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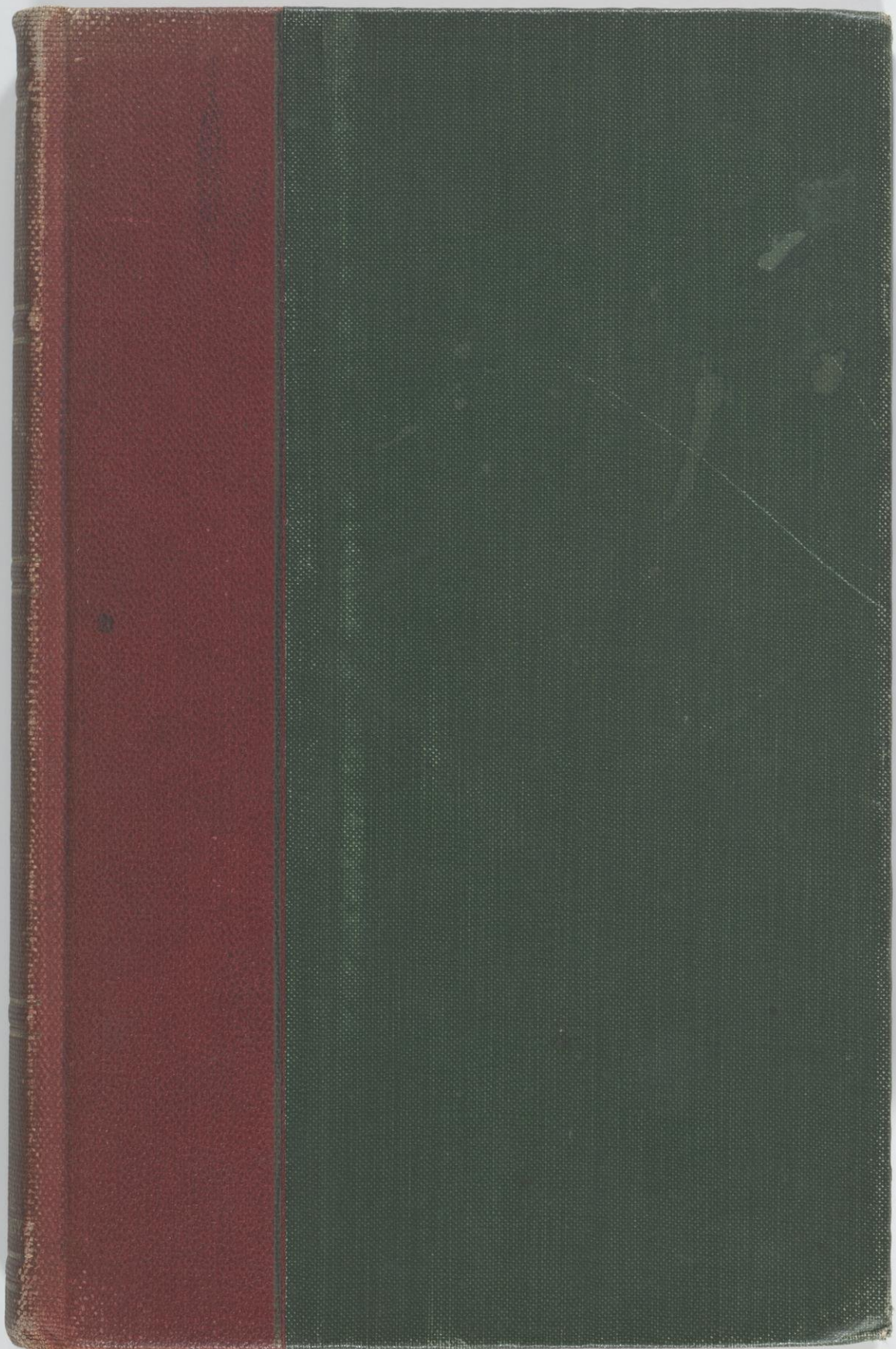
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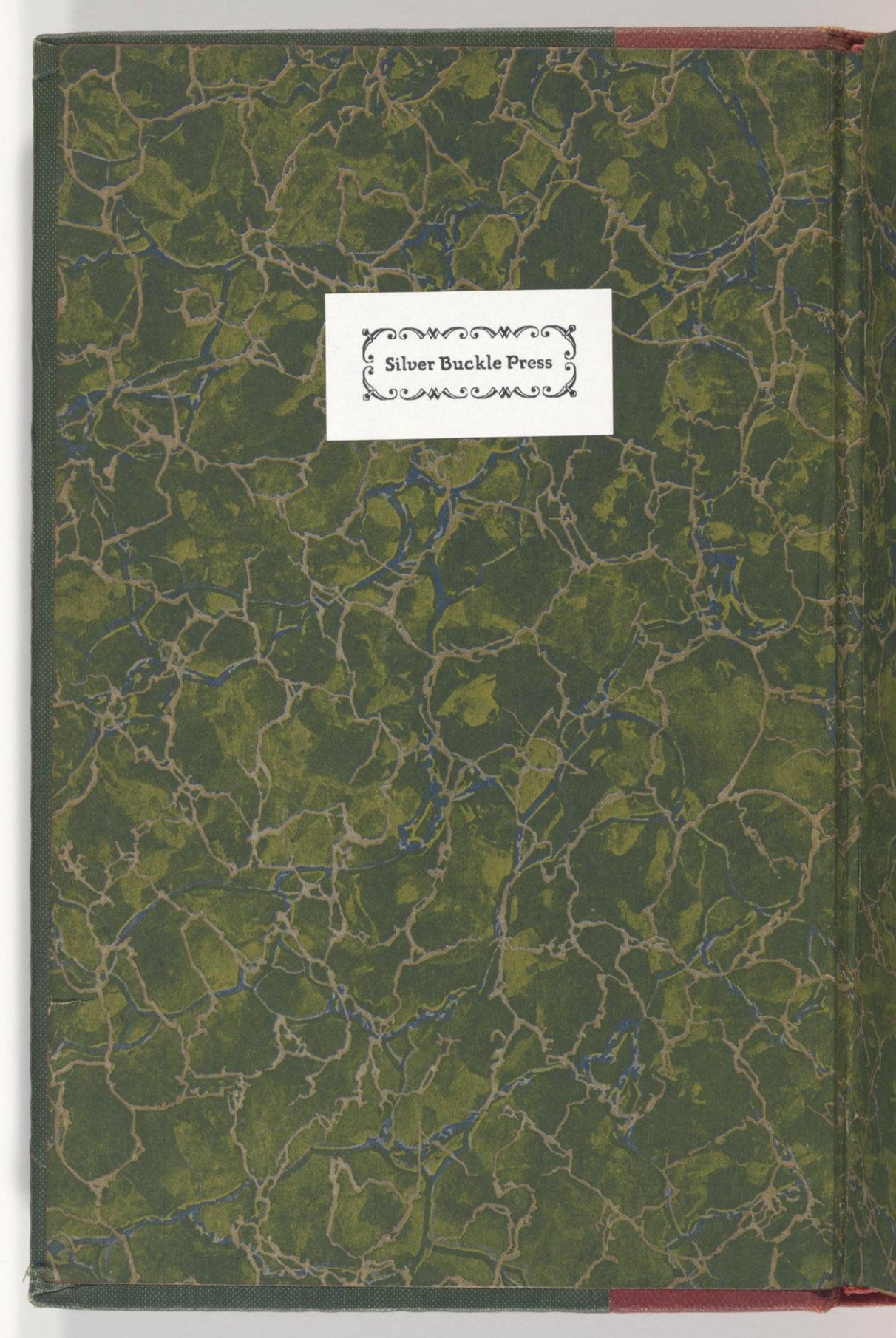
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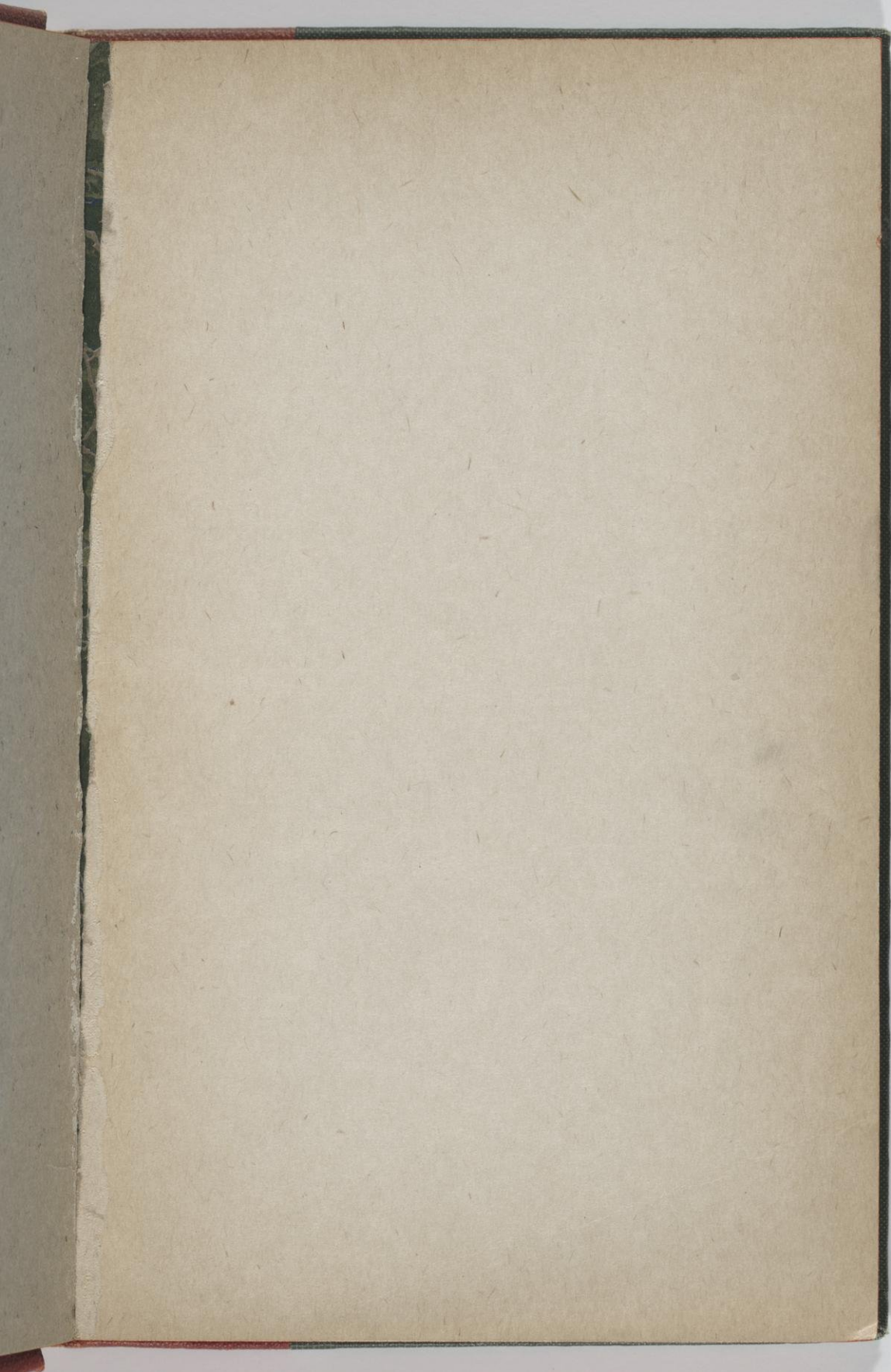
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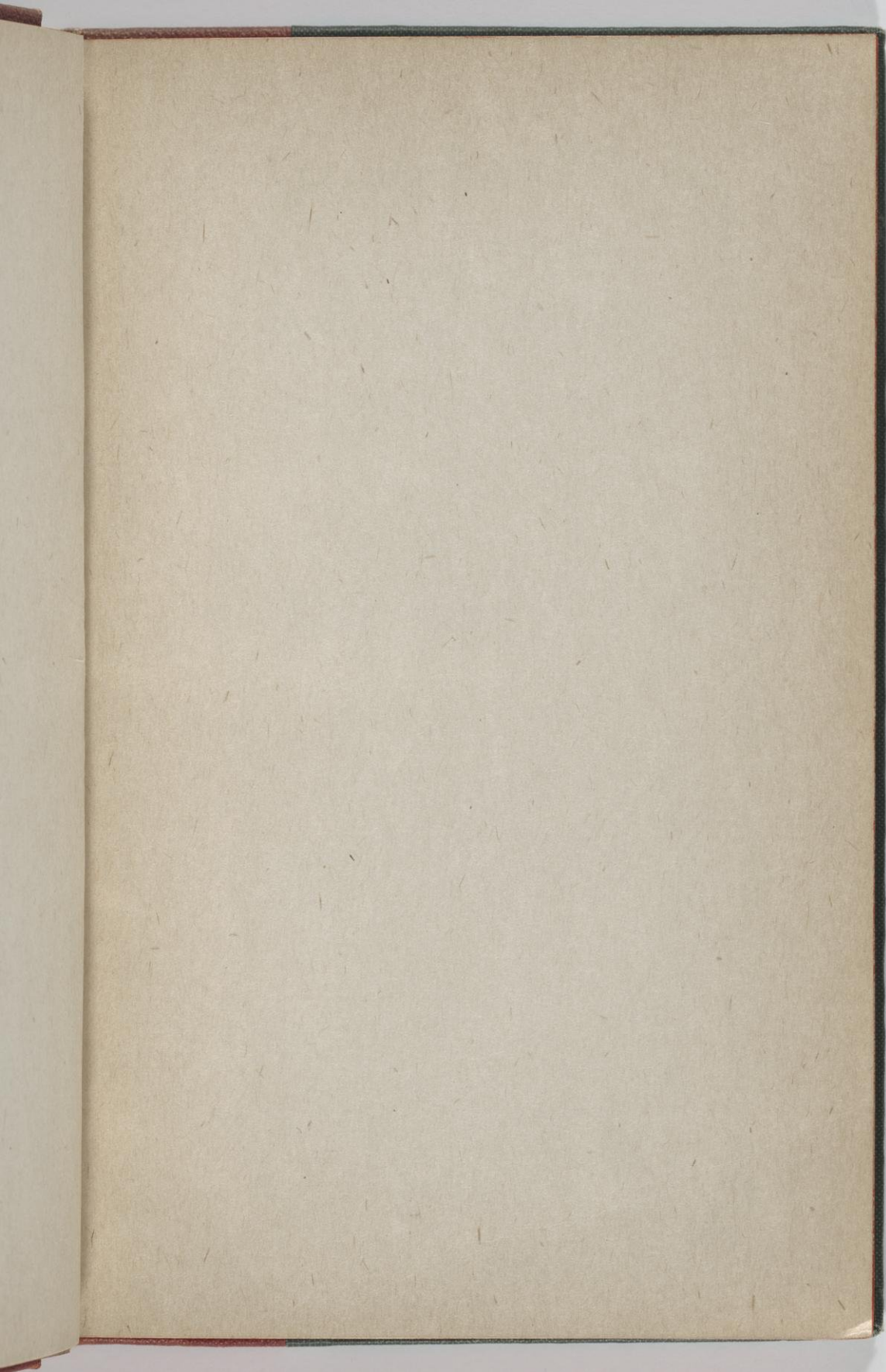


The image shows the front cover of a book. The cover is decorated with a marbled paper pattern featuring a dense, irregular network of veins in shades of blue, green, and tan. A small, rectangular white label is centered on the cover. The label has a decorative, ornate border with scrollwork and floral motifs. Inside the border, the text "Silver Buckle Press" is printed in a serif font. The book's spine is visible on the right side, showing a similar marbled pattern. The edges of the cover are bound in a dark green material, and a small portion of a red binding is visible at the top and bottom right corners.

Silver Buckle Press







International Library of Technology

343

Artistic Signs

How to Design and Make Them

239 ILLUSTRATIONS, 29 IN COLORS

By

E. L. KOLLER

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COMMERCIAL SIGNS
SIGN DESIGNING
COLOR IN SIGNS
PAINTING AND GILDING
ERECTION AND SALE OF SIGNS

Published by
INTERNATIONAL TEXTBOOK COMPANY
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1924

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PREFACE

This book is one of the volumes of the International Library of Technology, and is made up of Instruction Papers, or Sections, used in courses of instruction for students of the International Correspondence Schools.

A mere knowledge of alphabets and letters, however "up-to-date" these letter styles may be, will not enable one to design and make attractive and artistic signs. Underlying every successful sign must be a well-planned design. This is just as necessary in the work of a sign man as it is in the work of an architect, an illustrator, or a designer of silverware or of rugs. It is, therefore, the purpose of this volume to make plain the principles of artistic sign designing, and the methods of painting, erecting, and selling the sign.

While this treatise naturally begins with material on commercial signs, giving numerous examples (with descriptions) of modern signs, this work is only preliminary to the knowledge of artistic design here given. Design theory and principles and the theory of color and color harmonies are next treated, and then these principles are applied to the actual designing of signs for various purposes. As will be noted, not only clear and concise text matter but illustrations of actual signs, many in colors, give this knowledge.

The reader will find particularly helpful the material dealing with color schemes for signs. Not only will the color principles, and their practical application to actual signs, be of help but the examples of actual color schemes and signs in color will be found to be of great service in getting up well-designed signs.

The principles and practices of painting signs on wood, brick, etc., and of doing gold-leaf lettering on glass, are very clearly explained and illustrated, and in such a manner that

they can be carried out with successful results by any one who is actually working on such a job of painting or gilding. Perhaps, even the sign man of experience can find here points of information on these subjects which will be of help to him.

The concluding section on the erection and sale of signs includes helpful material on the business practices, prices charged, etc., in the field of sign work. Of course, these suggestions are general in character and must be adapted to suit the particular locality, conditions, and circumstances of the sign man. This is particularly true regarding the matters of getting work to do, and the prices to charge for it.

