The width of the letters average closely to 5 strokes, though there are many variations, owing to the eccentricities of outline. All the curved strokes of a letter are $\frac{2}{3}$ stroke wider than the straight strokes. In the capital letters *A*, *G*, *J*, *P*, and *T*, and in the lower-case letters *a*, *h*, *j*, *y*, and *z*, there is a fine line terminating in a round ball at the end of the letter; the diameters of these balls being 1 stroke in the capital letters, and somewhat more than 1 stroke in the smaller letters.

2. In the letters *A*, *E*, and *F*, where a middle bar extends entirely through the width of the letter, this bar is $\frac{1}{2}$ the stroke. On the top line, the letter *A* measures 6 strokes in width between the small knobs, which are equal in thickness to the fine line. This horizontal fine line, at the top of the letter, extends only $1\frac{1}{2}$ strokes to the right of the vertical stroke, and the curved line of the letter rounds out from the vertical stroke to a point 2 strokes distance at the horizontal bar, terminating in a ball $1\frac{3}{4}$ strokes below the line. The vertical stroke of the *A* is 6 strokes from the border line, and between it and the *B* are 4 strokes. The vertical stroke of the *B* is but 4 strokes in length, and the fine lines curving from the center of the letter at the top and bottom line cut the ends of the stroke in a slanting direction, projecting beyond and terminating in a ball $\frac{1}{2}$ stroke in diameter, the center of which is 1 stroke to the left of the letter. The inside space of the *B*, at the top, is $2\frac{1}{2}$ strokes, the bottom is $\frac{1}{4}$ of a stroke wider, and the points in the center of the curved strokes are $1\frac{1}{2}$ strokes above the bottom, and below the top, line, respectively. Between the *B* and *C* is a space of 2 strokes, and from the point of the *C* to its vertical fine line is $5\frac{1}{3}$ strokes. The left half of the interior of the *C* is a semiellipse, and the curved fine lines, top and bottom, are thicker as they approach the vertical fine line and become nearly tangent on the inside. Between the fine line of the *C* and the stroke of the *D* is a space of $3\frac{2}{3}$ strokes, and the latter letter is $5\frac{1}{2}$ strokes wide in the center. The left half, including the stroke and its termination, is precisely the same as the left half of the letter *B*, and the

right half the same as the letter *C* reversed. The general outline of the *E* is a duplication of the *C*, except that the vertical fine line extends $1\frac{1}{4}$ strokes above and below the letter, and terminates in small knobs the thickness of the fine line. The clear space between the *E* and the *F* is 4 strokes, and the vertical full stroke of the *F* is the same as that of the *A* reversed. The diminishing stroke on the right of the *F* can be readily recognized as an exaggerated spur, the origin of which has been seen in the previous alphabets. The inside of the letter is $2\frac{2}{3}$ strokes wide at the horizontal fine line, which horizontal line is 2 strokes below the top of the letter. The width of the letter on the top line is $6\frac{1}{2}$ strokes, and the finish below the bottom line is 1 stroke. The space between the *F* and *G*, at the intermediate horizontal line, is 2 strokes, and the left half of the *G* is constructed in the same manner as the left half of the *C*, while the right half is similar to the lower half of the *B*. The distance from the lower line to the top of the inside curve is $3\frac{1}{2}$ strokes, and the greatest width of the letter from point to point is $6\frac{2}{3}$ strokes.

3. Between the *G* and the *H* is 2 strokes, the vertical stroke of the latter being the same as that of the *F*, except as to its right finish on the top line. The curved stroke of the *H* makes the letter $5\frac{1}{2}$ strokes wide and carries it 2 strokes below the bottom line. The letter *I* is $3\frac{1}{2}$ strokes wide on the top and bottom line, 3 strokes from the *H* at the point of the curved stroke of the *H*, and 2 strokes from the *J* on the top line. The letter *J* is $4\frac{1}{2}$ strokes wide on the top line, and its upper horizontal stroke reaches its greatest thickness $1\frac{3}{4}$ strokes from the left-hand end. The left-hand fine line, which is nearly vertical, terminates in a knob 3 strokes below the top line. The ball on the bottom of the *J* has its center on the bottom line and its left side directly under the end of the top horizontal stroke. The letter extends $1\frac{1}{4}$ strokes below the line, is $3\frac{1}{3}$ strokes wide on the bottom line, and its curved stroke at the intermediate point reaches a thickness of $1\frac{1}{2}$ strokes, $3\frac{1}{2}$ strokes below the top line. The vertical strokes of the letters *K*, *L*, *N*, *P*, and *R* are formed precisely as the vertical strokes

of the other letters, variations being made in their terminations, but those variations in no way differ from similar ones in letters on the top line. The upper left-hand finish of the *P* and *R* is precisely the same as that of the *B*; the lower horizontal stroke of the *L* is the same as the upper horizontal stroke of the *J*, except that the letter is $5\frac{1}{2}$ strokes long. The curved stroke of the *N* is, in its lower portion, similar to that of the *H*, while its upper portion, where it joins the vertical stroke, is more like the *D*; the width of the letter at the center is $5\frac{1}{3}$ strokes. The curved strokes of the *K* reach a point on the top and bottom line that makes the letter 6 strokes wide. Their intersection and juncture with the vertical stroke takes place 3 strokes above the bottom line.

4. The letter *M* is $8\frac{1}{3}$ strokes wide at the center, and about $\frac{1}{2}$ stroke less at the bottom line. Its two points on the top line are about 3 strokes apart, and its right- and left-curved strokes are similar to those of the *C*, except that the enclosed ellipse is narrower. The middle stroke divides 1 stroke below the top line. The middle stroke of the letter at its center is 1 stroke wide, and the two interior ellipses are each 2 strokes wide. The letters *O* and *Q* are in outline a duplication of the left portion of the letter *C*, the tail of the *Q* being added, as shown, tangent to the center of the letter and extending to the right to within $\frac{1}{2}$ stroke of the outside. These letters are 7 strokes wide. The curved stroke of the letter *P* projects from the vertical stroke sufficient to make the letter $5\frac{1}{2}$ strokes wide, and extends below the top line 3 strokes. The upper part of the *R* is precisely similar, except that the ball on the interior is only the thickness of the fine line, in diameter, instead of the full stroke, as in the former letter. The tail of the *R* is nearly a straight line on its inside, with only enough curvature to prevent it from becoming straight; this stroke is $1\frac{1}{2}$ strokes wide, and its length between the lower ball, 1 stroke below the line, and the ball in the inside of the curve of the *R* is exactly 7 strokes.

5. The letter *S* is almost entirely included in a rectangle 7 strokes wide; the spur at the right-hand end on the top line

extends to within $\frac{1}{2}$ a stroke of the corner of the rectangle, while the spur on the opposite end of the letter on the lower left-hand corner extends the full width of the rectangle. The point on the heavy curved stroke touches the right side of the rectangle $1\frac{1}{2}$ strokes above the line, while the point on the left hand of the rectangle comes within $\frac{1}{3}$ stroke of the side, and is also $1\frac{1}{2}$ strokes below the line. The letter *T* is similar to the letter *G*, except that both of its curved strokes are of smaller dimensions. The top of the intermediate fine line, as it curls into the letter, is 3 strokes above the lower line. The horizontal stroke at the top of the letter is $5\frac{2}{3}$ strokes, and at its greatest thickness is 1 stroke wide. The intersection of the fine line of the body of the letter, with the crossing stroke at the top, is at the center of the letter. The letter *U* consists of a combination of the vertical stroke of the *A* and the curved stroke of the *C*, and is 6 strokes wide. The letter *V* is 7 strokes wide on the top line. The right slanting line of the *V* diminishes in width from a full stroke at the top to about $\frac{1}{2}$ stroke at the bottom, where it joins the left slanting stroke. The *W* is 8 strokes wide on the top line and the right portion is the same as the letter *U*, which is $5\frac{1}{2}$ strokes in width, to which is added a crescent-shaped curve and intersecting fine lines, this bringing the entire width of the letter up to 8 strokes. The letter *X* is $7\frac{1}{2}$ strokes wide, and the intersection of its curved strokes with the slanting stroke is just above the center of the letter. The letter *Y* is 7 strokes wide at the top line, and consists in a combination of the left stroke of the *V* and the right stroke of the *N*. The top and bottom strokes of the *Z* are similar to the bottom stroke of the *L*. The letter is $5\frac{1}{2}$ strokes wide. The spur on the bottom of the vertical stroke is 3 strokes long, while that on the top is $2\frac{1}{2}$ strokes long.

6. In the numerals the strokes are but $\frac{1}{8}$ " in thickness, in the straight characters, but extend to twice this thickness in the widest part of the curves. The top corners of the 3, 4, 5, and 7 extend slightly above the line, as do also the lower corners of the 2 and 7, as well as the spur on the end of the 1 and 4. The curves forming the sides of the 3, 5, 6, 9, and 0 are similar to

the curves forming component parts of the capital letters. The bottom stroke of the 2, the upper stroke of the 3, the left stroke of the 4, and tops of the 5 and 7 are each a semicyma. The horizontal fine line of the 4 extends 4 strokes to the left and $1\frac{1}{4}$ strokes to the right of the vertical stroke, the width of the stroke of the numerals being used for measurement. The intermediate stroke of the 5 is 4 strokes above the bottom line; of the 6, $4\frac{1}{2}$ strokes above the bottom line; of the 8, $3\frac{1}{2}$ strokes above the bottom line; while the 9 is $2\frac{1}{2}$ strokes above the bottom line.

The stroke of the lower-case letters is $\frac{3}{8}$ " wide. The width of all letters, except the *w* and *m* and the single-stroke letters, is $4\frac{1}{2}$ strokes. The spurs forming the terminations of the strokes, at the top and bottom of the letters, are carried from the center of the stroke on the top and bottom lines, either way, to a point about $\frac{1}{2}$ stroke from the line and $\frac{1}{2}$ stroke from the vertical stroke, and are given a slight curve to these points. The student should be able to design the other details of this lower-case alphabet from the general proportions of the original plate, being careful, if necessary, to measure each detail in the original, and proportion its length or thickness according to the stroke of the letter.

After executing the work on this plate in pencil, the student will ink it in, using the **T** square and triangle on the straight lines of the letters desired, and outlining all the curves and forming all the points on the curves of the strokes freehand, excepting the circles on the concave sides of the stroke of the capitals and numerals, which may be drawn with a compass if desired. The diameter of these little circles on the capital letters is $\frac{1}{8}$ ", and on the numerals $\frac{3}{4}$ that of the capitals. The balls on the *h*, *j*, *y*, and *z* of the lower-case letters are 2 strokes in diameter. The ball on the lower-case *a* is but 1 stroke in diameter. After the plate is inked in and the titles put in place, insert the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

Spencer

A B C C D
K L L M M
P P P Q Q
a b c d e f g h i j k l
1 2 3 4 5

JUNE 25, 1893.

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Script

E F G H I

N O P Q R

W X Y Z &

n o p q r s t u v w x y z
6 7 8 9 0

JOHN SMITH, CLASS N^o 4529.

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PLATE, TITLE: SPENCERIAN SCRIPT.

1. The term *script*, in its broadest and earliest application, included all styles of writing and printing, but custom has reduced the application of the term simply to that form of writing executed with the pen, which was formerly called *pen text* or *text hand*. The reduction to its present classification was caused more by the classifying of the other styles and leaving the term *script* to the pen text, rather than setting aside the pen text under the name of *script*, as was done with certain forms of early alphabets, such as the Medieval and Church Text. The earliest form of pen text was very simple in its construction, but it gradually grew complicated with the desire for elaborate lettering.

About the middle of the present century the form of alphabet shown on this plate was originated by Spencer, and gave to the world an entirely new and artistic form of text hand. This is the form that is used almost exclusively by the letterer and sign painter, and for all practical purposes where a shaded letter and accurate form is desired. In drawing this plate, the student will, as before, outline all letters in pencil, forming the strokes of the capitals and small letters of two individual lines, and so inking them with a pen, but blacking them in afterward with a No. 3 red-sable brush. In inking the lines, attention must be given not only to the formation of the curved fine lines and strokes, but also to the location and finish of these curves. When the letters are inked, it is of more importance that the student should secure the proper position for each line than that he should be able to form the curves with evenness and perfection. He must bear in mind that in executing this plate he is not to write the letters; he is not expected to make any one of the strokes or curves with a clean even sweep of the hand and have it perfect, but on the contrary, every detail of every letter must be carefully located and drawn, in order that the finished character may be a reproduction of the one on the lettering plate.

2. In dividing the plate, make the bottom line of the figures $\frac{1}{4}$ " above the lower border line. Draw lines limiting the top of the figures $\frac{3}{4}$ " above the lower one; leave a space of $\frac{5}{8}$ " between

the top of the figures and the bottom of the lower-case letters, and draw the lower-case letters $\frac{7}{16}$ " high. The loops of the lower-case letters, such as the *g* or *h*, extend $\frac{5}{8}$ " below and $\frac{1}{16}$ " above the lettering lines. Between the top of the long letters and the bottom of the capitals leave $\frac{1}{2}$ ". Capital letters are 1" high—the spaces between them, $\frac{5}{8}$ ". The capitals of the titles are $\frac{3}{8}$ " high, and $\frac{3}{8}$ " above the top line of letters. The small letters are $\frac{5}{32}$ " high.

3. In executing this plate, it will be practically impossible to give the student any idea of the exact location of each letter.

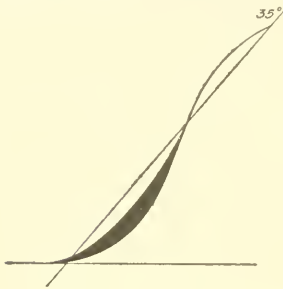


FIG. 1.

Judgment of the eye in comparison with the lettering plate, and close attention to the details of the copy, are all the guides that he can depend on to complete the details. He should bear in mind that the slant, or inclination, of the letters is always 35° , and in such strokes as those of the lower-case letters this angle can be easily kept; but the stroke that governs the capitals cannot be so easily determined. In Fig. 1 is shown a main stroke, such as forms the body of the letters *F*, *L*, *N*, etc., and its relative position to the 35° inclination line of the letter. The line of the angle is tangent to the stroke at the point where the shading begins, and passes through the shaded stroke on the bottom line. The divergence of the stroke from the line of inclination of the letter is the same in its upper and lower portions.

4. The drawing of these letters by means of inclined-angle lines will be found absolutely necessary at first, in order to secure satisfactory results, but the student will find, as his eye becomes trained, that this angle can be readily judged with great accuracy and the work executed entirely freehand. The stroke of the lower-case letters is $\frac{1}{16}$ ", and that of the capitals $\frac{3}{32}$ ". The shaded stroke of the capitals should, in such letters as have the stroke shown in the *A* and *L*, be below the center of the letter, the maximum width of the stroke being at a point 1 stroke above

the bottom line. While it is necessary to avoid the shading of all fine lines, there are cases, as in the letter *E*, where two shades are necessary in order to balance the letter and give it a more graceful appearance; but the shaded portion of a letter always represents the downward stroke of a pen or brush, and the shading of any of the upward fine lines would be in opposition to the characteristic formation of the letters. Every stroke of these letters is based upon a combination of the crescent and cyma. In the lower-case letters, the maximum thickness of the stroke of *a*, *d*, *g*, *o*, and *q* is above the center of the letter. In some alphabets, the tops of the letters formed similar to the *a* have their fine lines carried above the top line, as shown in Fig. 2, in which case the maximum width of the crescent stroke is above the center of the letter, and the general effect of the letter is oval. The points at the top of the *r* and *s*, and also the upper part of the loop of the *k*, extend above the top line. In executing the lower-case letters of the script in sign writing, one of the most difficult details is the joining of the fine lines and strokes in such letters as *a*, *n*, *u*, etc.



FIG. 2.

5. In Fig. 3, the stroke of the letter is shown to be practically a straight line until it nears the top or bottom lines at the left or right, as shown at *a, a*, when it commences to curve and at the same time to diminish to a fine line, which finishes the top or bottom of the stroke. This stroke and its accompanying fine lines, will be found to exist in the letters *a*, *d*, etc. In Fig. 3, the left stroke



FIG. 3.

is practically the reverse of the letter *i*, while the wide stroke is the other characteristic stroke that extends through the entire lower case. The dotted line through the center of the letter shows that the top and bottom of the stroke are duplicates, one of the other, and that the fine line, where it curves to join the vertical stroke, joins it in exactly the center of the letter. Comparison of this detail with the letters *h*, *m*, *n*, etc. will show its

application to the lower-case alphabet. The fine line should never intersect a stroke at a point above or below the center of the letter.

6. The two forms of strokes used in some of the capital letters are shown in the letters *A* and *B*. There are no rules governing which of these forms shall be used in the letters *P*, *B*, and *R*, under different conditions, this being left entirely to the taste of the letterer. The *A* stroke is used in *P* on this plate. The stroke shown in the letter *A* takes up a trifle less room than the one used in the *B*, and on that account is sometimes to be preferred.

7. Another variation of the capital letters, practiced by many expert letterers, is shown in Fig. 4, wherein the lower



FIG. 4.

part of the *C* is carried below the line and the first lower-case letter of the word is inserted somewhat within the letter. This treatment is applicable to the letters *C*, *E*, *K*, *L*, and *R*, and may be used in places where the space is limited and

the writing must be condensed, or to give an inscription a more graceful and freehand appearance.

8. The student must pay particular attention to the spacing of the inclined lines in the lower case. As said before, the proportions of strokes cannot well be given, but the horizontal width of most of the letters on a line through their centers will make them equal in this dimension to their height, with the exceptions of the letters pointed out in other alphabets. Careful observations of this, and the inclination of the letter at an angle of 35° , causes the student little trouble in the finishing of his work. A simple method of laying off the letters at the required angle is to make a small triangle of cardboard, one angle of which shall be 35° . This may be done by taking a piece of square card, and from one of its corners measure off a distance

Italian

A B C D E

M N O P Q

W X

abcdefghijklmnopqrstuvwxyz

1 2 3 4 5 *w x*

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Script

GHIJKL

RSTUV

Z &

mnopqrstuvw

YZ £ 67890

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red.

of 4"; at right angles to this, measure off a distance of $2\frac{3}{4}$ ", and join the points so sought with a line on which the cardboard may afterwards be cut. The two angles opposite the long and short sides adjacent to the right angle will then measure 55° and 35° , respectively, and the student can use this simple appliance for proportioning the inclination of his letters.

After drawing the plate and inking it in, as described, insert the title in its proper place, place the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

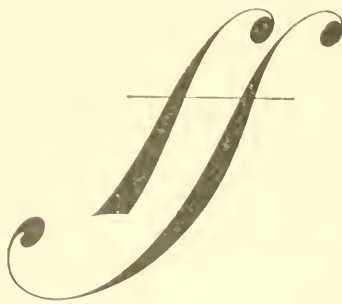
PLATE, TITLE: ITALIC SCRIPT.

1. This style of letter may be generally characterized as a Roman letter, the strokes of which incline to the right at an angle of 30° , or occasionally to the left at an angle of 20° . It is a letter that, after practice, can be executed with great rapidity, and is of great value to both the plain letterer and the draftsman. The capital letters are almost identical with the New York Roman, excepting as to the finishing of the spur on the fine lines of the *A*, *K*, and *V*, and occasionally as to the letters *M*, *N*, *W*, and *Y*, when these are finished in the same manner. The tail of the *R* is sometimes dropped $\frac{1}{3}$ of its length below the line, but in all other respects the rules governing the proportioning of the New York Roman letters will apply to these capitals. In drawing this plate, draw the line for the top of the numerals $\frac{13}{16}$ " above the lower border line and make the numerals $\frac{1}{16}$ " high. The lower-case letters are $\frac{9}{16}$ " high in the body of the letter and the first row of letters is $\frac{9}{16}$ " above the top line of the numerals. The five last letters of the alphabet are even with the top line that limits the height of the numerals.

2. The long letters of the lower case extend $\frac{1}{2}$ " above and below the bodies of the letters, and the space from the top of the long letters and the first line of capitals above them is $\frac{5}{16}$ ". The capitals are 1" high and $\frac{3}{4}$ " between each line. The long letters and capitals of the title are $\frac{7}{16}$ " high and $\frac{9}{16}$ " above the top line of letters. The proportion of the capitals and lower-case letters

in the title is the same as those in the body of the plate. The student will now draw the capital letters, as shown on this plate, spacing them by the judgment of his eye and proportioning them according to the rules laid down in the plate for New York Roman letters. The lower-case letters have a $\frac{3}{8}$ " stroke and average about 5 strokes in width, with the variation heretofore pointed out in other alphabets.

The tops of all the long letters are finished with a fine line and curved, as are also the tops of such small letters as *i*, *m*, and *n*. The letter *f* is reduced to a fine line and finished with a ball similar to the top of the letter *c*, the fine line appearing above the ball again as though a continuation of its outline. The bottom of the letter has an oval form, finishing with a small ball similar to the bottom of the letter *g*. Where the letters *f*, *f* occur in the middle of the word, the first reaches only



to the bottom line of the regular letters and is given a slight curve and cut off at the bottom, in the same manner as the letter *p* in this alphabet. The second letter *f* is then drawn as the one on the plate, its curved lower portion extending under the first one and the cross-line, or horizontal fine line, made continuous with the

two letters, as shown in the figure. The letters *j* and *y* are finished with a loop below the line, as in the ordinary script, the size of the loops varying slightly, according to the letter adjacent to them. The *p* and *q* are carried below the line with a full width of stroke, which is finished horizontally, though on the *q* the fine line is returned to the lettering line to distinguish it from the *g*. Either one of the two forms of *s* and *z* shown in this plate is admissible in ordinary Italic lettering. The first form of the letter *s* is the one usually made where there is much lettering to be done, as its form is simpler and it can be made quicker. The same rule applies to the second form of the letter *z*. Where two *s*'s occur at the end of a word, the first form is used and the first letter made a trifle smaller,

Ret

A A A B B B C C C

D D D I I I J J J K K K

P P P Q Q Q R R R

S S S W W W X X X

a b b c d d e e f g g h i j k l m m

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D D E E S F G G

L M M N O O

S T U U V U

Y Z Z &

o p p q q r s s t u u v w x y z

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its top reaching only to the top line of letters. The second, however, reaches above the line, as is shown on the plate.

3. The numerals in this style of letter are precisely the same as those in the New York Roman, their width being equal to their height. Should the student desire to lay out these letters by means of guide lines other than those for the tops of the letters, he can proportion them in the same manner as the letters of the New York Roman plate, drawing such horizontal lines through the letters as may be necessary to locate their essential characteristics, and spacing what would be the vertical lines in the New York strokes at an angle of 30° from the perpendicular for this plate. After drawing the letters, figures, and title, the student will black them in, as shown, inserting the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: RENAISSANCE.

1. Renaissance letters are of a great variety, the genuine characteristic of most of them being a lack of purity of style. The period of the invention of their design was about the middle of the 15th century, when great advancement was made in all art and architectural forms, and the discovery of ancient manuscripts and illuminated letters, embellished with classical ornaments, caused a divergence in the customs and styles in practice up to that time. In the capital letters of this plate are shown the style of Renaissance alphabet prevailing in Germany and its dependencies; it is known as the German Renaissance. The origin of the letter will be found in Italian writings, the Germans at this time occupying Northern Italy. The simplest style next to it is what is known as the French Renaissance, being more sober in its construction and less likely to be confusing in forming an essential part of an inscription. A peculiarity of the letter, in its German form, is the shape of a stroke strongly resembling the cyma, observable in many of the letters, but more particularly in the *F*, *K*, *M*, *N*, *S*, *U*, and *X*. This stroke was also adopted by the French when they modified their alphabet according to the German style. This stroke had its

origin in the shape of a cutlas that was used by the Germans at about the middle, or close, of the 15th century. It is most conspicuous in the French Renaissance in the top strokes of *E*, *F*, and *H*, although both the strokes of the *O* and the right fine line and the finish of the *W* and *Y*, as well as the crossing of the *T*, and details of other letters, show the influence of this characteristic. The other style of alphabet, as shown in this plate, is the modern adaptation of the German style or modern Renaissance, and is generally known among painters and in the printing trades as the Bradley text. The stroke is much heavier than in either of the former styles, and it is generally governed by rules derived from other alphabets, which did not influence either the French or German styles.

2. Many details show the influence of the Gothic alphabet, such as the tails of the *R* and *K*, while the *T* follows closely on the structural lines of the Old English or German text; however, this alphabet for modern use is much better suited to all styles of plain lettering than either of the former, but for elaborate initial letters or illuminated manuscript, the style of capitals used in the German or French text, with an elaborate fine-line background used with the former, makes a highly artistic design. In the lower-case letters, only two alphabets are represented—the German and the Bradley text. The German *a* is readily seen to be composed of two of the cutlas-shaped strokes and a small cyma, while the *a* of the Bradley text combines the vertical curved stroke of the Egyptian letter with the cutlas stroke of the German. These points may be studied throughout the alphabet, and are too evident to require individual explanation. The letters of the Bradley text, in the lower case, are as follows: 2-4-5-7-9-10-12-13-16-17-19-21-22-24-26-27-29-30-32-33-35-37-38. The three letters omitted are the *i* and *j*, which are made heavier than the German and dotted with a ball instead of a cyma, and the *w*, which is but two *r*'s joined together. In drawing this plate, locate the bottom line of the lower-case letters $\frac{3}{8}$ " from the margin line, the lower-case letters being $\frac{9}{16}$ " high. The long strokes of the letters reach $\frac{3}{8}$ " above or below the line, and their

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

a b c d e f g h i j k l m

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Marking

K H I O K L

R S T U V

Z & 6 7 8 9 0

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

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2. To draw this plate, make the line governing the lower part of the body of the lower-case letters $\frac{5}{16}$ " above the lower border line; the lower-case letters are $\frac{11}{16}$ " high, with a space of $\frac{9}{16}$ " between them. The strokes of the letters extend, in some cases, $\frac{5}{16}$ " above or below the lettering lines, as indicated. Between the top of the lower-case letters and the bottom of the lower row of capitals leave a space of 1". Make the capitals 1" high, and a space of $\frac{1}{2}$ " between each line. The title is $\frac{5}{8}$ " above the top line, and its capital letters are $\frac{3}{8}$ " high, the small letters being $\frac{2}{3}$ this size. The characteristic features of the alphabet consist of a number of cymas, half cymas, and crescent-shaped strokes. The straight strokes, where used, usually terminate at one or both ends with a spur on each side about $\frac{1}{2}$ stroke above the bottom line. The letters bear approximately the same proportion of width to height as did the Full Block letters, with the many variations necessary on account of their irregular form. The stroke of this letter is $\frac{3}{16}$ ", though it is not uniform in all parts, the crescent strokes in many of the letters being $\frac{1}{16}$ " wider. Where two cymas are adjacent, or a cyma stands near the vertical stroke, one of the cymas is usually made $\frac{1}{2}$ stroke wide at the thickest part; also, where a vertical stroke curves on the inside of the letter, as in the *C*, *T*, and *U*, the vertical stroke is a trifle less and the curved stroke is a trifle more in width than the full stroke.