The material here given is not a series of untried theories, but has been tried and tested in actually training many hundreds of students to become designers of high-grade artistic signs. Throughout the text, references will be found to preparing and "submitting" certain "Plates." These instructions apply only to persons enrolled in Courses of the International Correspondence Schools. The reader of this volume will of course understand that he will not "submit" any work to any one except himself. He is advised, however, to do all practice work or exercises that are recommended, and then to criticise them for himself and thus to note his own progress.

Doubtless the reader of this volume has also read the one on *ARTISTIC ALPHABETS, For Show-Cards and Signs*, which is really a preparation for this one. If not, he is advised to secure that volume, on account of the value of the brush-stroke exercise and the alphabets illustrated and described.

In the table of contents that immediately follows are given the titles of the Sections included in this volume, and under each title are listed the main topics discussed.

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COMMERCIAL SIGNS

EXAMPLES OF WELL-LETTERED SIGNS

PURPOSE OF THESE EXAMPLES

1. Sixth Stage in Learning to Letter.—Up to this point the student has been trained in the first five stages of learning to do sign lettering: First, the freehand brush practice; second and third, the familiarity with standard letter forms and the drawing and brush execution of a wide variety of standard letter styles suitable for sign work; fourth, the execution of modern letter styles and the correct spacing of letters and words; and, fifth, the study of ornamental and decorative forms, classic and modern, suitable for sign work and in harmony with letter styles already studied.

The next logical step is for the student to familiarize himself with the very best examples of commercial sign designs, and to study the good points of these practical signs, so that he may come to know what is being used and that he may apply this knowledge when he comes to do original sign designing later. This may be considered the sixth stage in learning to letter, and a very important stage. The best method of securing such familiarity with the best commercial signs is, of course, to go where such signs are and to inspect them carefully. If the student lives in one of the large cities, or even in a city of moderate size, such signs can be seen at all times in the business districts. Even those students living in small town or country districts take more or less frequent trips to the city where good signs of all kinds can be inspected.

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For the convenience of the student there have been collected and arranged, within the pages of this Section, pictures of a number of signs of various classifications that are considered good in design and lettering, and which it will pay to study carefully. It is expected that the student will study these specimens in such a way that he may gradually educate his taste and his style. Very soon he will be expected to prepare original designs for signs, and then he will have opportunity to apply what he learns in this Section. Thus there will be no excuse for the preparation and submitting of designs that are not up to a high standard of good letter spacing and good arrangement of ornament.

2. Method of Study in This Section.—The method of studying and submitting work in this subject will be the same as was followed in the case of the previous Section. Test plates will be required, as before, on which the student will make drawings of the signs shown in the text illustrations that he considers to be good signs. Directions in detail will be given for preparing these drawing plates.

WALL SIGNS

3. Display Advertising and Public Sentiment. The sign letterer must deal with situations as they are, and not as he or any reformer might want them to be. Civic bureaus and others might object to the erection of wall signs, billboards, etc., but, as long as they are erected, the sign letterer will be called on to prepare lettering for them. We must, therefore, show examples of all kinds of lettered signs, including displays on dead walls, etc., so that the student may become familiar with the styles of lettering used for various purposes.

4. Wall Displays of Various Kinds.—In Figs. 1, 2, 3, and 4 are shown various types of wall signs, each appropriate for its purpose. Fig. 1 shows display signs on a dead wall, front of buildings, etc., of a temporary character, and yet carefully executed. This was a preliminary cam-



FIG. 1

paign to arouse the interest of the public, and the lettering was soon replaced by a sign that told the public what the parrot really said. Note, however, how very readable is the lettering composed of lower case, with upper-case initials; and how much more attractive it is than the firm name of the flowers and feathers concern lettered in upper case on the tall building.

An example of a very elaborate display of wall lettering is shown in Fig. 2. The criticism could very justly be brought

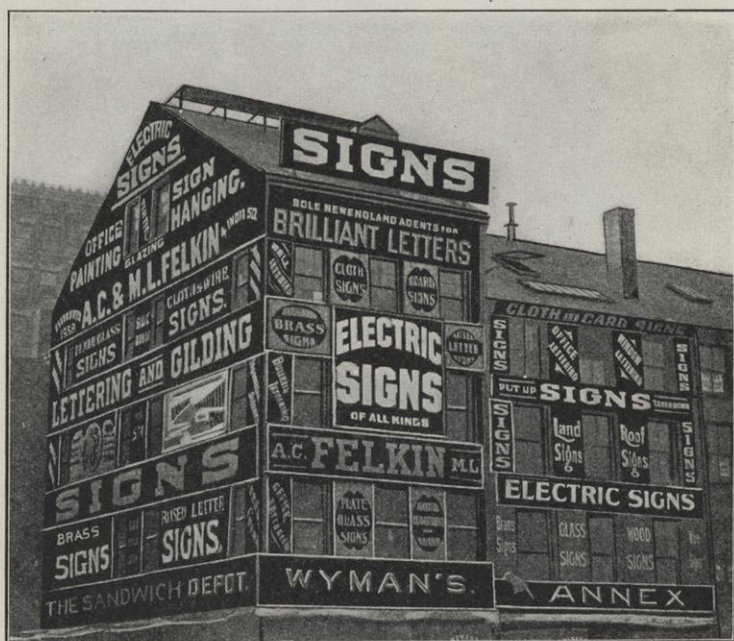


FIG. 2

against it that it is overdone; that the multiplicity of signs and lettering makes the result confusing. It will be noted, however, that the word SIGNS is repeated and emphasized, and that all the lettering is simple and easily read. This illustration forms an excellent example of lettering that is suitable for wall signs.

In Fig. 3 there is shown an example of a more artistic use

of dead-wall space. The wall itself is white, and the pictures of the packages of chocolate are painted in their natural colors. The lettering is well spaced, and accurately executed, the whole being in harmony with the pictures of the packages of chocolate.

In Fig. 4 is shown an unusually fine example of high-grade lettering with accompanying ornament, used for wall decoration.

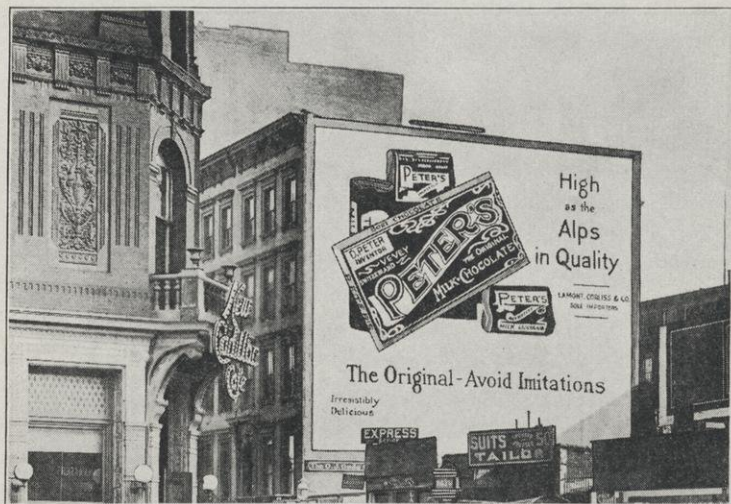


FIG 3

tion. The building itself was painted a light yellow, and the designs brought out in various hues of burnt umber and burnt sienna, strengthened with black. In the panels for the initial letters, bright blues and greens are used. The lettering is white throughout, except for the capitals, which are in various values of red.

. This example is shown, not with the expectation that the student of sign lettering will often be called on to paint a similar one, but simply as an example of high-grade wall-sign work.

BOARD AND FENCE SIGNS

5. Examples of High-Grade Fence-Board Signs.

Opportunity is given at all times to see examples of sign boards—or *bulletins* as they are sometimes called—on city and town streets, along railway tracks, along country roads and thoroughfares, and elsewhere. It is not necessary, therefore, to present more than a few illustrations as typical examples of boards, and those that are presented are of the highest class.

In Fig. 5 is shown a remarkably fine set of well-designed and lettered, and (in the originals) artistically colored, sign boards. These were placed on the property of one of the art schools of New York City, and the entire design and color scheme had to be submitted to and approved by the art school directors before permission was given to erect the boards. The spaces were paneled, and bordered with terra cotta, robin's-egg blue, and other softly harmonious colors, the effect being artistic in the extreme. The student should take such work as his pattern and guide.

Figs. 6 and 7 show some excellent examples of the highest grades of sign boards in which pictorial and figure work has been combined with the lettering. In the board shown in Fig. 7 the Holland Dutch influence has been carried out in all the panels of the board, even though four separate commodities or forms of service are being advertised.

6. Examples of Typical Commercial Signs.—The illustrations in Figs. 8, 9, 10, and 11 show typical specimens of sign boards, well lettered and designed, such as are used by the big advertising-sign companies in the large cities. They are shown here so that their general design, and the style and character of their lettering and pictorial features may be studied.

No particular description of these boards is needed. It may be interesting, however, to note that the "Blue Label Ketchup" sign in Fig. 8 was painted with a blue ground, the white letters being outlined and shaded in black. This,



FIG. 4

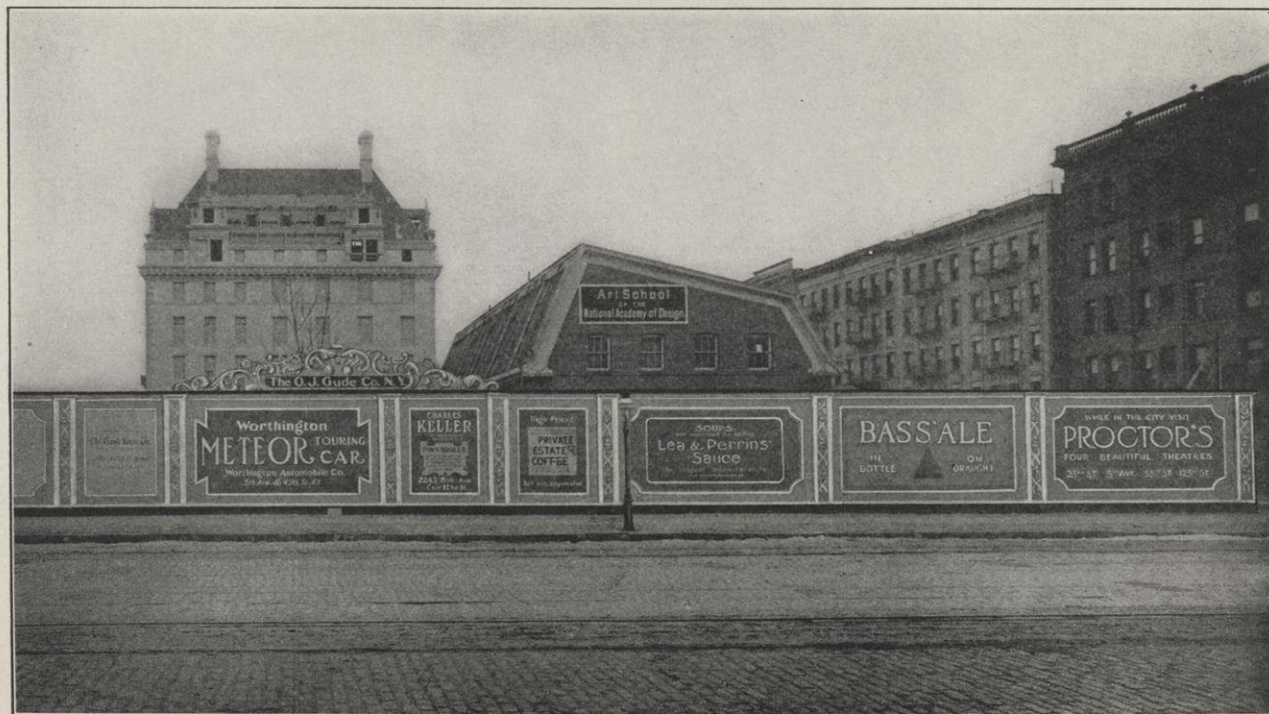


FIG. 5



FIG. 6



FIG. 7



FIG. 8

L'Auto-Bolide
A DARING
DIP of DEATH
AN ACT
THAT COSTS
\$2,000.
A Minute

**The BARNUM
BAILEY**
GREATEST
SHOW
ON
EARTH

MADISON SQ. GARDEN
COMPLETING
Thursday **MARCH 23**
Afternoon

Herald Square Baths
"Get in the Swim!"
TURKISH AND RUSSIAN
Broadway at 32nd. Street BROWNING
BUILDING
FOR GENTLEMEN An Entrance on 6th Ave. OPEN DAY & NIGHT

FIG. 9



FIG. 10



13

FIG. 11



FIG. 12



FIG. 13



FIG. 14



FIG. 15



Millions of People Drink

MOXIE

BECAUSE { *They like it
It's very healthful
It quenches the thirst*

FIG. 17

There is fully as much difference between milk & cream
as between ordinary and

King Midas
FLOUR

CRYSTAL DOMINO SUGAR



*THERE IS NO STRONGER PROOF
OF MERIT, THAN CONTINUED
AND INCREASING POPULARITY!*

SOLD ONLY IN 5^{lb} BOXES.
BEST SUGAR FOR TEA AND COFFEE!

FIG. 19

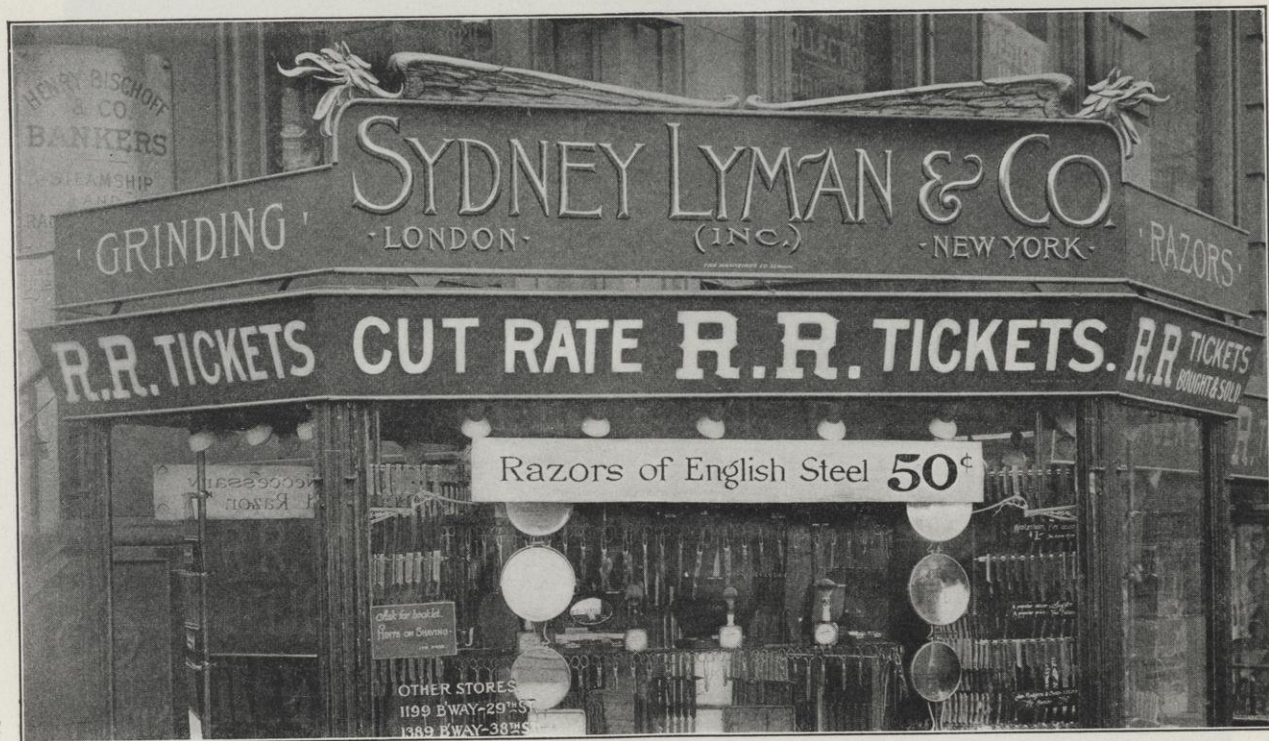


FIG. 23







§ 6

FIG. 22

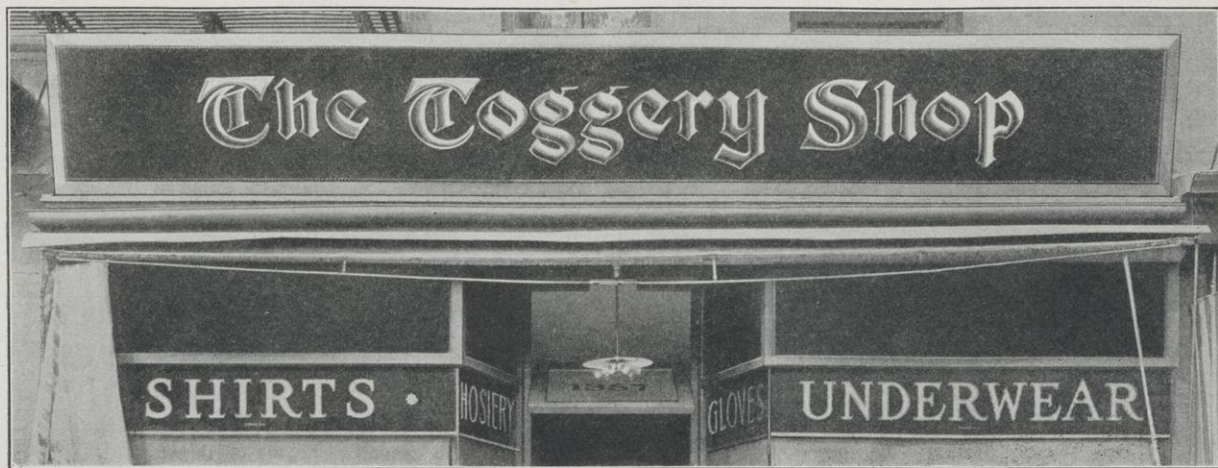


FIG. 24



FIG. 25



FIG. 26



FIG. 27



FIG. 28



FIG. 29



FIG. 30

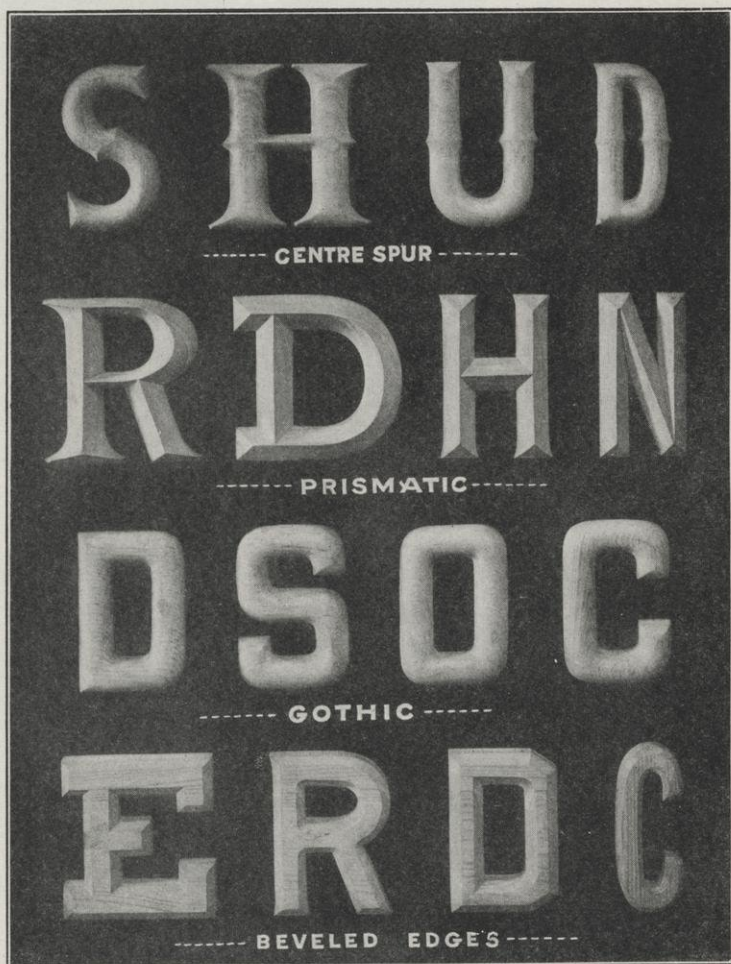
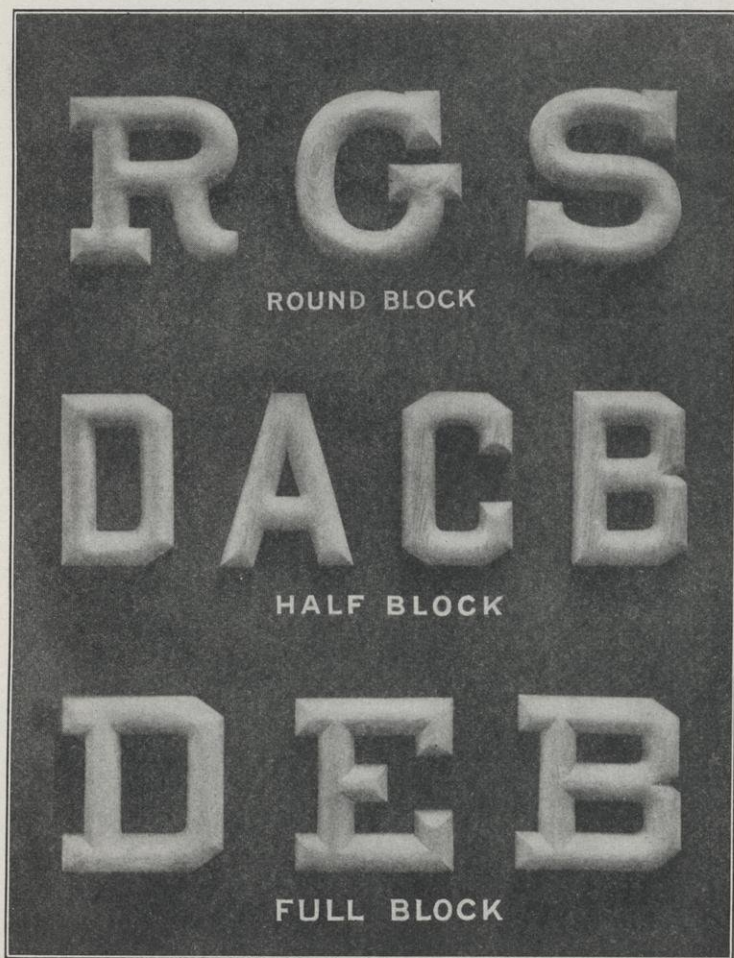


FIG. 31



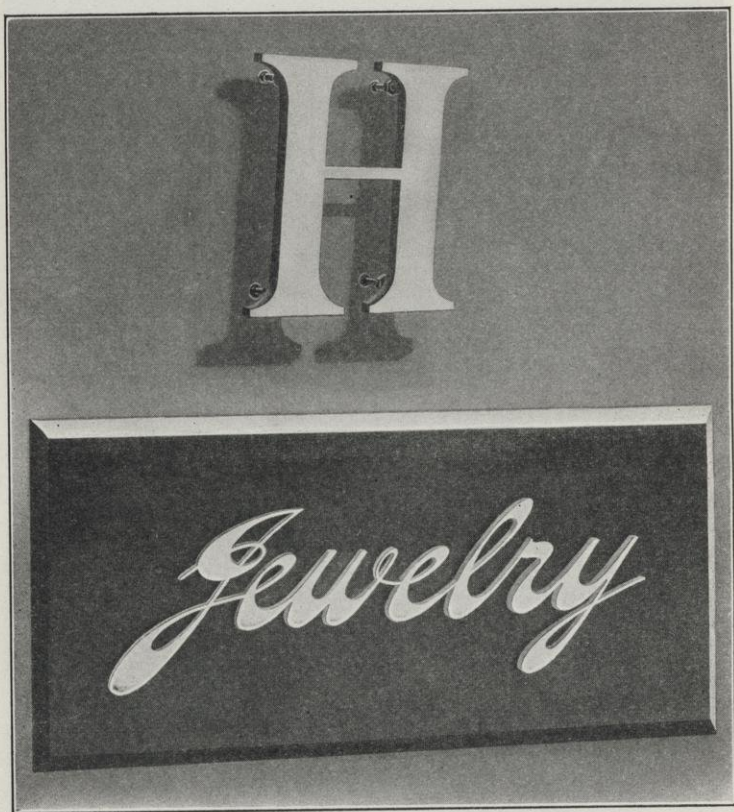


FIG. 33

together with the red ketchup bottle, and the colored label on the can, forms a very attractive color scheme.

7. Double-Decked Sign Boards.—In Figs. 12, 13, and 14 are shown additional examples of typical commercial sign boards, these being arranged in *double-deck*, or two-story, formation, thus serving not only to advertise merchandise and service, but also to hide unsightly building excavations, rubbish heaps, etc.

The lettering and design of these signs should be carefully studied, for they contain many suggestions that can be used later by the student.

8. Field Sign Boards and Bulletins.—In Fig. 15 is shown a typical group of field boards such as can be seen along any railway line, or thoroughfare, particularly if near a city or large town. One such example is sufficient to call the student's attention to this class of sign. Such boards must, of course, be placed a considerable distance from the thoroughfare or railway tracks, and the lettering on them should be bold and easily read.

9. Various Styles of Fence-Board Lettering.—Some representative examples of good display lettering, in wide variety, suitable for sign boards, are shown in Figs. 16, 17, 18, and 19. These are reproduced from close-up views direct from the sign boards themselves, and they deserve very careful study and analysis.

The name of the commodity in each case is brought out strongly; not only by the size and position of the name, but by the unique forms of the letters, and the sharp contrasts with the backgrounds. Thus, in Fig. 16 "Ceylon Tea" stands out light on a very dark background; in Fig. 17 "Moxie" is black on a light background; in Fig. 18 "King Midas" is of a neutral value, outlined in white, on a black background; and in Fig. 19 "Crystal Domino Sugar" is shown light, outlined in a neutral line and a black outline, on a gray background. In each case, the subordinate descriptive lettering is made smaller and less prominent.

10. Examples in Color of Sign Boards.—Although the matter of color and color schemes will be fully discussed in a later Section, it seems advisable to show here, in Figs. 20, 21, and 22, a few examples in color of sign boards and their surroundings. The student is thus able to get an idea of the importance of planning the color scheme of the individual sign or board itself so that the individual colors of the panel will be harmonious and the colors of the signs may harmonize with colors of surrounding buildings, sky, etc., and at the same time be attractive and compelling.

At a later stage of the course will be taken up the matter of the theory of color, color harmony, etc., and the method of planning the color scheme for a sign.

STORE-FRONT SIGNS

11. Signs Over Store Windows and Doors.—Although the sign lettered on the glass of the window or door, to a great extent, has taken the place of the rectangular sign stretched horizontally across the top of a store front, yet signs of the latter kind are still widely used and must be considered in this connection.

In Figs. 23, 24, 25, 26, 27, 28, 29, and 30 are shown such typical examples of store-front signs that will bear close study. It is possible to show here only a few typical signs; and the student is again advised to inspect those in his own or neighboring city so as to get a broad and comprehensive knowledge of what are good store-front signs.

Fig. 23 shows examples of two kinds of technique in letter execution. The upper sign, Sydney Lyman & Co., is made of carved and raised letters, gilded and mounted on a rich red background. The railroad ticket sign under it was made in gold-leaf letters on a black smalted background. Both signs are artistic, the former being elaborate and the latter being plain and formal.

12. The upper sign in Fig. 24 shows the use of a Text form of letter, well spaced and well placed on a generous back-

ground. These letters are carved out of wood and gilded, and glued onto the dark background. Such a style is very appropriate for a high-grade shop or store in any line.

Fig. 25 shows a plain, simple, readable sign, in Gothic letters, and one that is always dignified and appropriate.

Figs. 26 and 27 show signs of a rather elaborate character, illustrating the *signature*, or handwriting, style of sign. This is usually very effective by contrast, especially when other signs nearby are made of simpler and more formal letters.

The three signs shown in Figs. 28, 29, and 30 are excellent examples of typical store-front signs, well designed and well lettered. Fig. 30 shows a style of Roman letter, well shaped and carefully spaced, that always makes a readable and enduring sign; no one could want or find anything better. For those who profess to want letters of a unique character, that they wrongly call "up-to-date," the sign in Fig. 28 would probably be suitable.

13. Carved and Raised Letters.—In the specimens of store-front signs already shown, the effectiveness of certain signs was due to the carved and raised letters used. While it is not the intention here to introduce the student to wood carving (for the sign letterer is not called on to do such work), it is necessary that he should be familiar with carved, modeled, and raised letters, for they are widely used on store-front and other signs.

Figs. 31, 32, and 33 show a number of letters generally used for signs. The various methods used in treating the face of the letter are illustrated in Fig. 31. The first row shows half-round letters with a center spur. The second row shows letters with the triangular or prismatic beveling. The third row is the flat-finish Gothic letter, rounded to a $\frac{7}{8}$ -inch thickness. The fourth row of letters shows the various forms of the beveled-edge treatment. Here the inside curves of the R show the rounded corners as left by the machine, while similar corners of the E and the D have been carved to a sharp bevel by means of the chisel.

In Fig. 32 are shown three forms of Gothic, or block, letters rounded or beveled in the manner already described.

In Fig. 33 are shown several examples of plain sawed letters that can be fastened directly onto the board, or projected somewhat above the surface of the board, as shown by the H at the top of Fig. 33.

The student will, of course, understand that such carved and raised wood letters can be purchased ready for use, even gilded ready for use, from supply houses dealing in materials for sign men. Porcelain letters, similarly beveled, can also be secured for application to the glass of windows and doors.

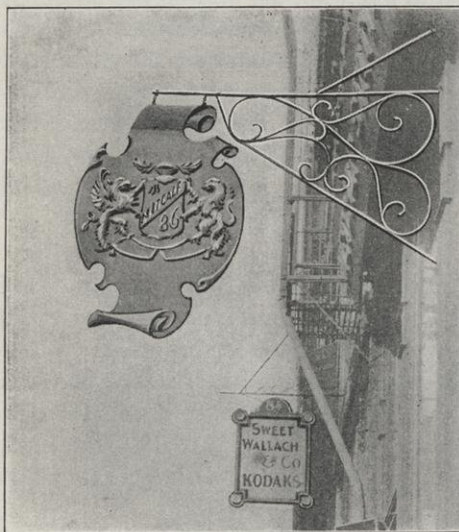


FIG. 34

14. Projecting Signs.—A swinging sign of the heraldic type is shown in Fig. 34. This sign is cut out of sheet iron in the shape of a decorative cartouche. The raised design is cast in brass and fastened on the sheet metal with brass rivets. The sign was tinted an old-rose color, and the design and scrolls were

shaded in a deep, rich red, in harmony with the ground color. The sign was suspended from a light ornamental iron crane, substantially braced from either direction.

15. Carved Swinging Sign.—The design shown in Fig. 35 is a combination of a helmet in full relief with lettering in bas-relief, which together make an attractive design. The helmet and ornaments were gilded as well as the raised and carved letters. The upper part of the sign was painted a

dark green, with lighter green striping across the face. The panel on which the name appears was carmine, and the ground of the lower portion was black. The attention is



FIG. 35

called to unsymmetrical curves in the iron work that destroy the beauty of the sign to a very great extent; also to the poor taste displayed by the sign hanger in using galvanized wire for braces rather than light iron rods.

16. Changeable Projecting Signs.—Fig. 36 is an excellent example of an ornamental iron sign. The panels containing the numbers and the name are of cast bronze while the main body of the sign consists of a sheet-iron plate that slides into grooves in the frame. Signs of this kind may be changed from day to day to call attention to successive special bargains or lines of merchandise. The illustration is therefore of twofold importance as a projecting sign.

17. Natural-Wood Swinging Signs.—In the illustration, Fig. 37, in which signs are numerous, there is a good opportunity for the student to study the lettering and arrangement of a number of the various designs; but the two signs to which attention is especially directed are the McDonald and the Acker signs. These are made of solid oak. They are first filled with a corn-starch filler that brings out the grain of the wood and gives it a smooth surface, after which it is varnished with a slow-drying finishing varnish. The examples shown are lettered in gold and outlined with a heavy line of black. The chamfered edges are likewise gilded. In the Acker sign, ornamental strap hinges are used to attach the sign to the crane, which, in that particular design, greatly adds to its artistic merit.

18. Iron-Bound Swinging Signs.—It may be important to note that Figs. 37 and 38 show that where a sign is especially attractive because of some artistic feature, it is likely to be copied by a neighboring tradesman, and usually by one in the same occupation. This is in poor taste, and shows that either the merchant or his sign letterer is devoid of artistic ideas and unable to be independent of another's designs.

The distinctive feature in the Hurry and the Moelter signs is ornamental iron work surrounding the board. The advantage, aside from the ornamental feature, is that the boards being stayed at close intervals to the frames, will always remain rigid and not warp or check. These signs are lettered in plain gold, and smalted with black. A stripe of gold also

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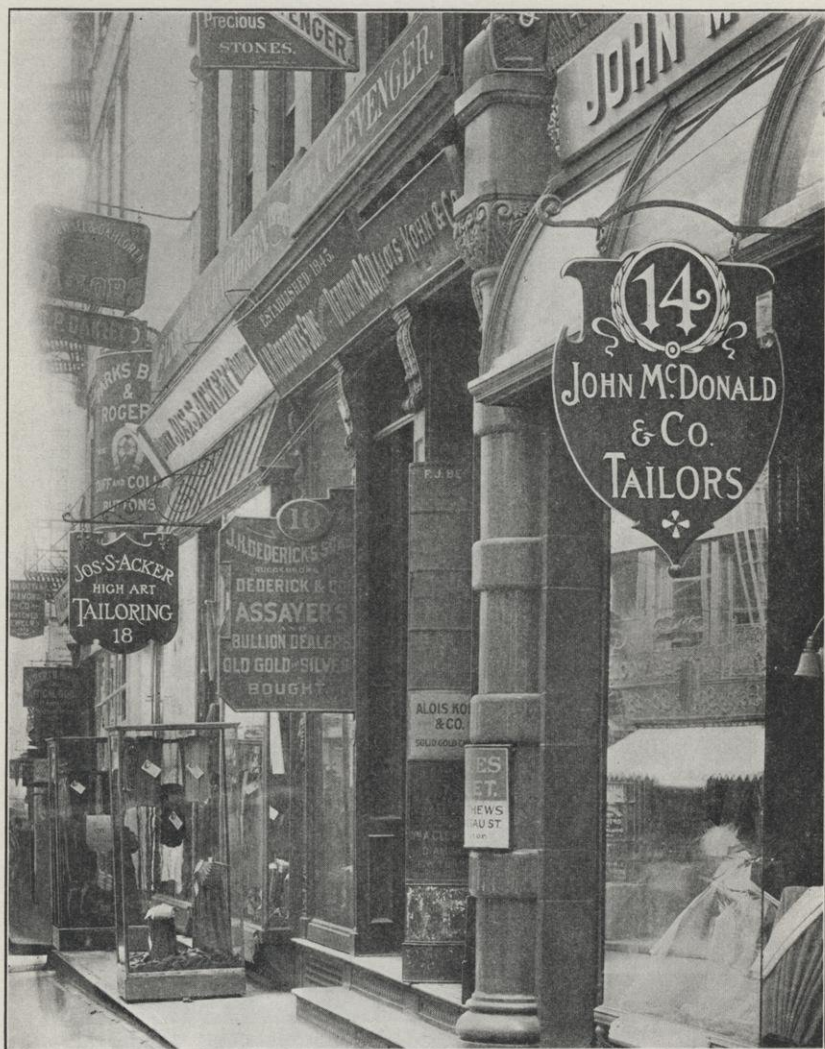


FIG. 37

surrounds the edge of the boards, outside of which are borders of color or jet black.