3. In proportioning the letter *A*, draw the fine line from a point on the lower line $2\frac{1}{2}$ strokes to the right of the left-hand border to a point $5\frac{1}{3}$ strokes to the right on the top line. Then make the letter 5 strokes wide on the bottom line, and draw the fine horizontal line $2\frac{1}{4}$ strokes above the bottom; the heavy horizontal line being $\frac{1}{2}$ stroke in width, is drawn the thickness of the fine line below. The half cyma on the bottom of the fine line is $2\frac{1}{3}$ strokes in length, measured from its point on the line, and the return of its fine line after curving 2 strokes below is directly under the point of the letter. The letter *B* is $4\frac{1}{2}$ strokes in width to the outside of the cyma, exclusive of the spurs. The cyma, in its upper left-hand corner, is $3\frac{1}{2}$ strokes

A B C D E F

G H I J K L

M N O P Q R

a b c d e f g h i

j k l m n

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All r h

English

G H I J K L

R S T U W

Z &

k l m n o p q r s

x y z

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in length, and its right-hand point is over the center of the fine lines on the interior of the letter. The right stroke of the *B*, where it joins the curved fine line, is thinned down to $\frac{2}{3}$ stroke in width, and the upper stroke at this point curves around suddenly to form the fine line, terminating in a small ball. The crescent shape of the letter *C* is $5\frac{2}{3}$ strokes wide from the point to its left-hand side, the upper end extending $3\frac{1}{2}$ strokes to the right, and stopping over the center of the interior of the letter, the vertical stroke being $2\frac{2}{3}$ strokes long and terminating with a half cyma, which measures $1\frac{1}{2}$ strokes on the top line. The fine line joining the vertical stroke of the cyma and the bevel on the bottom of the vertical stroke, as well as all the diagonal lines at the ends of the letters in this alphabet, except as otherwise pointed out, inclines at an angle of 30° , but the line is not straight and always curves toward the interior of the letter. The letter *D* is $5\frac{1}{3}$ strokes in width to the outside of the spur of the cyma. The right vertical stroke and the top horizontal stroke are joined together at the angle by a sharp curve. The two fine lines in the center of the letter are $\frac{1}{4}$ stroke apart and $\frac{1}{4}$ stroke from the cyma. The letter *E* is composed entirely of cymas and half cymas. The space between the fine line and the first cyma of the letter is 1 stroke, between the fine line and the second cyma is $\frac{1}{3}$ stroke, and between the right-hand fine line and the projecting end of the top of the letter is 2 strokes, which is directly over the half cyma on the bottom of the line, exclusive of fine-line projection; the middle half cyma projects from the fine line $1\frac{2}{3}$ strokes. The *F* is drawn similar to the *B*, except that its middle stroke is finished like the *E* and its top stroke like the *C*. The *G* also resembles the *C* strongly, being precisely the same as that letter, with the exception of the right stroke, which is carried around and finished, as shown, coming to a point 3 strokes above the lower line; the lower corresponding point is 1 stroke above.

4. From the vertical stroke of the letter *H* to its fine line is $1\frac{2}{3}$ strokes, from the vertical stroke to the cyma is 2 strokes, and from the vertical line to the outside of the second cyma, exclusive of the spurs, is $3\frac{1}{2}$ strokes. The horizontal line of

the *H* is $\frac{3}{4}$ stroke in width, and its top is 2 strokes from the top line. The letters *I* and *J* are similar to *E* in their upright cymas, the difference being in the position of the heavy and light cymas, which are reversed. These letters, as the *H*, terminate on the top line where they are joined to the fine lines. The single fine line on the letter *J* is $\frac{1}{3}$ stroke to the right of the main cyma, which terminates in a heavy cyma at the bottom of the letter. The letter *K* is developed from the letter *I*, the slanting fine line leaving the vertical fine line of the letter at a point 2 strokes above the lower line, and intersecting the top line at a point $2\frac{2}{3}$ strokes to the right of the fine line. The lower heavy stroke intersects the fine line at a point 1 stroke from the first double fine line. The letter *L* is similar to the letter *E*, with the middle stroke left out and with the vertical cymas reversed, the heavy one being to the right. The left part of the letter *M* is similar to the letter *I*, and its middle and right portions consist of two vertical strokes, separated by a space of $1\frac{1}{4}$ strokes and $1\frac{1}{4}$ strokes from the heavy cyma. The fine lines within the letter are $\frac{1}{4}$ stroke apart and $\frac{1}{4}$ stroke away from the vertical cyma.

5. The letter *N* is $3\frac{2}{3}$ strokes wide between its fine lines, the slanting stroke intersecting with the left fine line 1 stroke below the top. The letters *O* and *Q* are identical in every part, except as regards the tail of the latter. The left crescent-shaped stroke forms a semiellipse on its inside, and its outside is 3 strokes from the nearest inside fine line. The other side of the letter extends $2\frac{1}{3}$ strokes beyond this fine line, and the inside vertical stroke is midway between the fine line and the crescent stroke of the letter. The letter *P* is similar in construction to the letter *L*, its main cyma being carried nearly to the top line and its right stroke carried $\frac{1}{4}$ stroke above the line and to the right sufficiently to make the letter $4\frac{2}{3}$ strokes wide. The vertical fine line of the letter falls from the point of intersection of the cyma and the right stroke. The left half of the *R* is similar to the *I*, though a trifle shorter; the upper right stroke is similar to that of the *B*, though care must be used to keep the tail of this letter vertical and not confuse it

with the slanting stroke of the *K*, although they may appear somewhat similar. In drawing *S*, the point at the lower portion of the letter, where the half cyma joins the fine line from the full cyma above, is exactly midway between the convex curves of the cymas forming the body of the letter. The half cyma extends $3\frac{1}{3}$ strokes to the left of this point. The right cyma extends $2\frac{1}{2}$ strokes to the right of this point, and its greatest convexity is $2\frac{1}{2}$ strokes above the bottom line. The left cyma reaches its greatest convexity $1\frac{1}{2}$ strokes below the top line. The space between the cymas is $\frac{1}{4}$ stroke, the right one being a trifle less and the left one a trifle more than $\frac{3}{4}$ stroke in width. The cyma at the top of the letter *T* is 5 strokes long; the inside vertical fine line is $1\frac{1}{4}$ strokes from its right-hand end. The inside vertical stroke is $\frac{2}{3}$ stroke from the fine line and also 1 stroke from the crescent-shaped curve that forms the body of the letter, the right finish of this curve being directly under the end of the horizontal cyma at the top.

6. The crescent spur at the end of the letter *U* is somewhat distorted in shape, in order to admit the insertion of the interior stroke, which is 3 strokes long and $\frac{3}{4}$ stroke from the crescent. The letter is finished on the right side with a vertical stroke, as shown, the entire width of the letter being $4\frac{2}{3}$ strokes. The vertical strokes of the *V* make the letter 2 strokes wide inside, the point on the top line of the letter being on a line with the inside of the right vertical stroke. The extreme right and the extreme left strokes of the *W* are but slight modifications of the right and left strokes of the *V*. The middle stroke, however, is a plain straight stroke terminating as shown. In the letter *X* the space between the diagonal stroke and diagonal fine line, if both were carried through to the lettering lines, would be $2\frac{2}{3}$ strokes on the top and $3\frac{2}{3}$ strokes on the bottom. The intersection of the stroke and fine line is $1\frac{3}{4}$ strokes below the top and $2\frac{2}{3}$ strokes above the bottom. The cross-bar of the *X* is $3\frac{1}{3}$ strokes long. The intersection of the fine line and vertical stroke of the *Y* is 3 strokes above the bottom line, and the width of the letter on the top line, if the fine line were carried through, would be 4 strokes, the vertical stroke being in the

center of this width. The strokes of the *Z* are modifications of similar strokes existing in the *S*, the half cyma at the bottom being $4\frac{1}{2}$ strokes long in the bottom line; the diagonal cyma being drawn to finish with the former almost tangent at a point $1\frac{1}{3}$ strokes from its left-hand end. The cyma on the top line does not reach to the left limits of the letter within 1 stroke, but is 3 strokes long, as it stops to the right side within $\frac{1}{2}$ a stroke of a vertical line drawn through the center of the ball and the end of the lower half cyma. The diagonal strokes of the character *d* incline at an angle of about 35° , the two upper strokes being 1 stroke apart, and the two lower strokes, $1\frac{1}{2}$ strokes apart. The diagonal strokes can be gauged by the eye and the character drawn in, as shown.

7. In drawing the lower-case letters, the interior space of all the enclosed letters is 2 strokes; the strokes of the small letters are $\frac{1}{8}$ " in width. In designing the small letters, draw all the vertical strokes first; then the diagonal fine lines that form the enclosures at the top and bottom of the letter are drawn at an angle of 30° . The spurs at the tops and bottoms of the vertical strokes are similar to those on the large letters and on the long strokes extending above or below the line. These spurs project $\frac{3}{4}$ stroke to the right and left of all the vertical strokes, finishing on the top and bottom lines, with the exception of the right-hand strokes of the *m* and *n*, which terminate with a curve. The vertical stroke of the *j* is carried $2\frac{1}{2}$ strokes below the line and is beveled off to the left in a curved stroke at an angle of 60° and terminates in a short and abrupt semi-cyma. A little study of this alphabet will show that there is a great similarity in the construction of all the letters of the lower-case alphabet. It is essentially a straight-line alphabet, there being only sufficient curved strokes to emphasize the characteristics of certain given letters.

8. The student in drawing this plate will have to give particular attention to the proportioning of the spacing of the letters on the plate, as well as to the drawing of the letters themselves. Owing to their irregularity in outline, no definite rules can be given as to the location of each individual letter,

and as the alphabet is a difficult one and likely to require considerable practice before it can be satisfactorily done, it will be best for the student to draw each individual letter on a separate piece of paper until he is familiar with it, and then redraw it carefully after its proper spacing has been located on the drawing paper. The first line of letters once properly spaced, the second line and third line can be located according to the relative position of their letters with those of the line above. It is not required that the student shall maintain exactly the same proportion and spacing as is given in the original plate, but whatever spacing he adopts must be uniform, so that the letters will not appear crowded in one part of the sheet nor spread apart in another, and that the spacing between the two ends of each line of letters and the vertical border lines shall be uniform.

After drawing the plate, insert the title at the top, put the date in the left-hand corner and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: ENGROSSING.

1. This style of letter, generally referred to as German Roundhand, is usually executed with a writing pen, designed specifically for this purpose. It is more of a pen alphabet than a brush alphabet, and but rarely enters into any of the work required by the sign painter or general letterer. It is largely used for the body of the information contained in engrossed resolutions or conventional forms, and before the invention of the typewriter was the letter exclusively used for engrossing wills, deeds, and other legal documents. Although the student will, in executing this plate, draw the letters in outline and fill in the strokes with a brush, it is advisable that he should understand the characteristics of the construction of the letter in order that he may better proportion the stroke itself and its diminution to the fine line. The pens used by the draftsman to do this work are of two forms—one with a plain, flat point like an ordinary stub pen, and the other style shown in the figure, with which the shaded-letter alphabet is drawn. The latter style possesses a double point, which at one stroke draws both a

— Eng

A B C D E F G H I J K

1 2 3 4 5

U V W X

a b c d e f g h i j k l m

A B C D E F G H I J

O P Q

a b c d e f g h i j k l m

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L M N O P Q R S T

U V Z

6 7 8 9 0

o p q r s t u v w x y z z

L M N

R S T U V W X Y Z

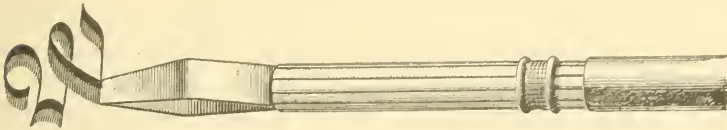
o p q r s t u v w x y z

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heavy stroke and a fine line, as in the open outlined letters and the shaded ones on the plate. The form of these pens is not unlike an ordinary stub, and is held in the hand, almost perpendicularly with the breadth of its point, at an angle of about 45° . The position of the point of the pen is not changed in forming any of the letters, the direction of its movement determining entirely the width of each stroke, and the points of its taper or diminution to the fine line. In the letter *A*, for instance, the pen is set in position to draw the interior crescent stroke to the left of the vertical stroke of the *A*. The pen is then moved to the left of this crescent, and the upper crescent is drawn so that the terminals of each come together. The lower crescent



of the *A* is then drawn as a continuation of the second one, thereby forming a curve somewhat like the letter *C*. The pen is again placed in position at the top of the second crescent, drawn vertically downward within 1 stroke of the bottom line, and then in a slanting direction to the right, until it touches the bottom line, and then in the direction of the inclination of the point, upward, making the terminal fine line. This operation, in varying forms, is repeated with every letter of the alphabet. Where the scroll curve occurs in any letter, each crescent or line of the curve is drawn separately, and terminated so that the fine end of one joins on to the fine end of another, except in the letter *C*, where at the top these lines are permitted to pass each other.