19. Relief Letters and Borders.—The two projecting signs shown in Fig. 39 are examples of relief work. In the Farrand sign the letters are in relief, while the band and stripe



FIG. 38

within this are plain. The Phelps sign is reversed, the raised work being confined exclusively to the border, while the letters are in plain gold. The panels on which the raised letters are placed in the Farrand sign are painted dark blue, and the balance of the sign with black. The ground of the Phelps sign is a dark green.

20. Various Styles of Projecting Signs.—In the four street views of Chicago, Figs. 40, 41, 42, and 43, a large variety of projecting signs may be seen. Fig. 40 shows one form of illuminated sign in which the raised letters are placed



FIG. 39



FIG. 40

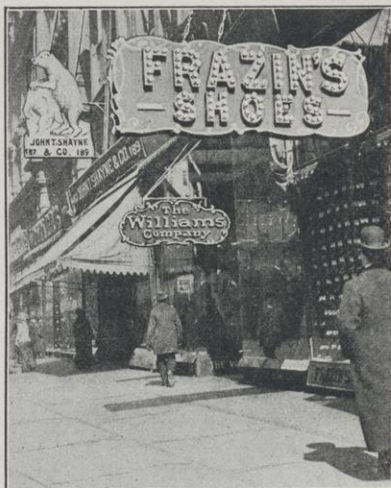


FIG. 41



FIG. 42



FIG. 43

on a panel; around this, lamps are set. The large gold shoe is an attractive feature of this group of signs.

In Fig. 41 the letters of the Frazin sign are sawed out of 2-inch pine and painted white, lamps being set in the faces of the letters. This is, perhaps, the most popular form of electrically lighted sign, both for its utility and comparatively small expense.

The Williams sign, just beyond this, is an excellent example of a neat raised letter and a rococo border suitable to the inscription.

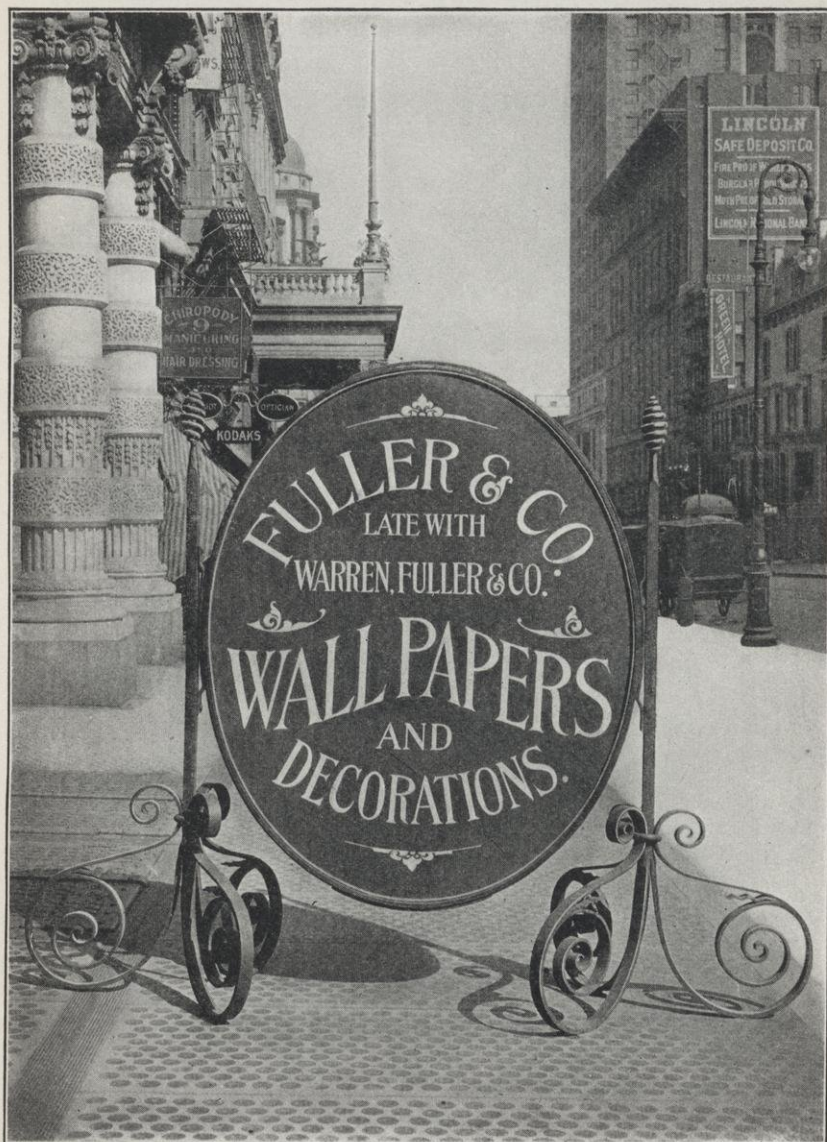
Beyond the end of the Frazin sign is the electric-lighted bear sign. The bear is painted white and illuminated by electric lamps placed entirely around the edge of the design. The name Shayne is also outlined with electric lamps at the base of the sign.

In Fig. 42 are two signs, the first of which is gilded and the border worked out in gold shaded with asphaltum varnish to imitate relief work. The sign beyond has a carved border and is lettered in relief.

Fig. 43 shows a very ornamental bracket from which a large white-faced gold watch is suspended. The Swanson sign just beyond this is a beveled plate-glass sign. The letters are illuminated by electric lamps within the sign. The pieces of beveled plate that form the border are fitted together and either gilded or silvered, having first been chipped or embossed.

21. Sidewalk Signs.—Coming within the general classification of store-front signs are the iron-frame standard signs, that stand in front of stores, on the sidewalk. The ordinary double sidewalk sign, with hinged top and spread base, and the single-standard sign with spread feet for base, are too well known to require illustration here. There are some forms of sidewalk signs that are novel and that are not very common in the average thoroughfare.

The sign shown in Fig. 44 shows an excellent design for such a sidewalk sign, although the lettering on it is not of the best, being somewhat crowded. The elliptic body of the sign



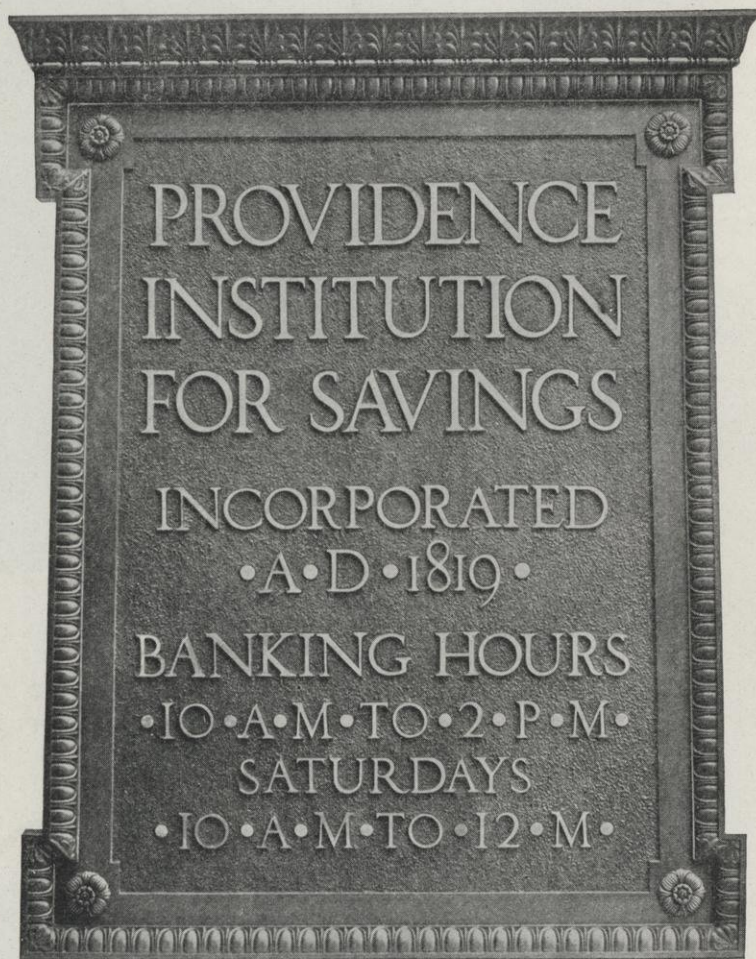


FIG. 45

is of wood. The letters are of gold, and the ground is green. The iron standards resemble somewhat the iron firedogs used in an open fireplace.

METAL SIGNS

22. Purpose of Showing Metal Signs.—The examples of metal signs shown are so grouped on account of their general type, because being made of metal, and therefore not coming within the province of the painter of signs. Most of the signs are store-front signs, and could be appropriately included in the grouping just considered. However, we will treat them as metal signs.

The purpose of the collection of specimens of metal signs is to show the student good examples of well-designed and well-



FIG. 46

spaced sign lettering, and he must so consider these examples. Metal signs are not made by sign painters, but are the technical and specific product of bronze and brass foundries, or makers of monumental bronze and brass products. The letters are designed by expert letterers who do that specific work; the molds are made and the entire tablet then cast in the metal, or in some other way manufactured. The sign painter has nothing to do with such products; but these examples

will show the student of sign lettering specimens of high-grade lettered sign work.

No attempt will therefore be made in this connection to discuss the process of manufacture of metal signs. It will be sufficient to show high-grade specimens of such signs, illustrative of well-designed and properly spaced lettering.

23. Examples of Good Lettering on Metal Signs.

Usually the very highest types of lettering are seen on cast bronze tablets of the better sort. Two of these are shown in Figs. 45 and 46. In both of these the Classic Roman letters are used, the edges being clean-cut and exact, and the heights of the lines of lettering being carefully studied. The spacing of the lines, words, and letters is particularly worthy of note. The student should always keep before him such specimens as examples of what is the very best in lettering.

Figs. 47 and 48 show two brass signs that give a very rich effect. In the first one, Fig. 47, the brass plate was beveled and burnished, the letters being cast in brass and beveled, with centers of black enamel. The brass plate was projected about 2 inches out from the polished mahogany board on which it was mounted. In Fig. 48 the brass plate takes an ornamental or decorative form, the letters being raised. The styles of letters on both these signs are very good for reference.

Figs. 49 and 50 show two examples of the curved brass corner or pilaster signs, that are rich in appearance, appropriate for their purposes, and well lettered. The Northwestern sign shows a good, readable commercial style of lettering suitable for any business sign. The Hotel Victoria sign shows a more classic and refined effect in both design and lettering and one that would be appropriate for any high-grade line of merchandise.

Fig. 51 shows an excellent example of a bronze tablet fitted to a round column. The letters of this sign, on the Old English order, are artistic and in good taste for this particular design. In Fig. 52 is likewise shown a design in keeping with the character of the architecture of the building on which it is placed. The lettering of the sign, however, would



FIG. 47



FIG. 48

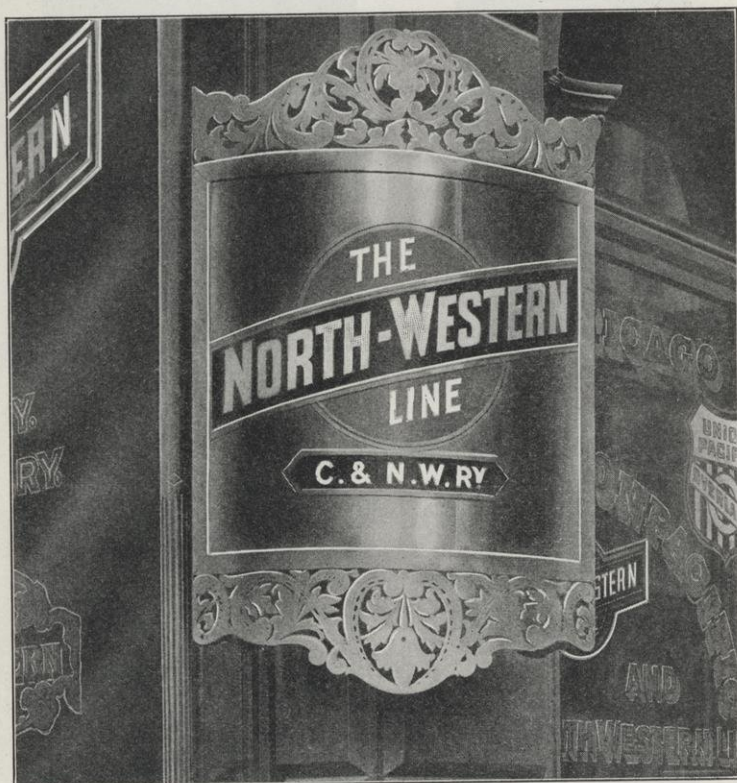


FIG. 49





FIG. 51

be greatly improved had the designer given spacing a little study and endeavored to make all the spaces between letters of equal area, as shown in Fig. 53. The buildings on which

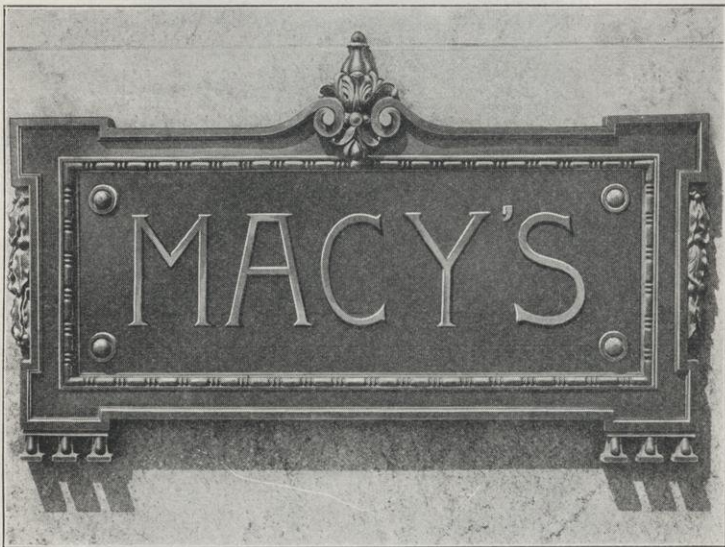


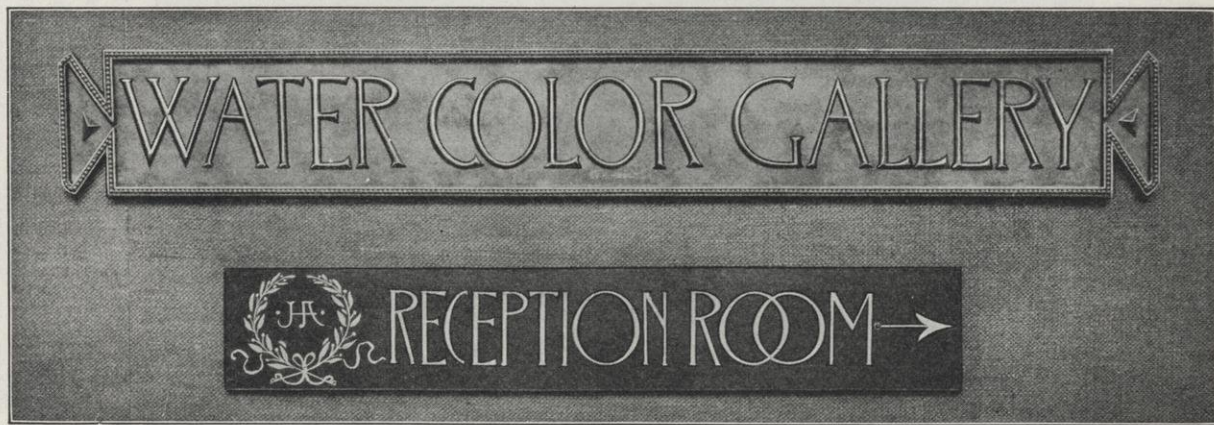
FIG. 52

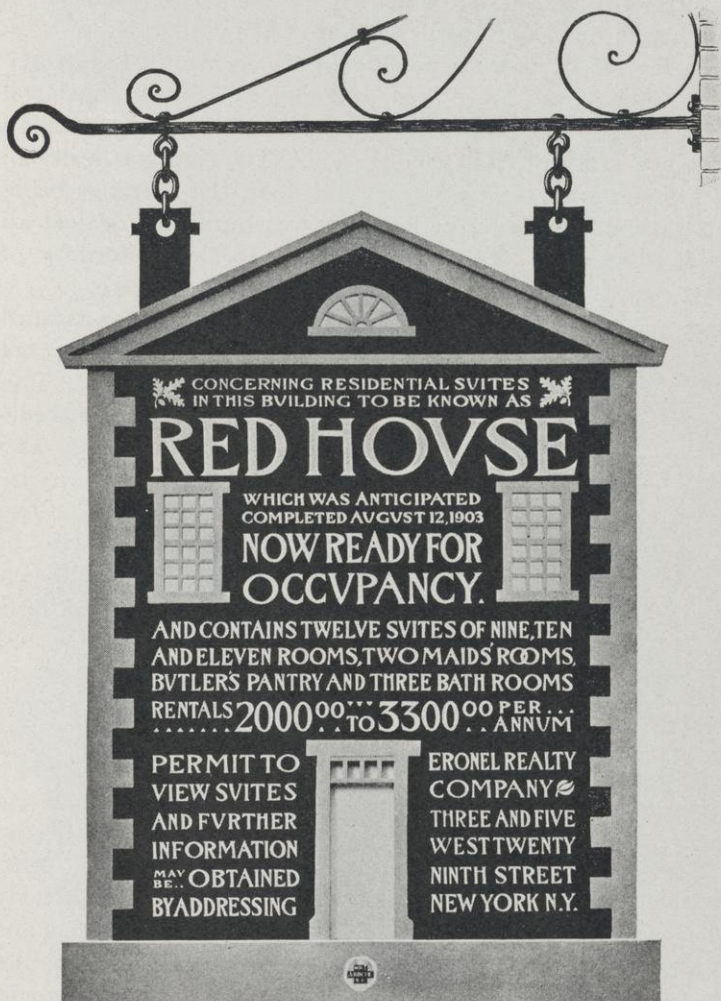
the signs shown in Figs. 51 and 52 are displayed occupy, in frontage, one entire block, and each column or pilaster bears a sign, thus adding much to the appearance of the entire front of the buildings.

MACY'S

FIG. 53

24. Gold-Plated Tablets and Signs.—Among the first-class sign makers are some who aim to produce work that is distinctive in character and design as compared with the work produced by others. Figs. 54 and 55 are examples of work done by a leading designer of brass and metal signs. The former shows an eccentric treatment of the Roman





alphabet, both in relief and flat lettering. On the upper sign of this figure, the pearl border is used, which greatly adds to the appearance of artistic brass or bronze tablets. The filling of letters in high-grade metal signs is not confined to black; red, green, blue, and other colors are often used.

In Fig. 55 is shown a novelty in the form of a brass sign. The original was hung as a swinging sign in the medieval English style; it was projected from the building with an ornamental iron bracket at the top. The sign was a design of a house with open windows and door, the openings being cut with cold chisels; the lettering was burnished against an oxidized ground. Attention is called to the uniformity of style in which this design is lettered in upper case.



FIG. 56

Fig. 56 shows a standing sign used in front of an art gallery. The portion of the sign bearing the lettering, also the molding, were cast in one piece. The standards, likewise of bronze, were cast separately. The lettering is of a classical order, and the whole is an exceptional piece of bronze casting.

At the entrance to a certain office building is shown a cast bronze sign of a novel character. The main body of the sign is flat and

is the width of the bevel of the stonework, while the border or frame of the sign conforms to the stone at a right angle. Above the entrance is suspended an artistic sheet-iron sign on an ornamental grill. The outlines of these signs are worthy of close attention. These are shown in Fig. 57.

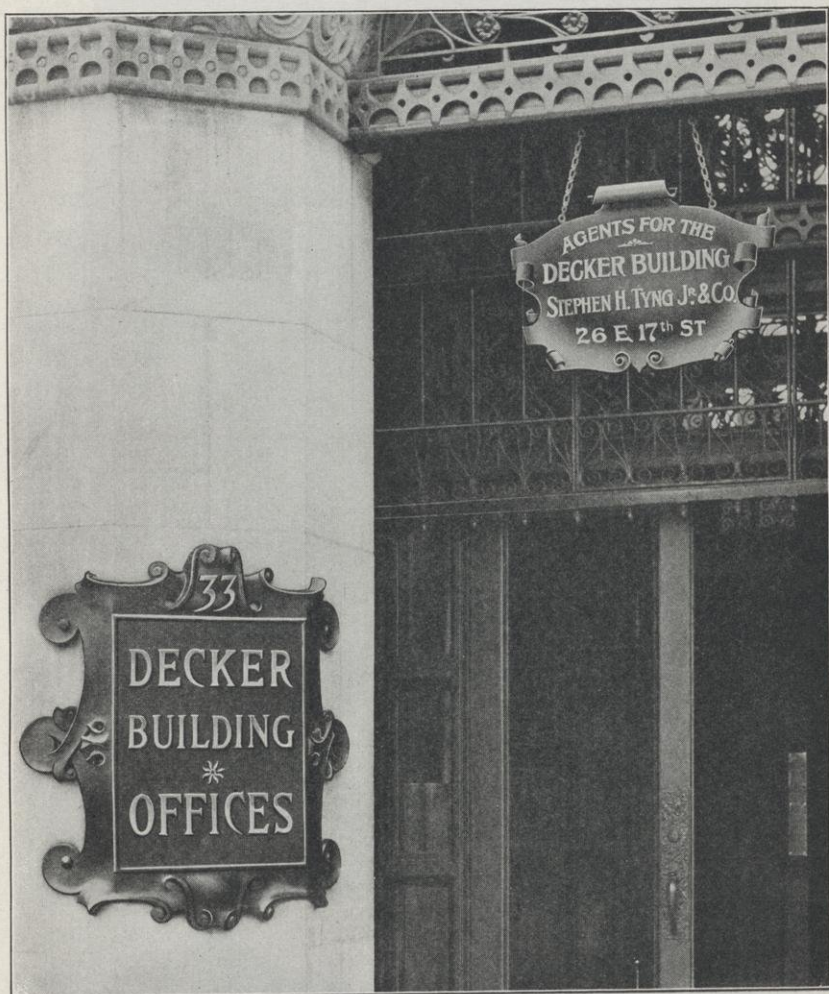




FIG. 58

The illustration shown in Fig. 58 is introduced to show a standard sign of beautiful design, the areas of lettered space and of decoration being so artistically arranged that it will be well to study it carefully. The drawing of the ribbon form at the top, with the upper-case lettering of the word ANACONDA is particularly worth studying.

SHEET-IRON SIGNS

25. Artistic Value of Sheet-Iron Signs.—The sheet-iron sign in its plainest application is, perhaps, the oldest known. With the modern development in electric

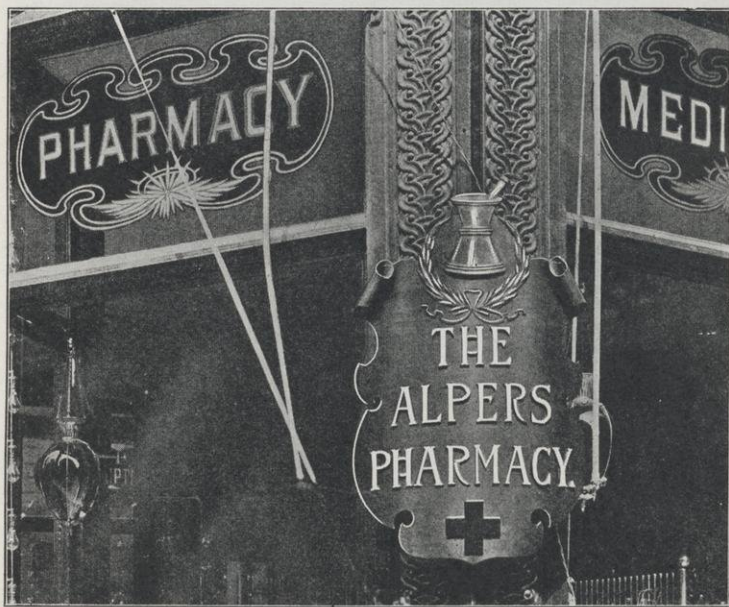


FIG. 59

lighting, the sheet-iron sign has become an illuminated sign, and has thereby doubled its commercial value. Today it is found among the most artistic and classical styles of sign used. A variety of such signs have been selected, sufficient to show their various applications.

26. Sheet-Iron Drum Sign.—The distinctive feature in the design of sheet-iron signs is the rolling of the metal into a scroll at the top or bottom of the design. This gives a peculiarly graceful effect that is attainable only in this form of sign. Fig. 59 shows the drum sign bent so as to fit a corner, and yet not enough to destroy the legibility of the inscription.

The outline of the Alpers sign is artistic, with, perhaps, one defect: the bottom point should have been carried lower and made more acute, to counterbalance the design at the top. The raised letters are of cast brass, as are the red cross, mortar, and wreath.

While window lettering will be dealt with under the proper head, it may be worth while to call attention to the windows of Alpers' Pharmacy, shown in the figure. The letters and design are outlined with gold, the background is stippled with dark green, and the letters with white, making a very attractive day sign, and one that is easily read at night.

27. Lamp Sign.—The Hanover sign, Fig. 60, is an excellent example of artistic workmanship. The elliptic design is appropriate to the inscription. The letters, as well as the elliptic border, are in relief.

The bronze tablet also shown in this illustration is worthy of close inspection, with regard to both lettering and spacing, as well as to the general character of the design.

28. Appropriate Designs.—There is, perhaps, no better display of taste in the preparation of a sign for a classical business than that shown in Fig. 61. The designer had used the breast plate and gauntlet of the medieval period, the former carrying the sign inscription, while the latter suggests the business advertised. The lettering, although not classical, is not out of harmony with the general character of the design.

29. Ornamented Sheet-Iron Signs.—The Dayton sign, Fig. 62, is a sheet-iron sign relieved with cast ornaments and trappings. The sign is apparently suspended by a chain held in the mouth of a dolphin. This, however, is only for



FIG. 60

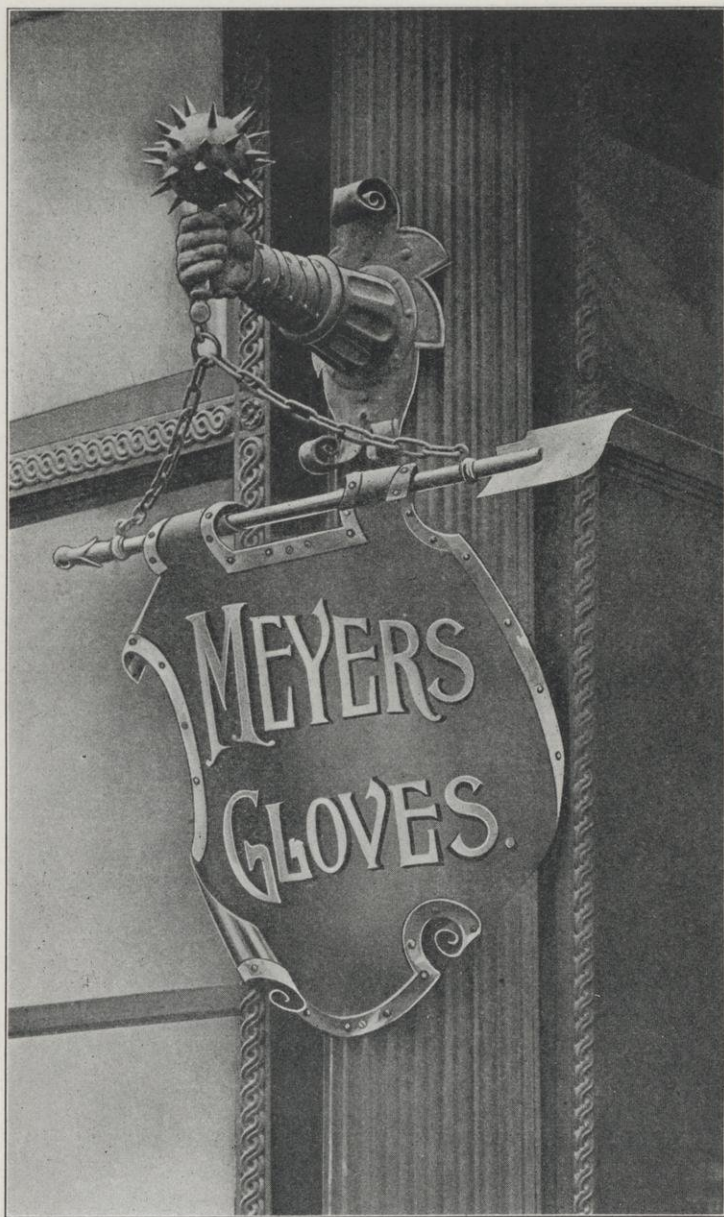


FIG. 61



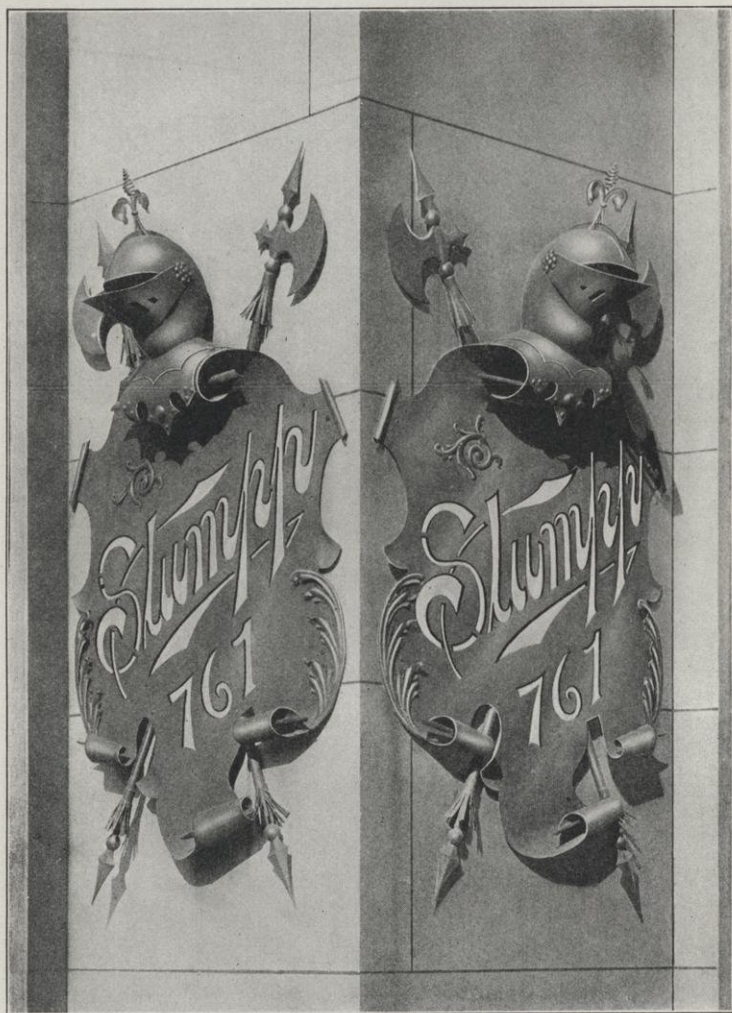


FIG. 63

effect, as the sign is firmly fastened to the building. The cast ornaments are riveted to the sheet metal, and the chains are linked through holes. The lettering is of gold on a reddish-brown ground, while the ornament is painted with a tint of the same color. The whole makes a very artistic sign.

30. Cut-Out Inscriptions.—The Stumpp sign, Fig. 63, presents several novelties not met with so far in the examples



FIG. 64

of sheet-iron signs. The letters are cut out and opal glass is set in the back of the sign. The design is in full relief. The helmet and battle axes stand out prominently from the building. The style of letter, a stub-script, is not well executed and rather mars the appearance of the design; the numerals are entirely out of harmony with the letters. This point, however, passes unobserved to those unskilled in letter

formation. A cast relief border is used to embellish the edges of this sign, and also as an ornament above the lettering.

31. Inexpensive Sheet-Iron Signs.—In Fig. 64 is shown a plain lettered sheet-iron sign made to show from opposite directions. Two sheets of iron are held together with rivets passed through the irons that are used as brackets to fasten the sign in place. The corners are rolled scroll-wise, this being the only attempt at the ornamental. The lettering, being white, is edged with gold.

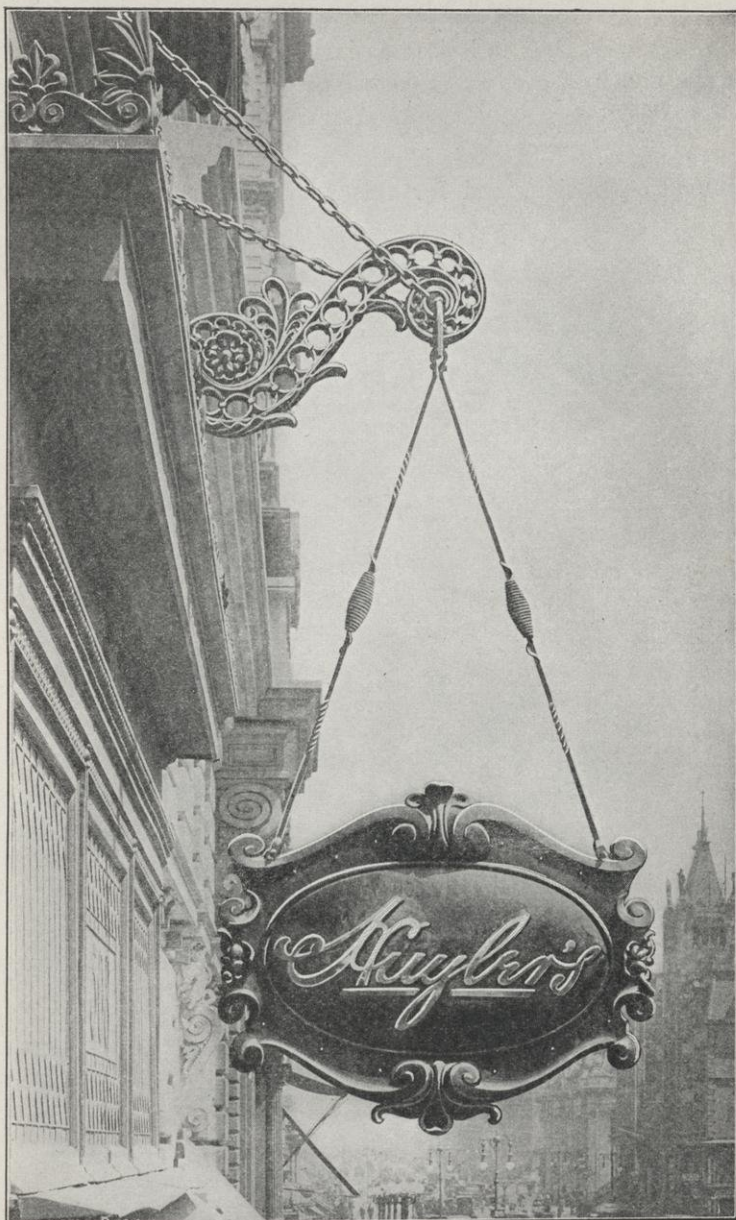
32. Swinging Sign.—A novel metal sign is the hammered-copper sign. Owing to the malleability of copper, bas-relief designs can be worked out, and many beautiful effects produced in the line of ornament.

The swinging sign shown in Fig. 65 is a good example of a plain copper sign. The letters may be cut out of brass and gold plated, or they may be cast in bronze with a gold-plated or burnished face. The hanging of this sign is somewhat unique, and at the same time most substantial.