2. When the letterer desires to use this alphabet on a large scale, he usually outlines the letter, thickening the stroke and tapering it to a fine line in such places as would naturally occur if he were using a pen. The letters have no absolute proportions of width; they are based, in general, upon the Script alphabet, with a slight tendency toward the eccentricities of the German Text; but with sufficient latitude to enable the letterer

to vary considerably in establishing proportions, without seriously impairing the symmetry and smoothness of the appearance of the work. In designing this plate, the student will locate the bottom of the lowest line of letters $\frac{1}{4}$ " above the lower border line. Make this line of letters $\frac{7}{16}$ " high and leave $\frac{3}{4}$ " space between it and the line of shaded capitals. The top capital letters and numerals are $\frac{3}{4}$ " high, and the space between the shaded capitals and the outlined letters above them is $\frac{1}{2}$ ", while between the outlined capitals and the lower-case letters in black above them, is $\frac{9}{16}$ ". The lower-case letters are $\frac{3}{8}$ " high and the space from them to the capitals is $\frac{3}{4}$ ". The two upper lines of capitals and numerals are $\frac{1}{2}$ " apart, and the title is $\frac{1}{4}$ " high and $\frac{9}{16}$ " above the top line of letters.

3. In drawing these letters on the plate, the student will use his freehand pen entirely, outlining the letters, and completing the plate in outline before he starts to shade or blacken in any of the characters. The upper alphabets of capitals and lower-case letters may then be blacked in. One-half of the second alphabet, and all of its lower-case letters may then be shaded, as shown on the plate, and the second half shaded and tinted with horizontal freehand lines, drawn about $\frac{1}{32}$ " apart. Should the student so desire, he may draw the letters with an engrossing or round writing pen, after he has had sufficient practice with this instrument on a separate sheet of paper. The width of the pen at the point should be $\frac{1}{8}$ " for the capital letters, and $\frac{3}{32}$ " for the small letters. This, when inclined at the angle of 45° , will give a stroke somewhat narrower than either of these measurements, which is the proper stroke, as shown on the plate. The main thing to be observed in letters of this plate is their characteristics, due entirely to the position of the pen, and the direction of its movement in their execution. The general proportion of each letter is more or less dependent on this; the amount of curve and the direction to be given each stroke will be determined by the position of the pen and the direction of the stroke.

After completing the pages shown, the student will insert the date in the lower left-hand corner and his name and class letter and number in the lower right-hand corner.

¹ A B C D E F G H I J K L

a b c d e f g g h i j k l m = & c

² A B C D E F G H I J K L

a b c d e f g g h i j k l m = & c

³ A B C D E F G H I J K L M N

a b c d e f g h i j k l

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All :

Pen Stroke

N O P Q R S T U V W X Y Z

Æ = nopqrsstuvvwxyz

N O P Q R S T U V W X Y Z

Æ = nopqrsstuvvwxyz

O P Q R S T U V W X Y Z & Æ

o p q r s t u v w x y z

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PLATE, TITLE: ARCHITECTS' PEN STROKE.

1. This plate exhibits three forms of the Pen Stroke alphabet and their corresponding lower case, used under varying circumstances, but almost exclusively for architectural drawings. The letter is constructed so that it may be easily drawn without the use of any instrument save an ordinary pen or a drafting pen. The letters should be made perfectly clear and legible, expressing its words without study necessary on the part of the observer. The letters are free from any conventional proportion, there being no rule for stroke or width of letter other than those prescribed, according to the circumstances of each case. The stroke should usually be made heavier when drawn on tracing cloth, in order to produce a clear print, but in the lettering of the details of a paper drawing the stroke can be as fine as the draftsman may desire. The general proportions for the letters in alphabet No. 1 require that their width shall be $\frac{4}{5}$ their height, while the width of alphabet No. 2 is equal to the height. In alphabet No. 3 the letters vary, the main purpose being to produce a letter by the use of the triangle and **T** square that can be completed in straight lines without freehand additions.

2. In drawing this plate, the lower-case letters of the alphabet at the bottom are $\frac{1}{8}$ " above the lower margin line. The letters are $\frac{5}{16}$ " high, and the long letters extend $\frac{3}{16}$ " above and $\frac{1}{4}$ " below the lines. The bottom line of capitals corresponding to this lower case is $1\frac{3}{8}$ " from the margin line. The letters are $\frac{1}{2}$ " high. The lower-case letters of alphabet No. 2 are 1" above these capitals, and are the same height, and extend the same distance above and below the line as do the other lower-case letters. From the second line of capitals to the lower-case letters of alphabet No. 1 is 1", with a space of 1" between them and the capitals, and a space of $\frac{1}{2}$ " to the title, the capitals of which are $\frac{3}{8}$ " high. The capitals and the small letters, alphabets No. 1 and No. 2, are the same height as those in the lower alphabet. The inclination of the letters in alphabet No. 1 is 30° .

3. The strokes of the letters are frequently projected beyond the limits of the normal letter, either as a scroll, such as occurs in the *C* and *E*, or as a compound curve, observed in the *G* and *R*. Wherever the scroll occurs, the end should be finished with a dot. The regular straight strokes of the letter are usually finished with a spur in the form of a short, straight line, which crosses the stroke at about an angle of 30° with the horizontal line. In some cases the stroke of one letter is carried over to interfere with another, as may be observed in the tail of the *Q*, the middle stroke of the *R*, etc.

4. Occasionally, the initial letter will be extended to cover over or extend under an entire word, as shown in the figure, but in the use of any such eccentricities, legibility, the chief object of the letter, must never be overlooked. While these conditions



apply to all the alphabets, it is more particularly to No. 1 on this plate that we refer. Alphabet No. 2 is a modified form of the French Roman, without any distinction between the stroke and fine line. The spur should be very small, the tendency of the draftsman usually being to make it excessive. There are no spurs in the lower-case alphabet. Alphabet No. 3 is made entirely with the **T** square and the triangle, and requires no freehand penciling before laying it out.

5. The upper and lower lines confining the letters should be drawn first, the letter *A* located in its proper place and drawn in ink, and then, after approximately spacing the distances, the vertical lines of the letters *B*, *C*, *D*, *E*, etc. should be drawn in ink without further instructions.

¹ A B C D E F G H I J

² A B C E S T U V

³ A B C D E F G H I J

⁴ A B C E S T U V

⁵ A B C D E F G H I J K L M N O P

abc defghijklmnopqrstuvwxyz ⁶ a

⁷ A B C D E F G H I J K L M N O P
1 2 3 4 5 abc defghijkl

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STYLES

KLMNOPQR

VXYZ

⁸
Backhand, Pen-Stroke Letter

KLMNOPQR

VXYZ

⁹
Shaded Italic Script

RSTUVWXYZ-123456789

cdefghijklmnopqrstuvwxyz

PQRSTUVWXYZ

opqrstuvwxyz 67890

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When this plate is finished, make a careful comparison of each letter of your own plate with that of the copy, and endeavor to criticize and detect for yourself any irregularity or error that may exist. If this error is in the proportioning of the letter, correct it before your plate is sent in for correction; if it is simply an error of location or spacing, let it stand, and, unless very serious, it will not be counted.

When satisfied that every detail is up to the standard, insert the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: DRAFTSMEN'S STYLES.

1. Many topographical and mechanical draftsmen, as well as civil and mechanical engineers, contend that the style and quality of lettering on a map, survey, or drawing is of little importance so long as it expresses what is intended in the parts referred to. With some there is a feeling that extensive lettering, or even careful and accurate lettering of a map or drawing, is time wasted, and that the real effort of their work should end with the finishing of the drawing itself. That this is a grievous and serious mistake for any finished draftsman needs no further proof than the fact that the government of the United States has recognized the importance of accuracy in map lettering to such an extent as to establish certain rules that shall govern the lettering of each individual part of a map, using a certain sized letter for certain objects or localities of importance, and larger and smaller letters for localities of greater or less importance. Each style of the letter is used uniformly, to indicate the character of the surface or division of the country lettered. For instance, all waterways, lakes, etc. are lettered in various sizes of *Italic* letter; railroads and engineering improvements are lettered in an inclined block letter; cities are lettered in Roman capitals; smaller towns in capitals and lower-case letters; etc. All of the principal letters used in this work, as well as several other styles, are given in this course of instruction for draftsmen, but their specific application is a matter of separate study and does not form a part of this Course.

2. In drawing this plate of letters, draw the bottom line of numerals $\frac{7}{16}$ " high and resting on the lower border line. Between this and the letters above is a space of $\frac{5}{8}$ ", and the letters themselves are $\frac{9}{16}$ " high. The lower alphabet of lower-case letters is $\frac{5}{16}$ " below the capital letters of that alphabet, or about $\frac{1}{8}$ " above the bottom line, and $\frac{5}{16}$ " high.

The line of letters numbered 6 is $\frac{3}{8}$ " above the line numbered 7, the lower case of alphabet No. 5, to the left, being $\frac{5}{16}$ " high in the body of the letters, and the alphabet to the right, $\frac{5}{32}$ " high. From the top of the former to the letters in No. 5 is $\frac{1}{2}$ ", and the letters are $\frac{7}{16}$ " high. Above this, a distance of $\frac{3}{8}$ ", the heavy line containing the last eight letters of the alphabet is $\frac{5}{8}$ " high, and all the heavy lines above this are spaced $\frac{1}{2}$ " apart and $\frac{5}{8}$ " high. The four letters in lines 2 and 4 are $\frac{3}{16}$ " below the line immediately above them, while the small lines of letters numbered 8 and 9 are each $\frac{1}{8}$ " high, and located with their small letters in the center of the space occupied by the alphabet immediately to the left. The panel containing the title, the length of which is 5", is $\frac{1}{2}$ " wide and $\frac{1}{2}$ " above the top line of letters. The height of the letters in the panel is $\frac{1}{4}$ ", the stroke is $\frac{1}{5}$ their height, and the white outlined border is 1 stroke in width. Beginning with the top line of letters, the stroke of which is $\frac{1}{5}$ the height, the student may locate the center of the top of the A 3 strokes from the left border line. The letters of this alphabet are all 5 strokes in width, except the L, which is only $4\frac{1}{2}$ strokes; the M, which is 6 strokes; and the W, which is 7 strokes in width. It will be observed that this alphabet is very similar in many of its details to the Half Block alphabet drawn on the second plate, but with two exceptions; one, that the width of the letter is equal to its height, and the other, that the letters with beveled corners do not possess that bevel on the inside of the stroke. The former of these exceptions may be varied according to the conditions in which the lettering is to be done. Certain drawings may require that the letters shall be elongated or condensed, thus destroying the proportion of width to height; but the condition regarding the bevel existing on the outside of the letter only, should never be altered, as omitting the bevel on the inside of small letters contributes

to the sharpness and clearness of the outline, as may be seen in the letters of the title.

3. Alphabet No. 2 shows an alphabet, or at least a portion of it, the proportions and general outlines of which are similar to No. 1, with the addition of the spur, as in the Antique Half Block plate. The student should experience no difficulty in executing this alphabet, should he so desire, in any of his work, as the general principles of the letters are precisely the same as in alphabet No. 1. In designing the other letters, no spur should be placed on the left extremity of the *J* nor on the tail of the *R*, and the small spur that exists on some letters where the bevel stroke intersects with the vertical stroke should never exceed in size $\frac{1}{2}$ the regular spur. No spurs on any of the letters should project above the line, except on the letters *C*, *G*, and *S*. Alphabet No. 3 is a repetition of the Egyptian letter already drawn in that plate, excepting in the letters having rounded strokes. The *O* and *Q* in this alphabet are perfect circles, while the strokes of the other rounded letters are all elliptical curves. The letters are somewhat similar in many respects to alphabet No. 1, the left extremity of the *J*, however, extending higher above the lower line, and the rounded letters, such as the *C*, *G*, *O*, etc., having their convex edges a little above and a little below the lettering line. This protuberance of the letter is only noticeable when horizontal lines are drawn limiting the top and bottom; but if it is not done, these letters will appear shorter than the others when a line of lettering exists alone. Alphabet No. 4 is similar to the Antique Egyptian plate, and in this is embodied some features referred to in the previous alphabet. The spur is added precisely as in alphabet No. 2, excepting in the letters *C* and *E*, all letters of a similar character partaking of the same peculiarity.

4. Alphabet No. 5 is one of the most important alphabets the draftsman is required to be familiar with. This style of letter is used in descriptive matter on all classes of drawings. It is a single pen-stroke letter drawn rapidly, freehand, and when executed at a uniform angle and properly spaced, presents

a line of very neat work. The principles on which these letters are constructed are shown in the oval of Fig. 2, and the characteristic curve by which such letters as the *m* and *u* are joined, is shown in Fig. 3. The angle of these letters is three parts base to eight of height, as shown in Fig. 1. The round letters of the lower case, which are shown to the left of alphabet No. 6, are not elliptical, but oval, and students should practice that curve repeatedly before executing the plate. If the capitals of alphabet No. 5 are drawn perpendicular, instead of at the angle shown in Fig. 1, then the lower-case letters shown to the right of those belonging to alphabet No. 5 will be used. These lower-case letters, alphabet No. 6, are elongated, and made to fill a space often occurring in drawings, which is too narrow for the regular proportion, as shown in the line above. When this



FIG. 1.



FIG. 2.



FIG. 3.

style is used, the capitals and long letters of the lower alphabet should be twice the height of the small letters of the lower alphabet.

5. Alphabet No. 7 is an engraving alphabet, or, as it is sometimes called, Round Writing, and is made with a shading pen especially designed for this writing, and used with ordinary writing fluid or India ink. The angle of the up stroke, or fine line, of the pen should be about 45° ; the heavy strokes should always be made with a downward movement of the pen, and the fine lines either united or, as in the *R* and *S*, terminated with a slight space between the points. The letters in No. 8 are backhand pen-stroke letters, as indicated, and are used for similar purposes with alphabet No. 5, and can be executed with great rapidity where time in the lettering of a drawing is of importance. This letter must always be of uniform angle and somewhat condensed.

QUIESCENT

א ב ג ד ה

ו ז ח ט י כ ל

QUIESCENT

מ נ ס ע פ צ ק ר

FI

ש ת מ נ

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All

REW

h r u z ch t

l m n p

q v sh t

IAL

n f ts

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6. The shaded Italic Script shown in No. 9 is a letter in general use for important lettering of drawings, such as titles, etc., where it is especially beneficial in giving a variety and thereby improving the appearance of the drawing. The title of the drawing shows the letter treated in a different manner, but proportioned precisely the same as the other letters in alphabet No. 1. The letter is carefully outlined, as in the previous cases, and then the background is blacked in, leaving the letter in relief instead of blacking the letter itself. The shaded strokes of alphabet No. 7 and letters in No. 9 may either be outlined with a fine pen and blacked in subsequently, or they may be made with a single stroke of the fine soft pen, the strength of the line being altered by the pressure, or in the case of alphabet No. 7, with a round writing pen previously described. The student should execute the plate as shown, paying particular attention to the spacing and proportioning of each of the strokes in each of the letters. There is nothing in this plate that is essentially new, but there is much in the arrangement, location, and proportioning of details that will test the attention he has given to, and the knowledge he has derived from, the work on previous plates.

After the plate is completed the student will insert the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner, as usual.

PLATE, TITLE: HEBREW.

1. This alphabet, though not considered until nearly the end of this Course, is, in point of chronology, the earliest form of letter with which we have so far had to deal. It is not the intention here to instruct the student as to the sound represented or the names given to the different characters, but to familiarize him with the forms and principles that govern the different letters, so that he can execute the same from a rough copy, when required to design an inscription for the stone cutter, marble worker, metal worker, or the engrosser.

2. In executing this plate, locate the lower lettering line $\frac{5}{16}$ " above the lower margin, which gives the bottom of *M* only.

Make these letters $1\frac{1}{8}$ " high throughout the alphabet, with a space of $\frac{7}{8}$ " between the two lower lines, and $\frac{3}{4}$ " between the upper lines. The title is $\frac{3}{8}$ " high, the word "Final," $\frac{3}{16}$ ". The average width of the stroke of these letters is about $\frac{1}{4}$ ", and the fine line about $\frac{1}{16}$ ". The English characters, for which the letters stand, are marked by the side of them, and the following names in their regular order will enable the student to discern which ones we refer to in the subsequent descriptions: *Aleph, Beth, Gimel, Daleth, He, Vav, Zayin, Cheth, Teth, Yod, Kaph, Lamed, Mem, Nun, Samech, Ayin, Pe, Tsaddik, Koph, Resh, Shin, Tav.* The final letters are *Kaph, Mem, Nun, Phe,* and *Tsaddik.*

3. Some of these letters resemble each other so closely that the closest attention is necessary, in order to distinguish the characteristic points. The cyma, which is the main stroke of the first letter *Aleph*, is more pronounced in this than in some other Hebrew alphabets, thus showing that there is opportunity for variation in this detail. The lower stroke of the second letter, corresponding with *B*, extends to the right of the fine line $\frac{1}{4}$ stroke, while in the next letter, *G*, it is but $1\frac{1}{2}$ strokes in length, and does not quite reach the fine line. The character corresponding to *D* and that corresponding to *R* are very similar, the distinguishing characteristic being that the former is carried almost to a point at its upper right-hand side, while the latter curves off to the fine line. The vertical stroke of the *H* does not reach to the cyma at the top of the letter. The letter *Y* is cut off short, finishing 2 strokes above the bottoms of the other letters. The dot inside the letters *B, K, T,* etc. must never be omitted, as the letter will not then possess its proper value. In the character corresponding with *M*, a space of $\frac{1}{2}$ stroke is left between the fine line and the bottom horizontal stroke. The quiescent *Ayin* somewhat resembles the letter *Y*, and the tail of the letter extends from the bottom line, at an angle of about 60° , to a point vertically under the top. The short stroke of the *P* is finished $\frac{1}{2}$ stroke above the horizontal stroke, with a short fine-line spur toward the left. The dot of the letter rests upon what is really the lettering line, which extends practically through

UNCIAL

A B Γ Δ
I K Λ M
P Σ T Υ

α β γ δ ε ζ
ν ξ ο π ρ σ

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GREEK

Ε Ζ Η Θ
Ν Ξ Ο Π
Φ Χ Ψ Ω

η θ ι κ λ μ
τ υ φ χ ψ ω

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the center of the letters, a characteristic in which this alphabet differs from all others.

4. The student in forming these letters will pay particular attention to the proportion of each, according to the width of its stroke. Notice the position of the cyma, with regard to the lettering lines, between which the characters are drawn, and also the location of other details, with respect to the horizontal lines, on which the script letters rest and below which the Hebrew letters, in nearly every case, extend. Note the combination of similar details existing in different letters, as was the case in the Old English and German Text alphabets; the *T*, for instance, possessing, as its right stroke, the same character as stands for the letter *R*, the upper stroke of the *B*, and the right stroke of the final *F*. Note also that in general appearance the letters *T*, *M*, *S*, *P*, and final *M* are very much alike, but when analyzed, as to the shape and proportion of their strokes, are entirely different. On the other hand, observe that the character standing for *Ts* in the middle of a word is totally different from the character standing for the same letters at the end of a word. The only difference in the characters standing for *S* and *Sh* is the position of the dot.

The student will lay out this plate in outline as in the previous ones, black in the letters with a brush, and print in the title in a Roman letter $\frac{5}{8}$ " above the top line of the Hebrew letters. The word "Final" over the last line of Hebrew letters is $\frac{5}{16}$ " above them.

After the completion of the plate, write the date in the lower left-hand corner and the name and the class letter and number in the lower right-hand corner.

PLATE, TITLE: UNCIAL GREEK.

1. The Uncial Greek alphabet is distinguished from the alphabet of minuscules in the same sense that capitals are distinguished from lower-case letters in the Roman alphabet. The minuscules, however, are not always used in the exact relation of lower-case letters to the Uncial Greek, nor are the latter used entirely as capitals. The uncial letter is always used at the

beginning of proper names and the first word of a sentence, whether the whole sentence is written in this style of letter or not.

2. In designing this plate, draw the line limiting the bottom of the letters $\frac{1}{4}$ " from the lower border line. The minuscules are then made $\frac{3}{4}$ " in height, with a space of $\frac{3}{4}$ " between them. From the top of the minuscules to the bottom of the uncial letters, a space of 1" is left. The uncial letters are 1" high, with a $\frac{1}{2}$ " space between them, and the title is $\frac{1}{4}$ " high and $\frac{1}{2}$ " above the top line.

3. There are but 24 letters in the Greek alphabet, and as their forms are in many respects different from the Roman letters, it is well that the student should know them by name in their regular order, that proper comparisons with them and other alphabets can hereafter be made.

The names are as follows: *Alpha, Beta, Gamma, Delta, Epsilon, Zeta, Eta, Theta, Iota, Kappa, Lambda, Mu, Nu, Xi, Omicron, Pi, Rho, Sigma, Tau, Upsilon, Phi, Chi, Psi, Omega.*

The stroke in this letter is a trifle less than $\frac{1}{4}$ " wide; the general width of the letter is about 4 strokes, excepting round or extended letters, which are wider and can only be judged by their relative proportions. The average width of the minuscules is $\frac{9}{16}$ ", and their form can best be reproduced by drawing the lettering lines at the top and bottom of the letters on the plate, and judging the proportion of the Greek letter in the copy as it projects above or below this line.

4. The letters *Alpha* and *Beta* are similar to the Roman characters *A* and *B*, with the exception of the spur, which is $\frac{1}{2}$ stroke in length and but $\frac{1}{4}$ stroke in width where it joins the letter. There is no letter *C*, and the *Gamma* (*G*) is similar to an inverted *L*. The *Delta* (*D*) and *Lambda* (*L*) are similar in outline to the *Alpha*, except that the former has a horizontal stroke and the latter possesses no horizontal fine line. *Epsilon* is similar to the Roman letter *E*, and *Zeta* corresponds with the Roman letter *Z*. The *Eta* is very similar to the Roman letter *H*, but is the character used in the Greek for the long sound of the letter *E*. The *Theta* (*Th*) is similar in outline to the *Omicron*

(*O*), except that it has a cross-bar in the middle, which is $\frac{1}{2}$ stroke wide and reaches to within $\frac{1}{4}$ stroke of the curved outline. The *Iota* and *Kappa* are similar to, and correspond with, the Roman letters *I* and *K*. There is no letter *J* in the Greek alphabet. *Lambda*, the equivalent of the Greek letter *L*, is similar to an inverted *V*, or an *A* without the horizontal fine line; and *Mu* and *Nu* correspond with, and are similar to, the Roman letters *M* and *N*. *Ni*, corresponding somewhat to the letter *Z*, is drawn with three horizontal strokes, the intermediate one being 1 stroke shorter on each end than the two outside strokes. *Omicron*, as said before, is similar to the letter *O* of the Roman alphabet. *Pi* is similar to the *Eta*, or the letter *H*, without the horizontal fine line. *Rho*, the Greek letter *R*, is identical with the Roman letter *P*, except as to the spurs. *Sigma*, the Greek letter *S*, is unlike, in its general appearance, anything in the Roman alphabet, but its slanting stroke and fine line are the same inclination as those of the *X*. *Tau* is similar to the Roman *T*. In the Greek, *Upsilon* is the character that stands for the Roman letter *Y*, to which it is closely related in outline. *Phi*, *Chi*, *Psi*, and *Omega*, the last four letters of the Greek alphabet, correspond to *Ph*, *Ch*, *Ps*, and the long sound of *O*, respectively. The *Phi* is similar to a letter *I* passed through a low, broad eclipse; the *Chi* is similar to the Roman *X*. The *Psi* is a character entirely different from anything we have heretofore met, but its middle stroke is the same as the middle stroke of the *Phi*. The *Omega* in its upper half is similar to the *O*, but its lower portion is finished with horizontal strokes and spurs, as shown.

5. Among the minuscules there is less resemblance to the Roman characters than we find in the uncial letters, and many letters that bear a resemblance to certain Roman characters do not correspond with those characters in sound. The *Sigma* is very similar to the *Omicron*, and closely resembles an inverted *Q*, totally different from the same character in the uncial alphabet, or to the letter *S* in the Roman alphabet, for which it stands. *Upsilon* closely resembles an italic *v*, while *Omega* is not greatly different from a *w*, and these characters themselves are entirely

different from those of the same name in the uncial alphabet. The letters *Beta*, *Delta*, *Zeta*, *Theta*, *Lambda*, *Phi*, and *Psi* extend their lines about $\frac{1}{2}$ their height above the line. The letters *Beta* and *Chi* extend $\frac{1}{3}$ stroke below the line, while *Gamma*, *Mu*, *Phi*, and *Psi* extend $\frac{1}{2}$ their height below the line.

6. It is not necessary that the student should remember the details of the shape of each of these letters, but he should be able to proportion them, when called upon, according to the rules laid down, and should also know when and where to apply the uncial letter or the minuscule.

The upper and lower lines confining the letters should be drawn first, the letter *A* located in its proper place and drawn in ink, and then, after approximately spacing the distances, the vertical lines of the letters *B*, *G*, *D*, *E*, etc. should be drawn in ink, without further instructions. After this plate is finished, make a careful comparison of each letter of your own plate with that of the copy, and endeavor to criticize and detect for yourself any irregularity or error that may exist. If this error is in the proportioning of the letter, correct it before your plate is sent in to the Schools for correction; if it is merely an error of location or spacing, let it stand, unless very serious, and it will not be counted.

When satisfied that every detail is up to the standard, insert the date in the lower left-hand corner and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: HENRY VII.

1. This style of letter dates back to the beginning of the 16th century, and takes its name from the Chapel in Westminster Abbey, London, which was built for King Henry VII, and in which his dust now lies. The letter was designed to conform to the style of architecture prevailing at that time, and was used for carvings and inscriptions throughout the Chapel. Its modern use is associated more with engrossing and ecclesiastical work; it is never used for carving in stone, though it is especially applicable for designs in pyrography, or etching on cork, leather, bone, and ivory.

HENRY
(WESTM)

A B C O

I J H

N O P Q

V W

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Y VII
(TER, ABBEY.)

E F G H

K L M

R S T U

X Y Z

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served.

2. The letters of this plate are divided into four lines, each $1\frac{1}{8}$ " high and spaced $\frac{3}{4}$ " apart, and the lower line but $\frac{3}{16}$ " above the lower border. The title is $\frac{7}{16}$ " high and $\frac{1}{8}$ " above the top line of letters. The average width of these letters is $1\frac{1}{2}$ ", a characteristic that did not exist in the original designs in Westminster Abbey. A peculiarity of Gothic art and architecture was that not the slightest attention was ever given to symmetry or uniformity in detail, and consequently the lettering at the close of this period is singularly marked with irregular eccentricities. Modern taste, however, demands a certain amount of decorous uniformity, and these letters have been modernized to that extent, in order to make a serviceable alphabet.