WINDOW LETTERING

33. Examples of Lettered Windows.—Gold-leaf lettering on the glass of windows and doors has come to be one of the most important forms of sign lettering. The enterprising student will, of course, look about him and note the many examples of such window lettering to be seen on every hand. Most of these will doubtless be plain window lettering and plain signs. For this reason, the specimens of which we will show illustrations in these pages will be of a somewhat more elaborate and varied character, and such as will best serve to show the various styles and methods of execution of window signs.

Figs. 66 and 67 show good examples of simple and readable lettering executed in gold, etc., for window work. The lettering in Fig. 66 does not, apparently, represent any elaborate or



65

FIG. 65

intricate work, but it is interesting to note how the picture of the lion in the circle is portrayed.

34. To all appearances, the lion's head is painted directly on the glass. While this is possible, yet it would be a very difficult operation, and for this reason a more convenient



FIG. 66

method is resorted to. The head is painted on transfer paper—a paper coated with several applications of gum arabic. After painting the head directly on this with oil colors, when dry, it is transferred by the regular process of decalcomania similar to the method of transferring transfer pictures, with which every child is familiar. In the original sign, the stripe around the belt is of bright gold, with a heavy

black line inside and outside the belt. The letters are black, and the belt ground white; the latter is shaded with a gray blended shade where required.

In Fig. 67 an eagle design is worked out in gold directly on the glass. This work is done by scratching the gold with needles and sharp-pointed maple sticks. After the work is sufficiently shaded, it is backed up with black or dark brown and subsequently with a protecting coat of varnish color.

Fig. 68 illustrates an example of a very attractive window. Not only is this attractive because of the excellent workmanship, but because of the character of the design. The lettering of this window is done in gold. The poster held out by the boy is printed and stuck on the back of the panel, there being perhaps 2 or 3 inches of margin painted white. The globe is outlined in gold and backed up with blue. The boy is of burnished silver shaded with black.

35. Trade-Mark Designs.—Among the lettered windows of every large city are designs that are used exclusively by one particular concern. Especially is this true in regard to manufacturers or large jobbers conducting large numbers of retail stores scattered throughout the country.

Fig. 69 shows another process of lettering the sign on glass. In this example, the owl is first carefully drawn on the outside of the glass, or, better still, a thin sheet of Manila paper is taken, and the design, having been drawn on this, is fastened on the outer side of the glass with mucilage. The shading is done with asphaltum and varnish, strengthening the shades by applying one over the other. When dry, the design is gilded. The design is gilded first and then the letters in the owl design are outlined with bright gold and filled in with dead or Etruscan gold.

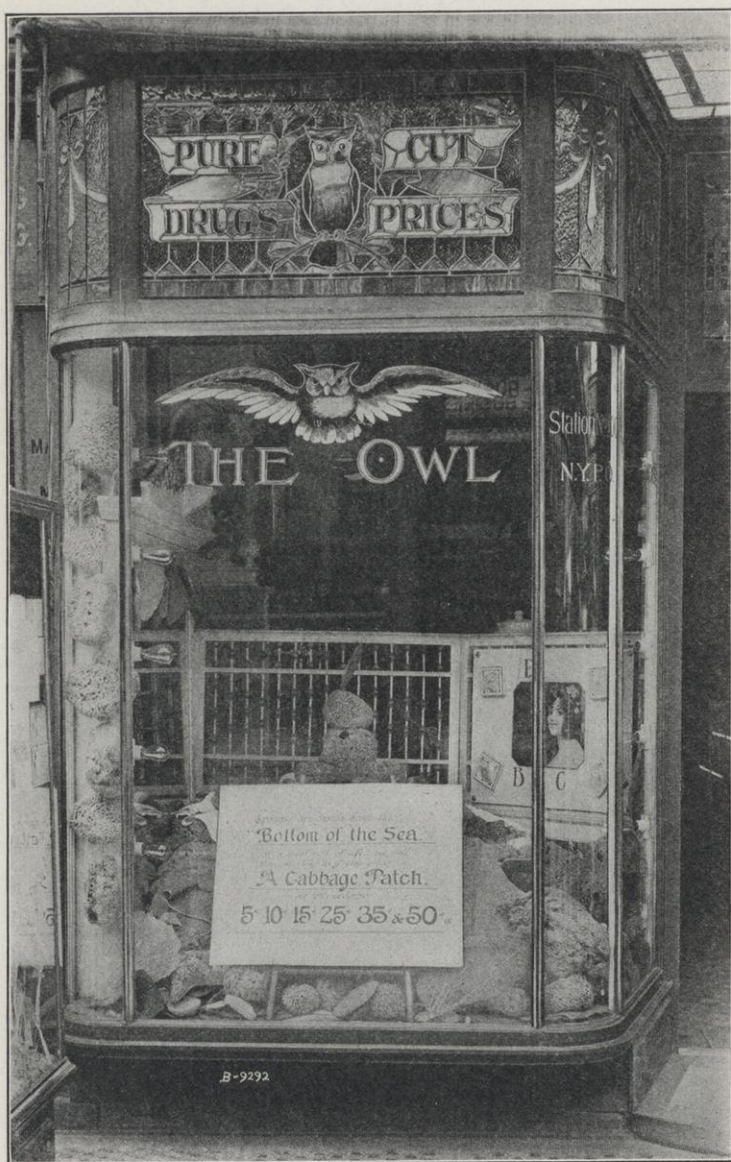
Attention is called to the frieze of the window, which is an artistic piece of stained-glass work.

36. Paneled Window Lettering.—Fig. 70 shows a window that is a relic of the earlier school of lettering. The panels and disk are backed up with solid colors. The border and letters are brought out in gold and strong harmonious



FIG. 67





B-9292

FIG. 69

colors, embellished with pearl. The dome of the Capitol at Washington being the central feature in the design, it is outlined in black, shaded and backed up with a solid pearl background.

While such elaborate examples of window lettering are scarce at the present day, they are unsurpassed by modern

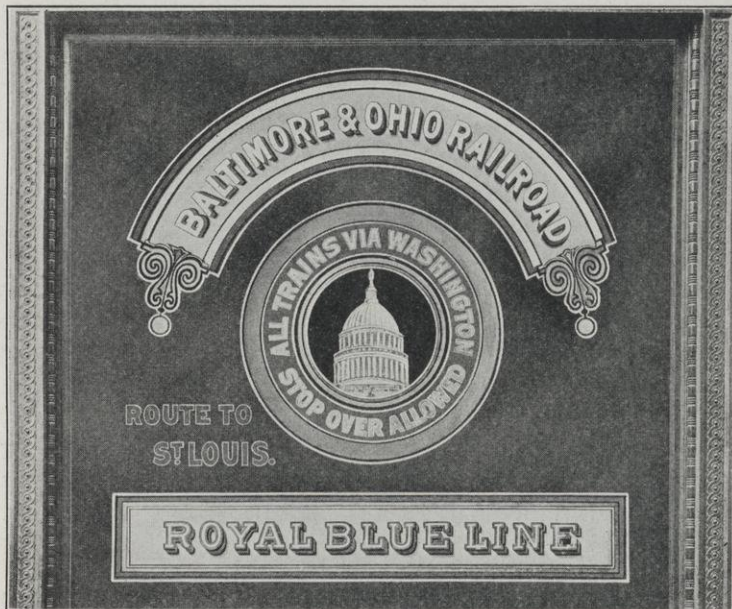


FIG. 70

styles of window lettering in opportunities for showing the versatility of the letterer, both as a designer and as a colorist.

37. Translucent Window Designs.—Perhaps no example will better illustrate modern window lettering and designing than that shown in Fig. 71. Few stores or places of business can afford to sacrifice daylight by obstructing the window with an opaque design. This has led to the translucent design that serves also as a transparency, thus taking advantage of the abundant interior illumination in a most practical way. In this illustration the elliptic panel is

surrounded with a pearl border of silver. The ground color on the ellipse is a dark green stippled in imitation of ground glass. The letters, as well as the wreath and lamp, are outlined with burnished gold and filled in with dead or Etruscan gold.

ELECTRIC SIGNS

38. Use of Electric Signs.—Electric signs are used more widely than ever before, because—through competition—the merchant is obliged to keep his firm name and his store before the public even at night. The purpose here is not to discuss the manufacture of electric signs, or the technical details of their installation and operation, for the average sign letterer has nothing to do with these technical features. However, the sign man is quite likely to be called on at any time to design letters and layouts of words and decorative work for electric signs, and he should, therefore, possess some knowledge of the characteristics of such signs.

It must be noted, also, that the specimens shown cannot possibly cover all classes of electric signs; especially can they not cover the many and diverse picture-electric signs such as are well-known landmarks along Broadway, New York City. However, the main classes are shown, particularly for the purpose of illustrating typical lettering for such signs.

39. Examples of Well-Lettered Electric Signs. Electric signs of every style, from the *talking sign* to the permanently lighted sign, have taken such an important place in the principal streets of large cities that they have literally transformed night into day. Flash signs are always the first to catch the eye, but owing, perhaps, to the expense of running these and the attention they require to keep them in running order, they are fast giving place to the permanently lighted sign, except in certain "show places" in the larger cities. For certain purposes, however, the flash or monogram sign is indispensable, as for carriage calls, electric-flash clocks (recording the time every minute), and other similar uses.

Fig. 72 illustrates a monogram flash sign that will show



every letter of the alphabet and also the numerals. The cylinder below the letter shows the method of operation; forty changes can be made on each cylinder. When once adjusted, the sign works automatically.

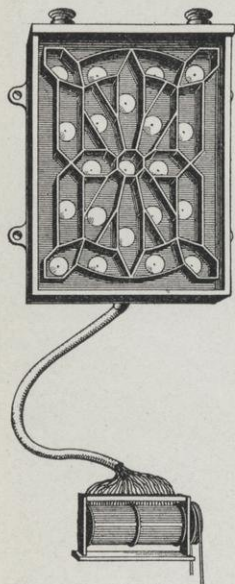


FIG. 72

In addition to the monogram flash, there is the side walk disk, the color flash, the periodical flash, etc., operated by various kinds of revolving switchboards.

40. On the Levey corner, Fig. 73, are shown two styles of the permanent electric sign. In the one directly on the corner the letters are cut out of 2-inch seasoned lumber and painted white.

On the faces of the letters, electric lamps are placed so as to show their outlines and illuminate their faces. It will be noticed, on close inspection, that at the back of the sign a wide strip of bar iron unites the letters, giving them sufficient strength to withstand a violent wind pressure. This iron strip serves also as a brace in fastening the sign in position. It is painted with some dark

color and is not noticeable at a little distance from the sign.

The dentist sign opposite the stairway, also shown in Fig. 73, is an inexpensive but most practical form of electric sign. The sign is of enameled iron, with a blue ground and white letters, set in a beveled frame. Around the inside of the frame, lamps are set at such an angle as to throw the light directly on the face of the sign.

41. Fig. 74 presents an example of a projected sign that is to be read from two opposite directions. The shield-like design is illuminated as well as the letters at the top of the sign. It is necessary to panel the wire when the letters are to show from opposite directions and illuminate the letters on both sides of the sign. The letters in the illustration are cut of kiln-dried pine and painted white, and to these the



FIG. 73

electric lamps are attached. The two lower signs on the shield, being of a temporary nature, are not wired for illumination, as the number of lamps used is sufficient to make these signs legible at a great distance.

42. In the Gardiner sign, shown in Fig. 75, no wire work is necessary. This sign consists of a frame, around which

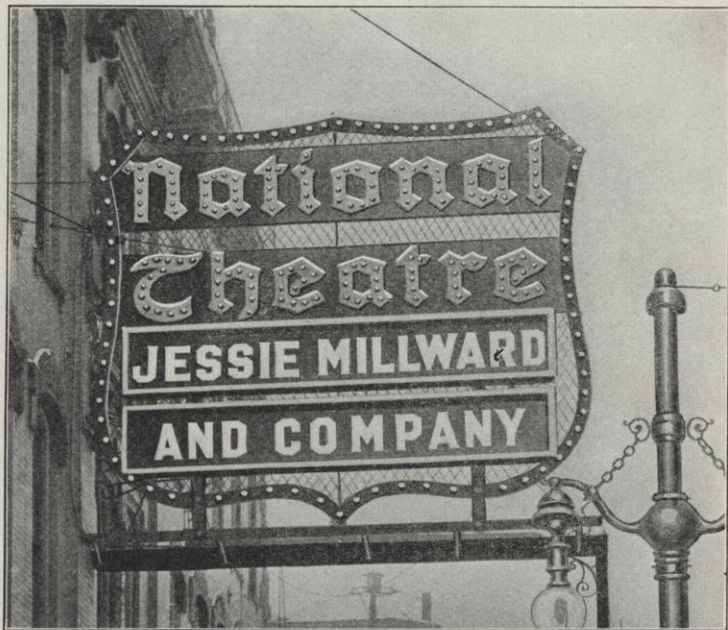


FIG. 74

there is a row of electric lamps; it contains a bevel-edged board with raised bevel-edged letters painted white. The sign is projected from the building by the use of peg hooks and eye irons, of the same kind seen on heavy iron gates. When swung out in a position perpendicular to the front of the building, it is stayed with iron rods.

43. One of the earliest electric signs used is that shown in Fig. 76. The letters of this sign are white, with an outline of gold surrounding them. The ground is smalted with

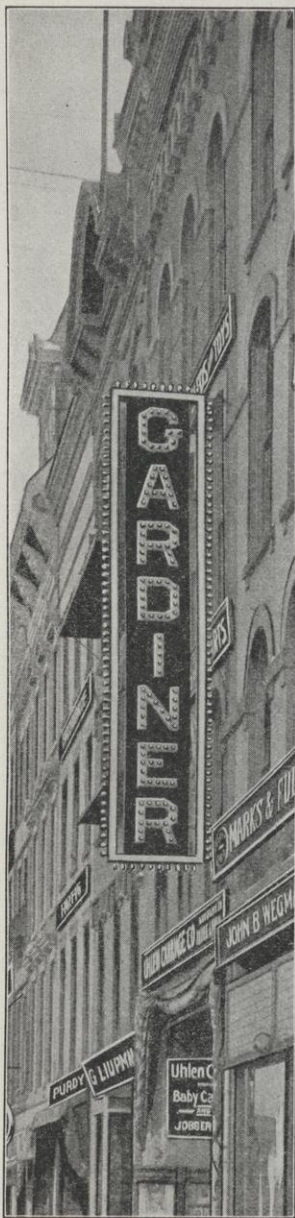


FIG. 75

dark-green smalt, giving the sign a rich appearance as a day sign, and combining under illumination to advantage with the white and gold. The sign on the front extends across the entire building, and is lettered in the same style as the side sign.

44. Fig. 78 illustrates an electric sign in which the electric lamps are concealed. The sign is of sheet metal, to which wooden letters are attached. Surrounding each letter and parallel with the edge of the sign are round holes made as closely together as possible. The sign lamps are placed at the back of the sign and through these holes the inscription and outline of the sign board are illuminated. The sign is smalted with diamond smalt, the glitter of which makes the sign more attractive.

Fig. 77 represents a photographic reproduction of the same sign taken at night. On account of the foreshortened view of the long sign, its illumination does not show; but the diamond-shaped sign will fully illustrate the lighting effect and the illumination of the raised letters. In the original sign, the reflection of light from the diamond smalt may be seen very plainly, which adds greatly to the attractiveness of the sign.

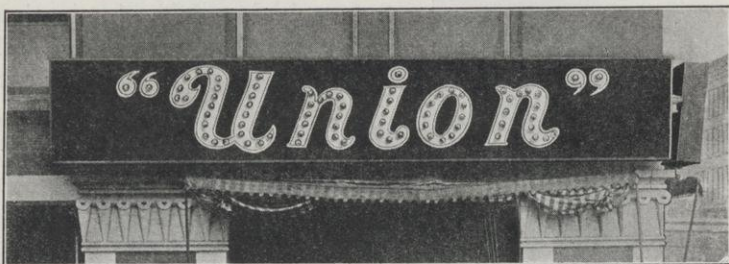


FIG. 76

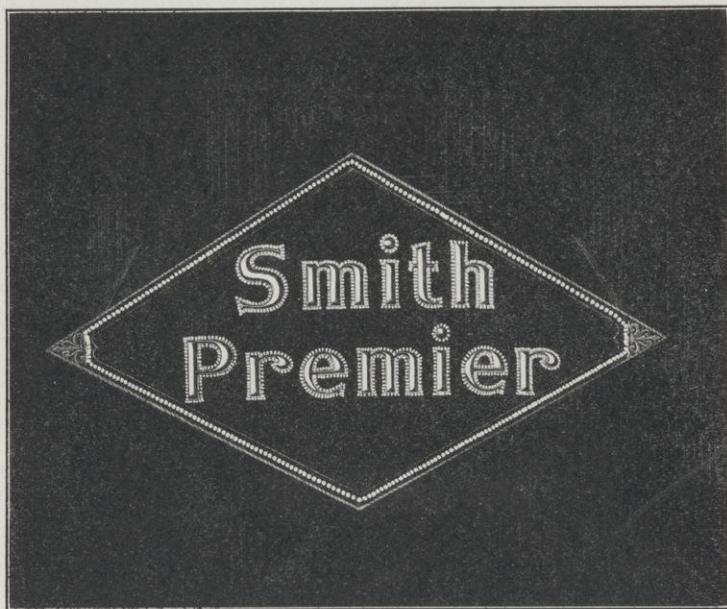


FIG. 77



FIG. 78

THE LETTERING PLATES

MATERIALS AND METHODS OF WORK

45. Paper, Pencils, Brushes, Pigments, Etc.—The student will require for the work in this Section nothing in the line of materials in addition to what he has already used. In fact, the kind of drawings to be prepared, to serve as plates to be submitted to the Schools, are practically the same as those prepared in the foregoing Section, and the technique and the materials may be the same as used previously.

The student must guard against allowing his supply of materials to become exhausted. He must glance ahead over the work in hand to see how much paper is required, and always keep well supplied with it.

46. Method of Preparing and Submitting Plates. The plates that constitute the work of this Section are to be prepared and submitted according to the same general plan as outlined for the work of the preceding Section. The student is to select, in each case, the specimen of a commercial sign that he considers the best, and then make a drawing of it, enlarged to the proper size, as specified in each case, and then write a few words of descriptive matter in the white margin at the bottom if he so desires.