3. The letters *M* and *W* are $1\frac{7}{8}$ " and 2" wide, respectively, *B*, *C*, *E*, and *F* are $1\frac{1}{4}$ " wide, and the letter *L* is $1\frac{1}{2}$ " wide over all. The round strokes at their maximum thickness are $\frac{3}{8}$ ", and the fine line is $\frac{1}{16}$ ". The dots at the ends of the stroke are $\frac{1}{8}$ " in diameter, as are also the circular white openings at the point where the stroke reaches its maximum width. The balls used in the center of the concave strokes are $\frac{1}{4}$ " in diameter; the only case where one of these ball forms is used at the end of a stroke is in the letter *U*, this detail being there but $\frac{3}{16}$ " in diameter. In the middle of the letters *A*, *B*, and *M* a floral device is used, varying somewhat in the different letters, but all based upon the trefoil, or fleur-de-lis, ornament characteristic of the period. It will be observed that a short, flat spur projects each side of the white disks or balls entering into the broadest parts of the strokes. The straight lines, or beveled ends, of these spurs are drawn from a point in the center of the white disk.

4. This alphabet naturally has wide exceptions from the general rules laid down for the conventional alphabets heretofore described to the student. These eccentricities are permitted simply because the letter had its origin in a class of work where the information conveyed to the reader was secondary to the ornament of the letter itself. For instance, the title, "Henry VII," carved elaborately on a tablet, was put there to ornament that tablet, and the information that it is the

name of the dead king is secondary, because the observer has time to decipher its meaning from the beauty of the detail. The letters *D*, *O*, and *Q* are precisely alike in this alphabet, with the exceptions of the tail added to the bottom of the *Q* and the ball at the top of its fine line, and the tail added to the top of the *D*. The vertical strokes of all letters that possess such are identical, and the middle strokes of the letters *F* and *H* are made thicker than the fine lines.

5. In drawing this plate, the student will first outline the letters in pencil, omitting all attempts at ornamentation, and rounding the curves as evenly as possible to their joints with the stroke and fine line, in the same manner as if he were laying out a medieval alphabet. The balls, hollows, foliated work, and other ornamentation can then be added, and when all is in place the plate may be inked. In inking the plate, it is advisable to ink in all the balls and ornamental work first, and draw the plain and simpler parts of the letters afterward, as it is much easier to connect straight or evenly curved lines to a detail than it is to plant this detail upon the lines in question.

After the plate is complete and blacked in, the student will insert the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: 16TH CENTURY.

1. This plate shows a letter of a modified form of the style used for general work during the 16th century. It differs from the Henry VII letter in some of its details, while in others there is a strong resemblance. The two styles were contemporaneous, however; the one in the present plate having been used more largely in France and other continental countries, while the Henry VII letter was peculiar to England. This letter, like that on the last plate, bears a strong resemblance to the medieval form. It is a more extended letter than the medieval letter. However, it possesses prominently many of those characteristics that mark all art works of this period. The trefoil, or fleur-de-lis, ornaments, on the middle strokes of the *B*, *E*, *F*,

16TH. CE

A B C

H I J

N O P

U V W

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NTURY

D E F G

K L M

Q R S T

X Y Z

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and *R*, are similar to those on the Henry VII alphabet. The letters conform more closely to the Old Medieval Roman, in outline, than did those of the previous plate, the *C*, *D*, and *E* being particularly more conventional. The ball is much larger in this letter than in the Henry VII alphabet, and there is no inclination or incision in the main lines of the stroke, in order to elaborate the outline. The letter itself possesses a combination of foreign details that brings it down to a union of European styles. The vertical stroke is the same as of the Roman letter; the curved fine line, with a small dot, is of Flemish origin. The triangular spur in the center of the stroke is traceable to the old text, either German or Church Text, while the point on the top and bottom of the stroke and the terminations to the middle strokes of the *E* and *F* are purely of Gothic origin.

2. These letters are all $1\frac{1}{8}''$ in height, with $\frac{7}{8}''$ between the lines, the lower line being $\frac{1}{4}''$ above the lower border line. The title is $\frac{5}{16}''$ high and $\frac{5}{8}''$ above the top line of letters. The vertical stroke of the letter is $\frac{1}{4}''$. The curved strokes are $\frac{1}{2}$ stroke wider. The curved fine line and dot, forming a spur-like termination, project 1 stroke from the letter. The pointed stroke at the top and bottom of the vertical strokes is a continuation of their outline, and projects about the thickness of the fine line above and below the top of the letter. The fine lines of the letter and those forming the spurs are about $\frac{1}{16}''$ thick. The triangular spurs, though varying slightly in different letters, project about $\frac{1}{8}''$. The small terminal dots are all 2 fine lines in thickness, whereas the large dots, or balls, at the end of the *J*, *E*, etc., are all $\frac{5}{16}''$ or $1\frac{1}{4}$ strokes in diameter. The curved fine lines of such letters as *E*, *F*, and *L* are similar in outline to the *C* and *O*, and they thicken slightly as they approach the terminal ball to which they are tangent, and finish in a curved pointed spur, which projects but slightly beyond the outline of the ball.

3. The student will draw these letters carefully, making all proportions and details not shown or described according to the Roman letter heretofore designed. In fact, in any case where the design of the letter is concerned, any uncertainty as

to form or proportion can safely be taken from the details governing this in the Roman alphabet, except in such alphabets as the Greek and Hebrew, and in the Old English, German, and Church Texts.

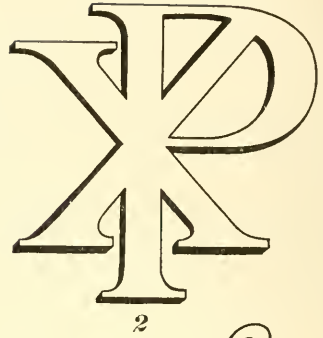
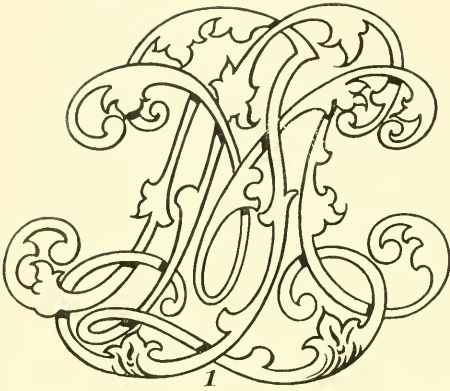
After completing the plate, the student will put the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: MONOGRAMS.

1. The origin and date of letters woven together in the form of a monogram cannot be exactly located. It is of most ancient origin, however, the earliest record upon which we can place any reliability being about the 3d or 4th century. As far back as the time of Constantine, the monogram of the two Greek letters, shown in No. 2 of this plate, were carried on the banners in warfare. This device, known as the *labarum*, may be classified more as an ideogram than a monogram, as it is two Greek letters, *Chi* and *Rho*, standing for the initials of Christ and Romans, and is always used in this form, and in this significance.

2. The monogram shown in No. 1 is a text-hand letter, interwoven in a somewhat florid style, so as to be suitable for embroidery. The form observed at No. 3 is a backhand script used largely by engravers and coach painters. No. 4 is a straight-line design, more especially adaptable for work in gold, as gold lines appear so much heavier to the eye than any color, and the lines of this alone are particularly fine. In No. 5 is shown a monogram laid in Old English letters, used to illustrate the fact that, complicated as these letters are in themselves, they are, nevertheless, susceptible of being interwoven into a monogram. In No. 6 is shown the opposite of No. 4, an interlacing of heavy letters, and is usually applied to such form of monogram as will permit of the letters being drawn in outline. In No. 7 is an illuminated capital letter *A* surrounded by another letter that it does not even come in contact with, and though smaller than either the *C* or *J* in the same monogram, it is the most prominent letter in it. No. 8 is a light-faced

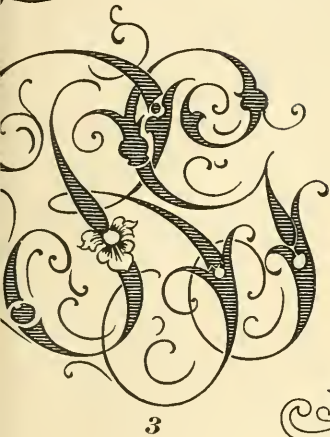
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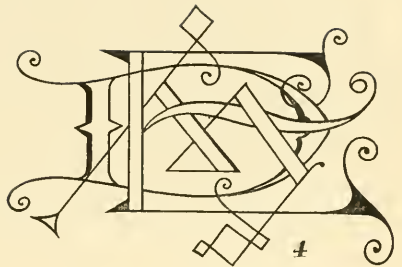
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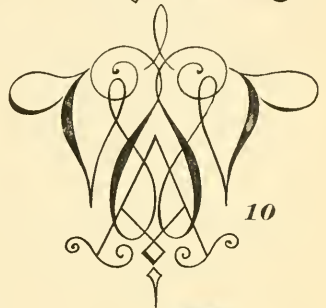
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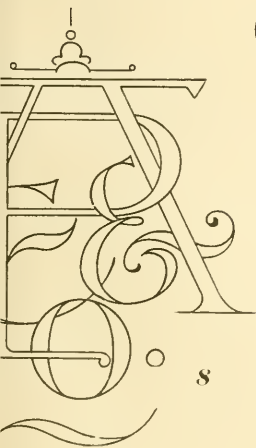
4



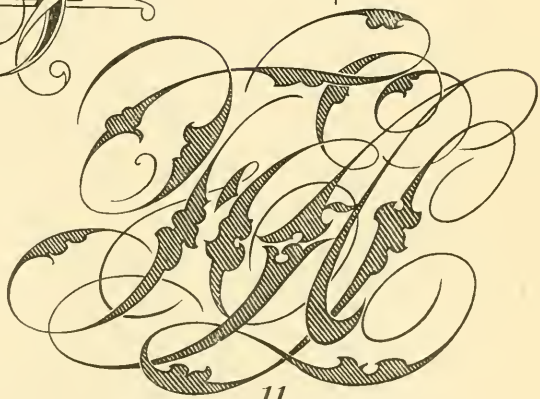
9



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8



11

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letter combined to form a monogram suitable for a firm name—*A. P. & Co.* No. 9 is a design very elaborately carried out by an interweaving of three letters, showing how compact a design may be made. No. 10 is a design of the letters *W W A*, the second letter being reversed, which is permissible in some cases for this style of design. No. 11 is similar to No. 3, except the inclination of the letters is in the opposite direction.

3. In executing this plate, the student will first study the letters and determine to what style each particularly belongs. For instance, in No. 8 he will observe, in the light stroke and heavy fine line, a resemblance to the light French Roman letter. In No. 6 a resemblance to heavy Egyptian can be seen, while No. 2 is essentially a Roman letter. It may be desirable for the student to divide each monogram of the plate into a number of squares (making very light pencil lines only), then draw his own plate in a similar number of larger squares, and note the point in each square where the most lines of each letter occur, thereby outlining the whole. For instance, to draw monogram No. 1, the student can draw its bottom line $4\frac{3}{8}$ " above the lower border line. He can then make a rectangle, the left side of which is $\frac{1}{4}$ " from the left border line, the height of which is 3", and the width $3\frac{1}{2}$ ". If he then divides this rectangle into squares of $\frac{1}{4}$ " each, he will find that the extreme left-hand portion of the monogram touches the left-hand line in the fourth square above the bottom, as also does the right extreme curve touch the line in a corresponding location.

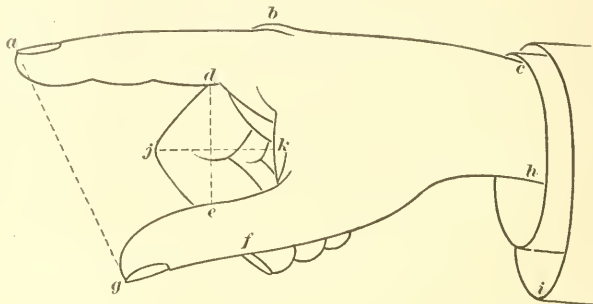
4. By dividing the rectangle that encloses monogram No. 1, of the plate, into small squares, 14 horizontally and 12 vertically, he can proportion every detail of the monogram by locating its position in each square, and so locating it on his own plate. This he will do with No. 1, using this method in drawing each of the succeeding monograms, locating them on the plate according to their relative position on the original design, and drawing them all in outline, and after he has completed his work cleaning all pencil marks and guide lines from the plate. Though it is desirable that as much of the work as possible be done free hand, it is perfectly permissible for the

student to use the triangle and ruling pen to execute any portion of this work, as it is essentially a work of precision, and from a practical standpoint is of no value unless neatly, accurately, and systematically carried out. Therefore, it is wise to draw each monogram separately on a piece of paper, where it can be altered and erased as many times as necessary to insure its perfection, after which, with the practice and experience gained, it may be reproduced upon the drawing plate.

After completing the plate, the student will insert the date in its usual place, and the name and class letter and number in the lower right-hand corner.

PLATE, TITLE: INDEXES AND BANDS.

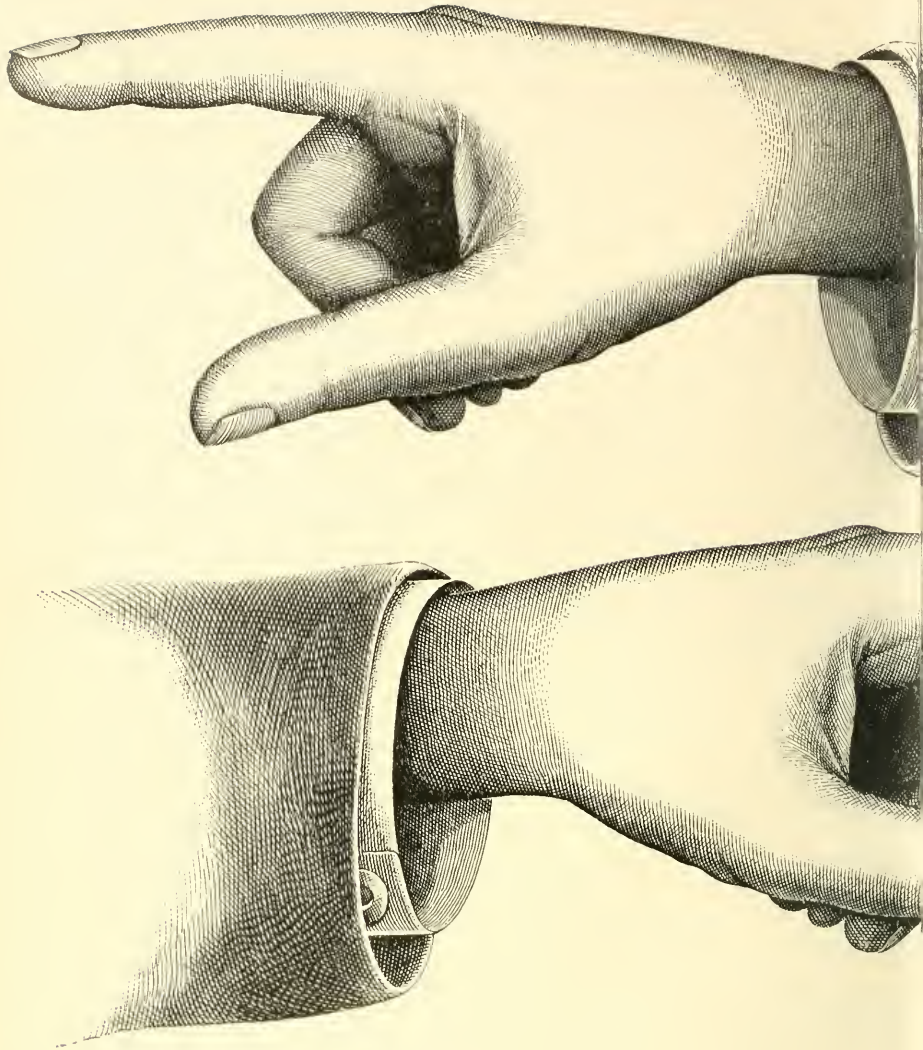
1. The principal figures shown on this plate are right and left index hands, the proportions of which are here given in such simple terms that the student should have no difficulty in laying them out at any time from memory, by locating the principal points hereafter described. The back of the hand just touches



the top border line, and the forefinger touches the left border line. In drawing the hand pointing to the right, the student can locate its outline midway between the upper hand and the lower border line.

2. In proportioning the indexes, make the distance from the end of the first finger to the top and center of the knuckle of the second finger the same as from the latter point to the edge of the cuff, or, in other words, make ab equal to bc , as in the

Indexes

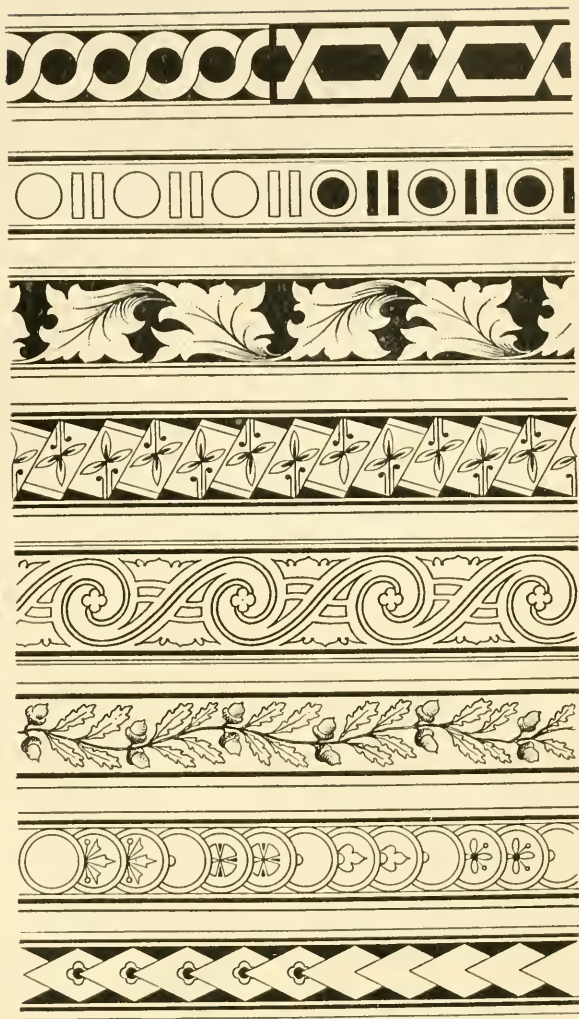
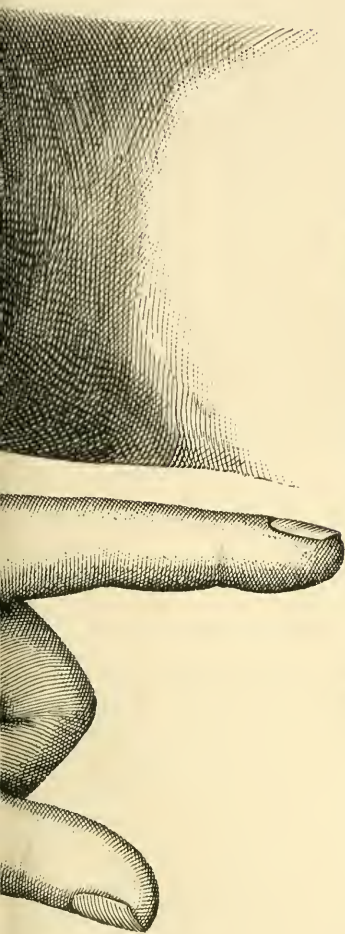


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figure of the text; make the distance from *a*, the end of the finger nail, to *g*, the end of the thumb nail, equal to *ab*. This distance should be $3\frac{1}{2}$ " on the student's drawing, which is also the distance from the top of cuff to the coat sleeve, or from *c* to *i*. The distance from *d* to *e*, *g* to *f*, *c* to *h*, and *h* to *i* is $1\frac{1}{2}$ ", as is also the distance from *j* to *k*. With these measurements fixed in mind, it will always be a simple matter to lay out a well-proportioned index hand.

3. It is not always necessary that the index should be shaded, but where such is imperative, full strength should be given, where necessary, in order to bring out the drawing in relief. The lower side should always be shaded much stronger than the top, and the shade of the coat sleeve should fade out softly toward the edges, where it disappears into the white of the paper. Be careful not to show the joints of the finger and thumb too prominently, as they only require the mere suggestion. The right index is approximately the same as the left in every respect, but both should be practiced with equal attention, as it frequently happens that a designer is capable of drawing a right-hand index extremely well, and is utterly unable to execute the same figure in the opposite direction.

4. The bands on this plate are extremely simple and require very little explanation. They may be used as borders to tablets or signs, or, in some cases, may be stenciled and afterwards filled in, or, with slight variation, may be used as dividing parts in an inscription, provided suitable foliated or geometrical ends form their terminals. In laying them out, the top line of No. 1 is but $\frac{1}{8}$ " below the upper border line, and the bottom line of No. 8 is $\frac{1}{4}$ " above the lower border line. Nos. 3, 4, and 5 are each $\frac{7}{8}$ " high, while Nos. 2, 6, and 7 are only $\frac{3}{4}$ " high. No. 8 is but $\frac{5}{8}$ " high. They should be drawn to reach to within $\frac{1}{4}$ " of the right-hand border, and may be finished in an irregular manner when the motive is shown. The length of these bands is $3\frac{3}{8}$ ".

In drawing these, the student may use the **T** square and triangle to execute the straight lines, as well as the compasses for carrying out the curves, with the exception of Nos. 3, 5,

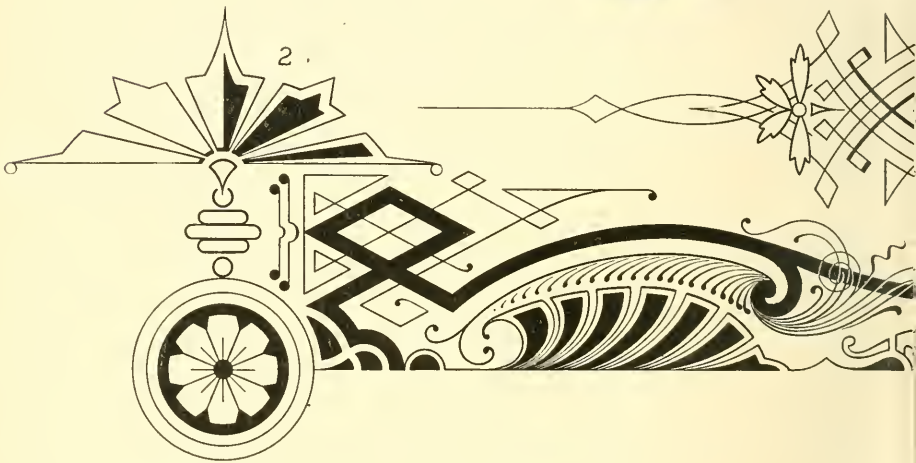
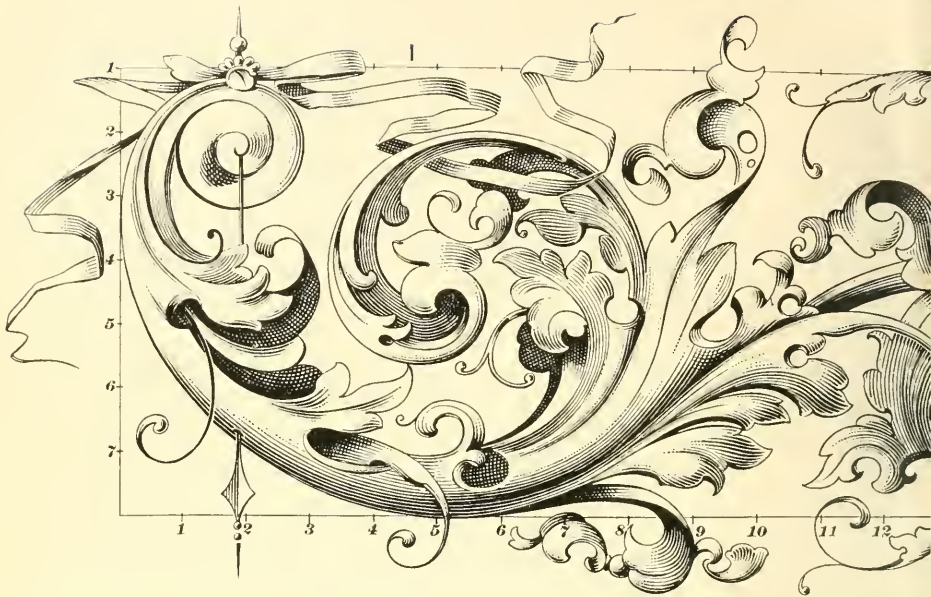
and 6, which must be executed entirely freehand. Proportion each part carefully; no matter how simple, do not hurry the work, and when complete, shade the indexes and black in the borders like the original plate.

Insert the date in the lower left-hand corner, and the name and class letter and number in the lower right-hand corner of the plate.

PLATE, TITLE: ORNAMENTATION.

1. The subject of ornamentation is of great importance to the letterer and sign painter, and is deserving of much more consideration and study than is usually devoted to it. Ornament in itself is divided into two general classes—relief ornament and flat ornament—and although the varieties of each are almost endless, their characteristics, with regard to classification, are unmistakable. Relief ornament is usually representative of some natural form, such as foliage, leaves, flowers, etc., while flat ornament is more often composed of geometrical outlines, such as frets, woven bands, etc. In general practice, the former is called organic ornament and the latter inorganic ornament. When the organic ornamentation is used to express some particular idea or thing, such as music, literature, or art, it is said to be symbolic, and a classical or descriptive form of design is used. This may be either relief or flat ornament, or a combination of both. When ornamentation is applied to natural objects, or surfaces, it is usually termed decoration, and if raised from that surface so as to be in actual relief, it is termed *alto-rilievo*, *mezzo-rilievo*, or *bas-relief*, according to the circumstances. As a usual thing, only the brush is used as a means of ornamenting surfaces, although, for certain classes of work, pen design is often resorted to; but even in such works as engrossed resolutions and other ornamental writings, the ornament itself is usually executed with the brush.

2. In the accompanying plate five examples are given that are representative of four different kinds of ornament. They are numbered with regard to their positions on the plate rather than in the progressive order in which they should be drawn.