PLATE 1

47. Purpose.—The purpose of this plate will be to determine whether or not the student has understood just what is a well-designed and well-lettered formal sign, such as would be used for a dead-wall or a fence-board sign. His choice of the one he uses for Plate 1, and his manner of

drawing it, together with the comments he writes at the bottom of the plate, will determine this point.

48. Laying Out the Plate.—Look over again and carefully study the illustrations of dead-wall signs, and board signs, etc., shown in Figs. 3 to 5, inclusive. Select from these the one that you consider to be the best example of a well-designed and well-lettered sign. Make a drawing of it, in pencil, or pen and ink, etc., on your 20"×15" sheet of drawing paper so as to fit approximately within the 15"×9" rectangle on the sheet. Render and shade it so as to be as nearly like the illustration as possible, using for this purpose the medium that gives you the best results—pencil, pen and ink, charcoal, wash—or even color, if desired.

Leave enough white margin at the bottom of the sheet so that you can write there, in pencil or ink, or in typewritten form, your reasons for selecting this example, and a statement of what features of the design most strongly appeal to you as making this a well-lettered sign.

49. Final Work on Plate 1.—When the drawing and the rendering, and the written material have been entirely completed, place the title, Plate 1: Commercial Signs, at the top of the sheet, and the class letters and number, name and address, and the date of completion, on the back of the sheet in the lower left-hand corner.

This plate may be mailed to the Schools in the mailing tube now or may be held until Plate 2 has been completed, at which time Plates 1 and 2 may be mailed to the Schools together for examination.

Proceed now with the work of Plate 2.

PLATE 2

50. Purpose.—This plate will serve to test the student's knowledge and choice of a well-lettered store-front sign; just as the previous plate served as a test for wall and bulletin signs.

51. Laying Out the Plate.—Select, from among those illustrated in Figs. 23 to 30, inclusive, what you consider to

be the best designed and best lettered store-front sign. It may be either a sign to go horizontally over a door or window, or it may be a sidewalk sign. When the proper selection has been made, make an enlarged drawing of it, in the usual way, to fit approximately within the 15"×9" rectangle on the 20"×15" sheet. In the lower margin write your reason for selecting this example, and a statement as to what features of the design make the strongest appeal to you.

Render the design carefully, as described for Plate 1, so as to be as nearly as possible an accurate replica (enlarged, of course) of the original illustration.

52. Final Work on Plate 2.—Place the title, Plate 2: Commercial Signs, at the top of the sheet, and the class letters and number, name and address, and the date of completion, on the back of the sheet in the lower left-hand corner. Mail this Plate 2 to the Schools in the usual manner, and if Plate 1 has not yet been sent, mail it, along with this Plate 2, for examination.

Proceed now with the work of Plate 3.

PLATE 3

53. Purpose.—The purpose of this plate is to serve as a test of the student's estimate of what is a well-designed and well-lettered sign for a street or field sign or bulletin board, just as the two previous plates served as tests for signs of other kinds.

54. Laying Out the Plate.—Select from among those illustrated in Figs. 8 to 20, inclusive, what you consider to be the best designed and best lettered street or field-board sign or bulletin board, and then make an enlarged drawing of it in the usual way, to fit approximately within the 15"×9" rectangle, on the 20"×15" sheet.

In the lower margin write your reasons for selecting this example, and a statement as to what features of the design most strongly appeal to you.

Render the design, as previously described, so as to be as

nearly as possible an accurate replica (enlarged) of the original illustration.

55. Final Work on Plate 3.—Place the title, Plate 3: Commercial Signs, at the top of the sheet, and the class letters and number, name and address, and the date of completion, on the back of the sheet in the lower left-hand corner. Mail this Plate 3 to the Schools in the usual manner for examination.

Proceed now with the work on Plate 4.

PLATE 4

56. Purpose.—Just as previous plates in this subject have served as a test of the student's judgment of designs of certain kinds, this plate will serve as a test of his judgment on a window sign. As in previous cases, the text also concerns the careful manner in which the sign will be drawn for the plate.

57. Laying Out the Plate.—From the illustrations shown in Figs. 66 to 71, inclusive, make a selection of your idea of the most attractive, artistic, and appropriate window lettering. Then make and carefully render an enlarged drawing of it in the usual way, to fit within the 15"×9" rectangle on the 20"×15" sheet.

Write the usual data in the lower margin.

58. Final Work on Plate 4.—Place the title, Plate 4: Commercial Signs, at the top of the sheet, and the class letters and number, name and address, and date of completion, on the back of the sheet in the lower left-hand corner. Mail this Plate 4 to the Schools in the usual manner for examination.

If any redrawn or rerendered work on any of the plates of this Section has been called for and has not yet been completed, it should be satisfactorily finished at this time. After all required work on the plates of this Section has been completed, the work of the next Section should be taken up at once.

SIGN DESIGNING

PRINCIPLES OF DESIGN COMPOSITION

1. Seventh Stage in Learning Sign Lettering.—The instruction so far given in the six stages of learning to do sign lettering has provided the necessary equipment that may be used as material for the actual work of making the design for a sign. The purpose of the present Section will be to train the student to use this equipment so as to produce well designed signs. To do this, it is necessary first of all to become familiar with the principles of artistic design, then, later, to apply these theoretical principles to the production of designs for signs.

2. Necessity for Good Composition in a Design.—The term composition, as used in artistic design work, means the orderly and harmonious arrangement of parts to secure a pleasing and attractive design—in this case a sign. Unless the various parts of a sign design, (the lettering, the ornament, the background, etc.) are arranged in an orderly manner, they are simply isolated parts, and there is nothing of interest or value produced. Suppose six matches or toothpicks are allowed to fall in an indiscriminate heap on a sheet of paper; there is no order or harmony; in fact, there is disorder, as shown in Fig. 1 (*a*). But if these sticks are arranged in orderly relation to one another; that is, so as to make patterns with them, there is at once harmony, and, therefore, composition is shown. The six matches or toothpicks may be arranged as the sides of a hexagon, as in Fig. 1, (*b*); or they may be so placed that the inner ends of each one touches the inner ends of all the rest, the bodies of the sticks spreading

out fanwise, like a sunburst, as in (c); or they may be laid to form a six-pointed star, as in (d). No matter what the orderly arrangement is, there has been expressed composition in design; that is, a design has been produced.

Composition in a sign design is expressed, not only by orderly arrangement of lines, but also by the orderly arrangements and relations of lettered spaces and blank spaces and their relative sizes and shapes; the relative tone values of

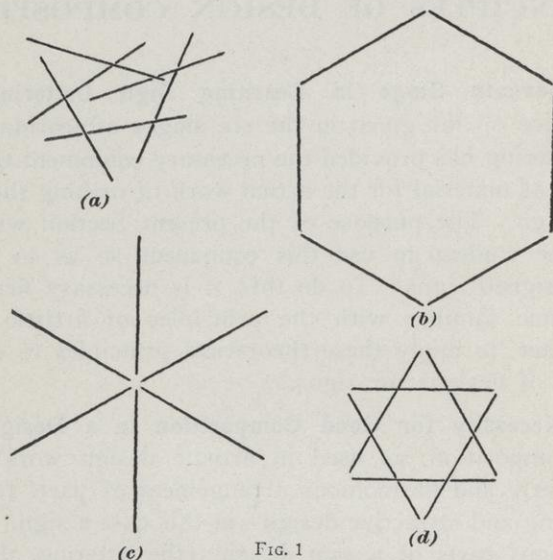


FIG. 1

masses of black, gray, and white, together with their sizes and shapes; and the relations of masses of colors; that is, their relative color values.

3. Unity.—In the arrangement showing absence of plan or order, Fig. 1 (a), the six lines of equal length bear absolutely no relation one to another and are therefore meaningless and of no interest, being disconnected and scattered. But, when grouped so as to form a hexagon, as in (b), or a sunburst, as in (c), or a six-pointed star, as in (d), they express a uniform idea from which no one of them could be removed without leaving an impression of incompleteness. This com-

posite arrangement of lines that forms a complete idea, is termed *unity*, inasmuch as the lines, when grouped, no longer are separate elements, but form the unit of a design.

Similarly, if the different units in the drawing or design were outlined shapes instead of merely lines, or if they were masses of black, gray, or colors, this same principle of unity would have to be established as the first principle of composition in design.

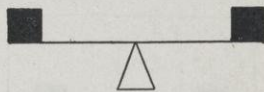


FIG. 2

4. Balance.—Unlimited combinations of lines and masses can be made, all expressing unity; but some of them will be more pleasing than others, depending on the care with which these lines and masses have been arranged so that each will keep its proper place without being unduly emphasized. Such proper arrangement is called *balance*.

The proper balance of outlined spaces, or of tone and color masses, in any drawing, is arranged subject to the same laws that govern the balance of actual physical weights. For instance, when a board is balanced evenly, as in the case of a seesaw, its center must be over the point of support; also, if a weight is placed on one end of the board, the balance can be maintained by placing an equal weight on the other end, as shown in Fig. 2.

5. If, however, the weight on one end of the board is moved toward the point of support, it must be made heavier, if the balance is to be maintained; on the contrary, the farther the weight is removed from the center, the lighter it may be and still balance the one on the other end. Thus, a weight of 100 pounds placed half way between the end of the board

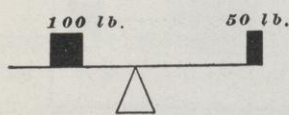
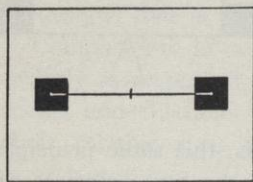


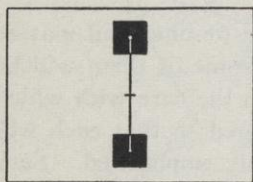
FIG. 3

and the point of support can be balanced by a weight of 50 pounds placed on the extreme other end, as shown in Fig. 3. Applying this principle to the balancing of outline shapes and tone masses in a design, it is found that the two black masses in Fig. 4 (a) and (b) balance each other

perfectly, because they are of equal size and weight, and are the same distance from the center, corresponding to the point of support.



(a)



(b)

FIG. 4

But, if one of these spots were gray or white, the two would not balance in the position shown, because the gray or white spot would be lighter in tone value; and, to balance the black one, it would have to be increased in size. This is shown in Fig. 5, where the gray spot *a* is twice the size of the black spot *b*, but its light-and-shade value is only half as strong, or heavy, as that of *b*, and therefore these two are perfectly balanced when equidistant from center *c*. In Fig. 6 the lighter value *a* is balanced by the darker, or heavier, value *b*, although *b* is only one-fourth the size of *a*. Being one-fourth

the size and twice the strength, or weight, in tone value, *b* has half the value of *a*, and balances with *a* when placed from *c* a distance twice as great as *a* from *c*. In general, these same principles apply to the balance of black or gray values as against white values.

6. Application of Unity and Balance.—In discussing unity it was stated that, in arranging abstract lines so as to become patterns, it was possible to make some arrangements more pleasing and interesting than others. What has already been learned about the principle of balance will make plain

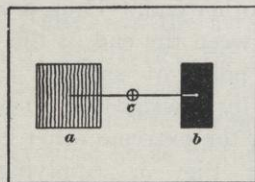


FIG. 5

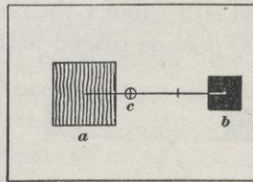


FIG. 6

how this may be done. In Fig. 7, (a) to (f), are shown line arrangements expressing unity, but also showing balance. The

square at (a), divided into two equal areas by the vertical line, shows exact symmetrical balance of the two rectangular spaces just as symmetrical balance from the standpoint of physical weights and of equal masses was shown in Figs. 2 and 4 (a). The application of these physical forms of balance to visual

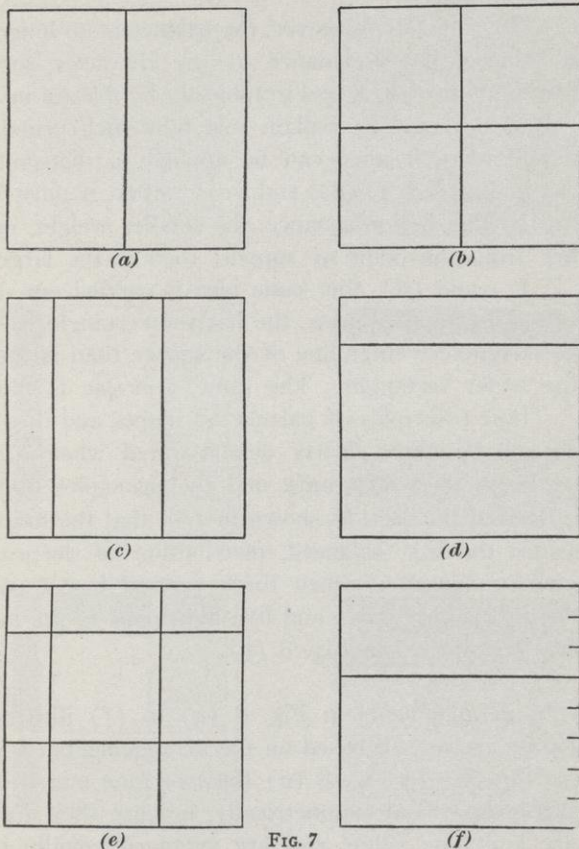


FIG. 7

balance, or apparent balance or equal distribution of areas, is this: Whereas in Fig. 2 physical balance was shown by placing equal weights at equal distances from the point of support, in Fig. 7 (a) balance is shown because the vertical center line is midway between the two large equal rectangular spaces, thus serving in the same capacity as the fulcrum or point of support

in Fig. 2, and balances the two equal areas. In a similar manner balance is expressed in (b), both vertically and horizontally, because the lines drawn through the square are both center lines, and not only are the rectangles balanced, but the squares all balance equally around the central point where the two center lines intersect.

In (c), (d), and (e), however, the balance is no longer symmetrical balance, but is balance of the character shown by physical weights in Fig. 3, and graphically by masses in Figs. 5 and 6. It is not easy to explain just how such principles of physical and mass balance can be applied to distribution of spaces, as in Fig. 7 (c), (d), and (e); rather, it must be seen and felt. In Fig. 3, for instance, the smaller weight, or mass, is farther from the point of support than is the larger; and in Fig. 7, (c) and (d), this same idea is carried out, because in each case the smaller mass, the narrow rectangle, is farther from the imaginary center line of the square than is the larger mass, the wider rectangle. The same principle is illustrated in (e). These principles of balance of shapes and distribution of areas will be more clearly demonstrated when Fig. 8 is studied. From these diagrams, and the principles underlying them, is derived the fact, as shown in (f), that the most pleasing, because the best balanced, distribution of vertical areas in a panel or square is when three vertical heavy parts are assigned to the upper space and five light ones to the lower, as more clearly indicated in Fig. 8 (f).

7. The arrangements in Fig. 8 (a) to (f) illustrate balance of tone masses, all based on the arrangements of outlined spaces in Fig. 7. In Fig. 8 (a) the two tone masses balance each other exactly and symmetrically, because they are of the same size and tone value, and are arranged equally on each side of a vertical center line.

In Fig. 8 (b) the balance is also exact and symmetrical, vertically and horizontally, because the masses are of the same size and tone value. It is evident that (a) and (b), while showing exact balance, are not so interesting as the remaining examples, (c), (d), (e), and (f). In (c) the narrow black

space at the left balances the larger white and gray spaces at center and right. Similarly, and for the same reason, in (d), the black space at the top balances the two lower spaces, the white and gray. In (e) the vertical and horizontal arrangements are combined, but still illustrate the principle of small

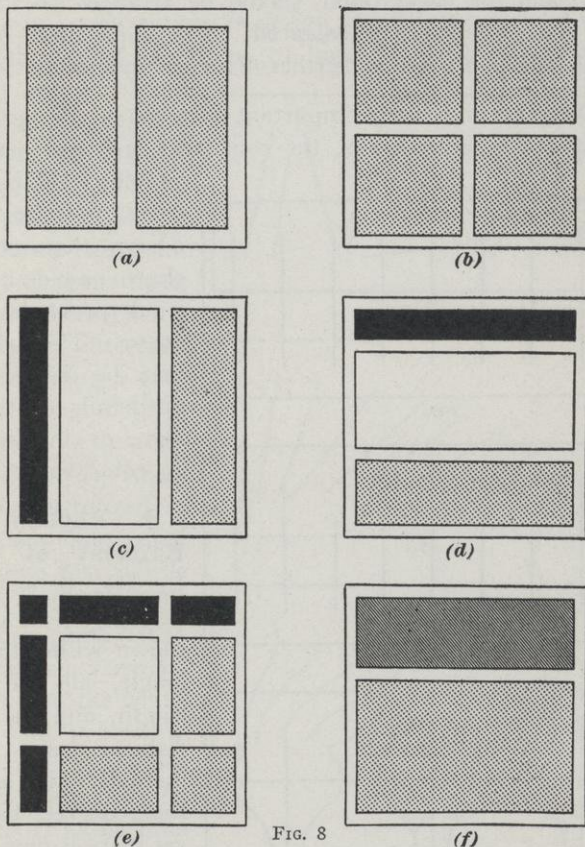


FIG. 8

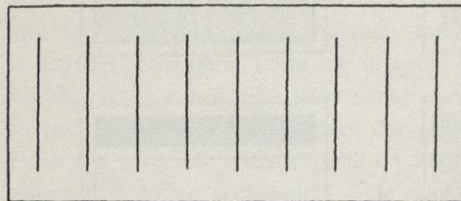
black masses balancing large gray or white masses. In Fig. 8 (f) the upper dark-gray mass balances the lower light-gray mass, the actual space relation being about three to five, as explained regarding Fig. 7 (f).