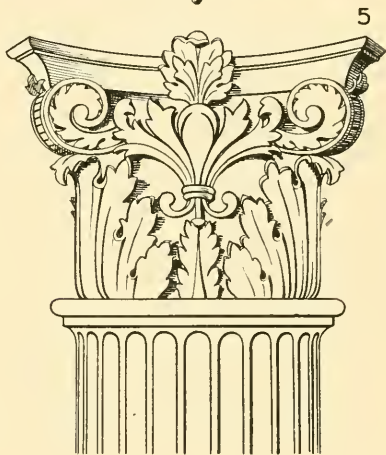
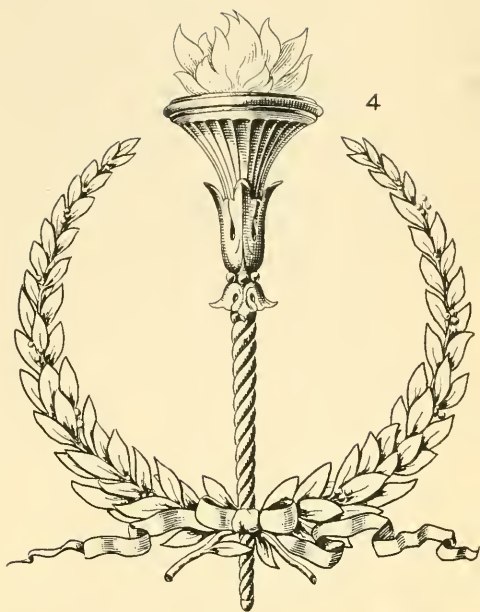
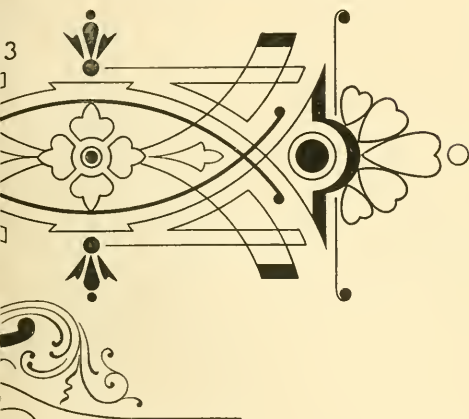
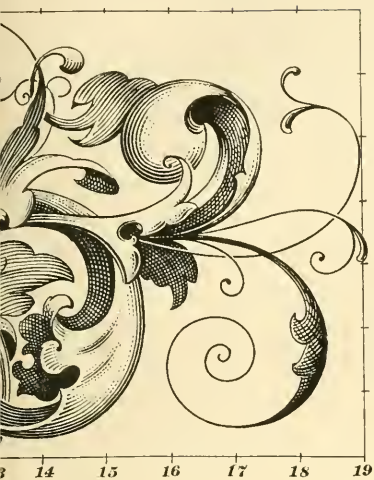


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No. 1 is a design to be executed either in flat or relief ornament. If painted, or drawn and shaded, as shown on the plate, it is an ornament representative of the relief, but it may be executed in actual relief by modeling in plaster or clay. The same may be said of No. 5, although the latter is a form of capital less often used in painted work than in actual modeling and carved work. Nos. 2 and 3 are a style of ornament used entirely on flat work, and are purely geometrical in their construction. No. 4 represents the relief ornament, practically geometrical in its construction, but intended to appear with less constraint than a geometrical ornament, owing to the manner of its shading and finish.

3. Before drawing any of these figures, it will be well to locate their positions on the plate, in order that each may be drawn separately without interfering with the other. The border line is drawn around the plate as usual, making a rectangle $8\frac{1}{4}'' \times 15''$. Within this, No. 1 is designed by drawing a vertical line $\frac{7}{8}''$ to the right of the left-hand border, $\frac{1}{2}''$ below the upper border, and $3\frac{1}{2}''$ long. This line is made on the left side of a rectangle $9\frac{1}{2}''$ long, which encloses the figure. The vertical line at the left is divided into 7 equal parts by 6 horizontal lines, drawn the full length of the rectangle, and the horizontal line at the bottom is divided into 19 equal parts, making rectangles $\frac{1}{2}''$ square throughout the figure. Repeat this operation on the copy, also, with light pencil lines, from points where marked on same. This system, used in reproducing all drawings, will enable the student to locate every point and curve of the ornament in its proper position. To insure this, each horizontal and vertical line should be numbered consecutively on the student's drawing to correspond with the plate.

4. In drawing No. 2, a vertical line is drawn as a continuation of the arrow of No. 1, and a horizontal line is drawn $\frac{1\frac{1}{8}}{16}''$ above the border line. At the intersection of these lines a circle is drawn $1\frac{3}{8}''$ in diameter. The rest of the ornament is executed by means of the 30° and 60° triangle, with which the lozenge shape to the right is drawn, and the rest is executed freehand. To design No. 3, draw a vertical line $8\frac{3}{8}''$ from the left-hand

border, making it 3'' long, ending $1\frac{1}{4}$ '' above the lower border line. Through the vertical line draw a horizontal line $2\frac{3}{4}$ '' from bottom border line, extending $2\frac{7}{8}$ '' to the right and 5'' to the left of the vertical. Describe the heavy arcs from points $1\frac{7}{8}$ '' above and below the horizontal on the vertical line, and intersecting the horizontal line $1\frac{1}{4}$ '' from the vertical line. All curved lines in the center of the figure are parallel to one or the other of these arcs. On the intersecting lines of the right or left are the combinations of straight lines and similar arcs.

5. The wreath and torch, shown in No. 4, is designed by first drawing a circle $\frac{3}{16}$ '' in diameter, the center of which is $1\frac{7}{8}$ '' to the left of the right border line and $2\frac{7}{16}$ '' below the upper border line. Within this a circle $2\frac{1}{16}$ '' in diameter is drawn, with its center $\frac{1}{8}$ '' above the center of the first circle, making its top tangent to the top of the former, and a third circle $3\frac{1}{2}$ '' in diameter, with its center $\frac{1}{8}$ '' below that of the first, drawn. To locate the principal points of the drawing, draw a vertical line through the foci or centers of the circles of which the middle point is the bottom point of the ornamental center of the torch; the width of the top of torch is $1\frac{1}{4}$ '', the flame reaching to top margin line. Having drawn the circles giving the center and outline of wreath, the further details may easily be drawn and proportioned with the eye.

6. In drawing No. 5, its vertical center line is directly under the center line of the torch in No. 4, and extends $3\frac{1}{4}$ '' above the lower border line, and the curve at the top of the column is drawn with a radius of $5\frac{1}{8}$ ''. The width of the column proper is $1\frac{7}{8}$ ''. The extreme width of the capital at the top is 3'', and is $2\frac{1}{16}$ '' high at the center.

The student will carefully outline all of these figures as directed, blacking in such portions as are shown blacked in, and carefully shading, by means of curved parallel lines, such portions of the ornament as are herewith shown shaded. He will then put the date in the lower left-hand corner, and the name and the class letter and number in the lower right-hand corner of the plate.

A SERIES
OF
QUESTIONS AND EXAMPLES

RELATING TO THE SUBJECTS
TREATED OF IN THIS VOLUME.

It will be noticed that the questions and examples contained in the following pages are divided into sections corresponding to the sections of the text of the preceding pages, so that each section has a headline which is the same as the headline of the section to which the questions refer. No attempt should be made to answer any questions or to work any examples until the corresponding part of the text has been carefully studied.

ELEMENTS OF LETTERING.

EXAMINATION QUESTIONS.

- (1) (a) What name is given to the earliest form of writing? (b) By whom was it used?
- (2) What are "rustic" letters?
- (3) Name two styles of letters that came into existence prior to the 15th century.
- (4) What are "illuminated" letters?
- (5) What is meant by the term *elongating*?
- (6) What class of people were skilful in the art of lettering during the period immediately preceding the 15th century?
- (7) What is meant by the term *interlacing*?
- (8) On what materials can transparent water color be used to the best advantage?
- (9) What is meant by a "part panel"?
- (10) What is the "stroke" of a letter?
- (11) What is meant by the term *background*?
- (12) What are "cut-in" letters?
- (13) On what side of the letter should the shade be placed?
- (14) (a) What is a "background stencil"? (b) How does this differ from the regular letter stencil?
- (15) What is meant by the term *telescoping*?
- (16) What two forms of numerals are used in modern lettering?
- (17) What material is most suitable for making stencil patterns?
- (18) For what special class of work are tin-foil stencils used?
- (19) What style of brush is best adapted for use in stenciling?

(20) What styles of letters are best adapted for illuminated capitals?

(21) In cutting stencil patterns, what method is safest to follow in order to avoid the possibility of cutting off ties?

(22) How is the design for the second stencil placed on the first to insure accuracy?

(23) What alphabet is the mother of all modern styles of writing?

(24) About how many signs may be stenciled before the stencil pattern should be cleaned?

(25) On what part of the letter should the highlight be placed?

(26) How was the letter *W* expressed when first introduced into the alphabet?

(27) When letters are placed on an inclined panel, what position should they be given?

(28) What is meant by the term *condensing*?

(29) What is the difference between mechanical and free-hand lettering?

(30) What are the "ties" in stencil patterns?

(31) In what way did the invention of the printing press directly benefit the art of writing?

(32) On what angle should the shade of the letter be placed?

(33) Of what importance is letter-face shading?

(34) What is the "spur" of a letter?

(35) Where would you place the possessive apostrophe in the following: "Mens and Boys Clothing"?

(36) How is the block shade placed on a letter?

(37) How many forms has the cast shadow?

(38) What are the three chief classifications of letters?

(39) When are colors applied in their dry state?

(40) Name some of the styles of letters known exclusively as "American writing."

(41) For what purpose is the stencil pattern used?

LETTERING AND SIGN PAINTING.

EXAMINATION QUESTIONS.

- (1) At what angle should a lettering table be inclined?
- (2) Of what material are transparent signs usually made?
- (3) How is a design transferred to a brass plate for the purpose of embossing?
- (4) For what purpose are large wooden letters used?
- (5) How are parts of the brass plate protected where it is to be left unetched?
- (6) How are aluminum and gold bronze applied to a sized surface?
- (7) What is a *neutral* color?
- (8) What is the *priming coat*?
- (9) What acid is used for etching brass plates?
- (10) For what purpose are metal letters used?
- (11) (a) How many compasses are necessary for use in sign painting? (b) Describe the largest.
- (12) What is *flock*?
- (13) In making letters one inch or under, what brush should be used?
- (14) What are the primary colors?
- (15) What is the principal use of the **T** square in sign painting?

(16) What is the cause of a color *creeping* after being applied?

(17) How can a wire sign projecting from a building be made to read from opposite directions?

(18) What should be the height of a lettering table?

(19) What name is given to the long-hair brush used to pick up the gold leaf?

(20) Describe the transparent shade.

(21) How is the penetrating quality of pitch destroyed in pine sign boards?

(22) What gauge of engraving brass is generally used for the embossing process?

(23) From what oil is slow size made?

(24) How is gold leaf prepared for use where the wind is too strong to use the tip?

(25) How should lettering brushes be preserved from drying or hardening?

(26) What are compo signs?

(27) What two general kinds of size are used for gilding on wood or metal?

(28) What is meant by the term *tint*?

(29) What is the most durable color when exposed to the elements?

(30) What is used as a backing for pearl filling to produce a solid letter?

(31) What are the principal classes into which colors are divided?

(32) What mixtures should be used for lettering on cardboard?

-
- (33) What size is used for Etruscan gilding?
- (34) What is the spectrum shade?
- (35) When are colors in harmony in their combination?
- (36) What color is used in the mixture of size for gold?
- (37) What are relief letters?
- (38) How is the asphaltum coating removed after the brass plate is taken from the etching bath?
- (39) What is a secondary color?
- (40) What is meant by the term *cold color*?
- (41) How many brushes are recommended as necessary for practice work?
- (42) What acid is used for embossing on glass?
- (43) When are colors said to be in contrast?
- (44) To what depth should the letters be etched in glass?
- (45) (a) What is a *shade* of a color? (b) How may this be produced?
- (46) How should cotton cloth be prepared before letters are applied?
- (47) What is meant by the term *warm color*?
- (48) What materials are used to fill letters etched in brass plates?
- (49) On what colors is the glaze shade used?
- (50) In embossed work, to what depth should the acid be allowed to eat the brass plate?
- (51) What would be the result if a coat of paint were placed over another before the first dried, one being a slow-drying and the other a quick-drying mixture?

-
- (52) What adhesive material is used in the preparation of gilding water size?
- (53) Name two semineutral colors.
- (54) How many methods are there of striping by means of a lettering brush?
- (55) When is frosting on glass used as a ground for lettering?
- (56) What is considered the least durable color?
- (57) How is a design that is to be gilded placed on a window glass?
- (58) What is the best protection against frost that may be applied to a finished letter on glass?
- (59) What is *smalt*?
- (60) What mixture of colors produces purple?

INDEX.

All items in this index refer first to the section number,—which is printed on the inside edges of the headlines and is preceded by the printers' section mark $\frac{1}{2}$,—and then to the page number. Thus, Acid, Hydrofluoric 2 $\frac{1}{2}$ 29, means find the paper having $\frac{1}{2}$ 2 on the headlines and then find page 29.

A.	Sec.	Page.		Sec.	Page.
Acid, Hydrofluoric	2	29	Antique Egyptian (heavy)	2	26
“ “ Testing of	2	29	“ “ (heavy) letters,		
“ Nitric	2	28	Inking	3	29
“ Material used for resisting	2	26	“ “ (heavy) letters,		
“ Use of	2	28	Numerals of	3	29
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“ antique Egyptian, Modi-			Directions for		
fication of	1	57	drawing	3	22
“ antique half block, Modi-			“ “ (light) letters,		
fication of	1	59	Inking	3	26
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