The diagrams in Fig. 8 (c), (d), (e), and (f) are simply graphical applications of the mechanical principles of balance

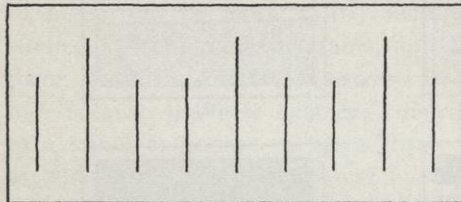
of blacks, grays, and whites shown in Figs. 5 and 6. The student should plot out for himself other diagrams illustrating these principles. He should not look on these as abstract diagrams, but should remember that they typify how the elements that are used in a design for a sign, that is, the lettered material and the background, should be arranged so that the design may be properly balanced. The application of this principle of balance will be further discussed in another Section.

8. Rhythm.—A very important element in design composition is *rhythm*; that is, the consistent and systematically

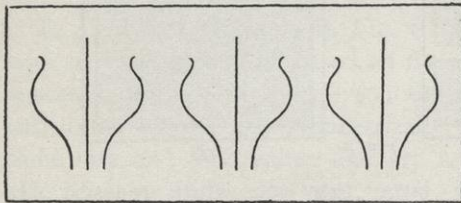
varying relation of parts or values in a design that gives it charm and interest and prevents monotony. The rhythm may be in the parts or details of the design, or in the tone or color values.



(a)



(b)



(c)

FIG. 9

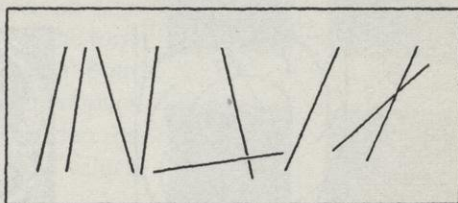
9. Rhythm and Harmony of Lines.

In Fig. 9 (a) nine vertical lines are shown within the rectangle, all the same length, and the same distance apart. While there is unity and, in some degree, balance, yet there is monotony, just as there would be if a pianist would strike the same key

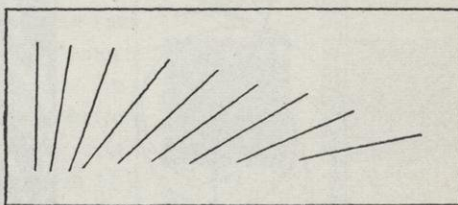
nine times in succession. But in (b) the first, third, fourth, sixth, seventh, and ninth strokes have been made shorter than the second, fifth, and eighth strokes, with the result that the

strokes occur in this regular order: short-long-short, short-long-short, short-long-short. In (c) the idea is carried still further by making the two short strokes adjoining the long ones symmetrically curved, as shown. Thus, in both (b) and (c) is shown related movement; a continuous, alternating rise and fall, like that of the waves of the sea, or of the tonal rhythm in a musical composition; in design, this effect is termed rhythm.

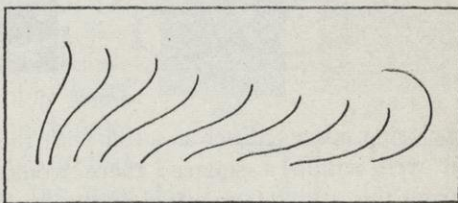
Another form of rhythm of lines is that where there is an orderly and consistent changing of relative direction or movement of parts in a design. In Fig. 10 (a) are shown nine inclined straight lines, none of them having the same direction, and presenting a very confused and disagreeable effect. In Fig. 10 (b) these lines are arranged so that each succeeding one slants just a little farther away from the preceding one than did that one from its predecessor, the whole series thus presenting a rhythmic movement that is pleasing. In Fig. 10 (c), the lines are made curved instead of straight and the wavelike effect is made even more pronounced, and thus rhythm is expressed.



(a)



(b)



(c)

FIG. 10

10. Fig. 11 (a) and (b) illustrates how an establishment of the lines of rhythm, as in (a), enables the entire decorative composition to be drawn with pleasing effect as shown in (b).

This figure will also illustrate a principle of composition associated with rhythm, namely, *harmony*. While the term harmony, as used in art, is usually applied to the proper relation of colors, yet there is also harmony of line and mass in composition. In this connection harmony means appropriateness or fitness. For instance, in Fig. 11 (b), the figures of the two children and the lines and masses of the scroll and the leaves fit well within, and are perfectly adapted for, the shape of the



(a)

FIG. 11

(b)

enclosing space. Such a scroll with the two figures would not fit well within a square; there would be lack of harmony. From this elementary principle the student can well understand that such fitness must be considered when a design is laid out, in order that harmony may be expressed.

11. Rhythm and Harmony of Tone Values.—But rhythm and harmony apply not only to lines and outlined shapes. There must also be rhythm of tone values. Just as the eye is carried along in orderly related movement by the proper placing of rhythmic lines, so it can be, and should be, carried

along in orderly sequence by the tone values in a design.

In Fig. 12 are shown five tone values, made from wash drawings, in proper order; (a), black; (b), dark gray; (c), gray; (d), light gray; and (e), white. In Fig. 13 are five tone values in similar order, made from line drawings. Close inspection of Figs. 12 and 13 will show that the relative differences in tone value between any two adjoining squares are the same. For instance, in (c), in both Fig. 12 and Fig. 13, the tone value is just as much lighter than in (b) as that in (b) is lighter than in (a). Thus, orderly rhythm or movement of decreasing tone values is expressed.

Figs. 14 and 15 are examples of lack of rhythm, and when these two are compared with Fig. 16, where smooth rhythm of values is expressed, this principle will be better understood. In Fig. 14 the contrast between the tone values in (b) and (c) is so much greater than between those in (b) and (a) that there is no rhythm. There is likewise no rhythm in Fig. 15, because the transition from the tone value in (a) to that in (b) is much more abrupt than from that in (b) to that in (c); in other words, the tone value of (b) is much lighter than that of (a), though that in (c) is not much lighter than in (b). In Fig. 16, however, rhythm is correctly shown, for the values (a), (b), and (c) progress evenly from one to the other, and the step from (a) to (b) is practically the same as that from (b) to (c), thus making an even progression that is smooth and satisfactory, and that gives

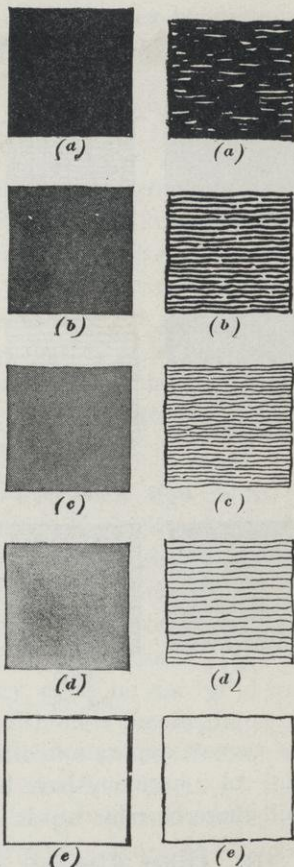


FIG. 12

FIG. 13

a feeling of restfulness. Further, comparing these values with those of Fig. 13, it will be seen that the jump from (b) to (c), in Fig. 14, is practically the same as that from (b) to (e), in Fig. 13; while in Fig. 15 the variation in tone from (a) to (b) is practically the same as that from (a) to (d), in Fig. 13. In Fig. 16, however, the values in (a), (b), and (c) correspond to the values in (a), (c), and (e), Fig. 13, and therefore express rhythm; and the use of such related values

in a design would give more satisfactory results than the use of unrelated values.

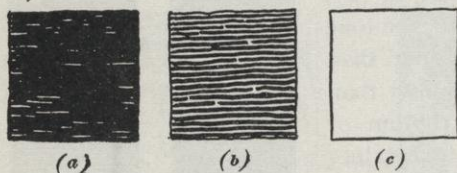


FIG. 14

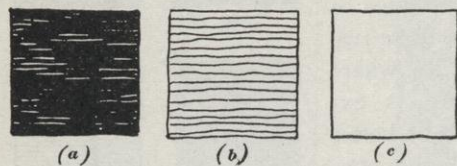


FIG. 15

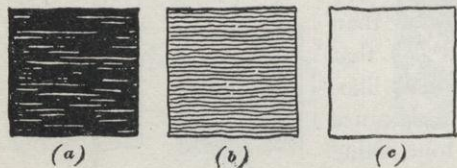


FIG. 16

12. Harmony as Applied to Color in Design.—The discussion of the term harmony in this connection has been applied only to lines and tone values in black and white; the matter of color has not been considered. The function of color in design is so important, and so many considerations underlie

its correct application, that the discussions of color in design and color harmony have been reserved for a later Section, and will there be taken up in detail.

13. Other Elements of Composition.—Some of the other elements of composition used in the preparation of well-designed signs, are: repetition, alternation, contrast and variety, symmetry, subordination, proportion and fitness, and fashion. These terms are self-explanatory. One can readily understand, for example, that the sizes of the letters

or lines of lettering should alternate: that is, there should first be a line of tall letters; then beneath it a line of smaller letters, then another line of fairly tall ones, etc. All of these additional elements of composition should be considered when getting up a design for a sign.

DESIGNING THE SIGN

PLANNING

14. Necessity for Planning.—Before a sign can be lettered, it must be planned, so that the letterer knows exactly what he is to do. This planning may often be done quickly and effectively, but it must include such matters as securing the necessary data, determining available space and size, as well as the proper arrangement of masses of lettering, etc., in relation to the background; making the small-scale preliminary sketches, and then doing the full-size blocking-in on the actual board, window, or wall.

15. Securing the Proper Data.—When a sign is to be made, the designer must first learn its kind, size, etc., whether it is to be for a horizontal board store sign above the entrance door and windows; or for a slightly projecting sign on a bracket; or a flat wall sign lettered on the boards or bricks of the side of a building, or a sign for a street or field bulletin board. The sign may even be for gold-leaf work on a glass door or window, although the beginner in sign-lettering work is not likely to attempt gold-leaf lettering until he has had ample experience in other kinds of sign work. The size of the sign—the actual measurements of length and breadth of space to be lettered—must be secured. Also, it is necessary to know the kind of lighting the sign will receive when it is completed and in position, its height from the ground, and the position and distance from which it will be read; also, the character and sizes of the neighboring signs.

16. Of course, from a commercial standpoint, it is important to know, at least approximately, how much the customer is prepared to pay for his sign work, as the kind of scheme suggested by the letterer must be determined to a considerable extent by the amount of money available for its execution.

Obviously, the important data to secure is the exact wording, or copy, that the customer wants to have placed on the sign. The copy should be furnished in typewritten form, or at least hand-lettered, and a clear understanding should be reached by the letterer and the customer as to the spelling of all proper names and unusual words, the desired punctuation, and the word or words on which the customer wants most emphasis laid. Unless these points are fully understood, there is likely to be dissatisfaction on the part of the customer, who, when the work is finished, may think his ideas have not been carried out.

17. Determining Available Space and Size.—The size of the sign is in many cases predetermined—as in the case of a street board or a field board, or store and wall signs—and all the letterer has to do is to design his lettered work to fill the available space. But, on many occasions, the sign letterer is required to use his good judgment in determining the size of the sign; for example, in the case of a board sign for above a store front or when a slightly projecting sign is required. This statement applies also to jobs of gold-leaf lettering on windows and doors. In such cases the sign itself must be planned, and perhaps constructed, by the sign letterer.

A number of things must be taken into consideration when estimating the most suitable size for the sign. Among these are: its position, the angle from which it will be read, the distance from the sidewalk, its relation to adjoining signs, the position of awnings, and the dimensions of the space into which it is to fit. It would be absurd, for example, for a merchant to go to the expense of putting up over his entrance door and show windows an elaborate

sign, perhaps with raised gold letters, and then to place beneath the sign a permanent, or even a roll, awning. All these points must be carefully considered before actual work on the lettering of the sign is started.

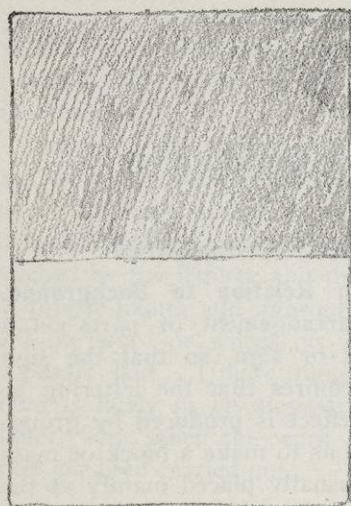
ARRANGEMENT OF LETTERING

LETTERS, BACKGROUNDS, AND MARGINS

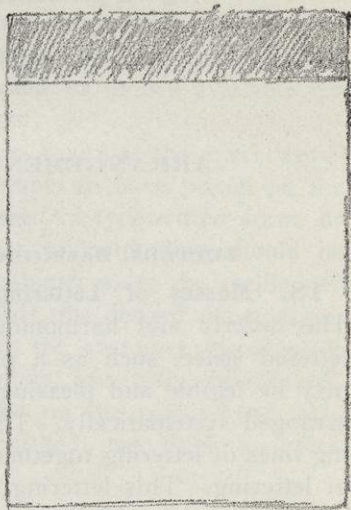
18. Masses of Lettering in Relation to Background.

The orderly and harmonious arrangement of parts on a lettered space, such as a panel or sign, so that the sign may be legible and pleasing, requires that the lettering be arranged systematically. This effect is produced by grouping lines of lettering together so as to make a block or mass of lettering. This lettering is usually placed mainly at the top of the panel, with little or no lettering, or perhaps smaller lettering, at the bottom of the panel. In the case of a commercial sign, this lower part of the panel, usually horizontal, contains lines of lettering, but the effect is to show that the wording at the top is the stronger and of greater importance.

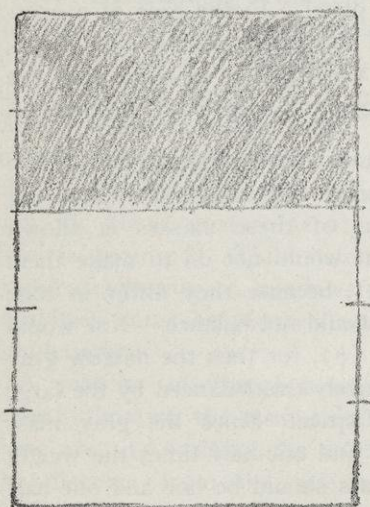
19. The top lettered space must bear a certain proportion to the lower lettered or bare space. The method of securing the proper relative proportions of these masses is shown in Fig. 17. It is evident that it would not do to make them equal in size, as in Fig. 17 (a), because they differ in tone value or weight and, therefore, would not balance. Nor would they look well if arranged as in (b), for then the narrow gray mass, the lettering, would be entirely overbalanced by the large white mass, or the unlettered space. Since the gray mass may be considered as being one and one-half times the weight of the white mass, the white mass should be one and one-half times the size of the gray mass to secure proper balance, as shown in (c). Thus the block of lettering should occupy the upper two horizontal spaces and the unlettered portion the lower three horizontal spaces. In blocking out the masses



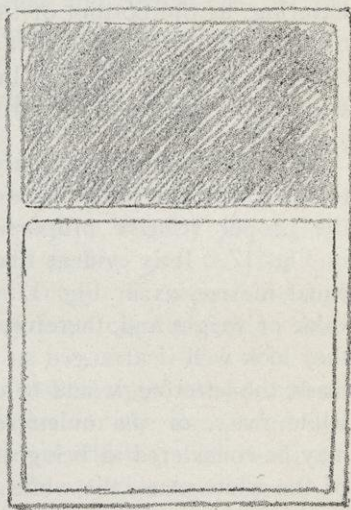
(a)



(b)



(c)



(d)

FIG. 17

of lettering, therefore, the gray and the white should be blocked out as shown in (d).

20. Suppose, for example, the wording of an actual sign is to be "Brown Brothers, Dealers in Fine Boots and Shoes," and that it is to go on a rectangular board horizontally over the door or show window of a small store.

At first thought the plan of making three lines of lettering suggests itself, and the natural tendency is to block out three horizontal masses, or strips of lettering, as shown in (a), Fig. 18. Such an arrangement would not only violate the

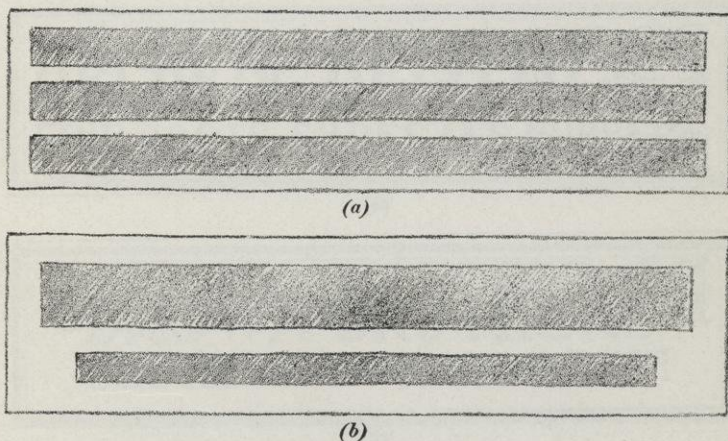


FIG. 18

laws of correct composition, just as Fig. 17 (a) violated them, but would result in lines of lettering that would be neither interesting nor attractive. The proper theoretical arrangement, as shown in Fig. 17 (d), can be obtained with the blocked-in masses as in Fig. 18 (b), where the larger, or most important, group of lettering is placed at the top, and the smaller, or least important, feature placed at the bottom, the relative proportions being about as shown.

21. The masses so obtained are translated into lines of lettering as shown in Fig. 19 (a) and (b). In (a) is shown the result of grouping three lettering lines or masses of uni-

form size, as they would appear if the scheme of Fig. 18 (a) were carried out. The result is an uninteresting, and certainly unattractive sign. But, when the arrangement of masses shown in Fig. 18 (b) is used, the lettering appears as shown in Fig. 19 (b), which makes an interesting and attractive sign.

22. Proper Value of Margins.—Another point to be considered in planning the letter arrangement is that of margins. A common fault is for sign letterers to fill the available space on the sign too fully, and to crowd the letters up against the top, bottom, and side margins. In this way they are able,

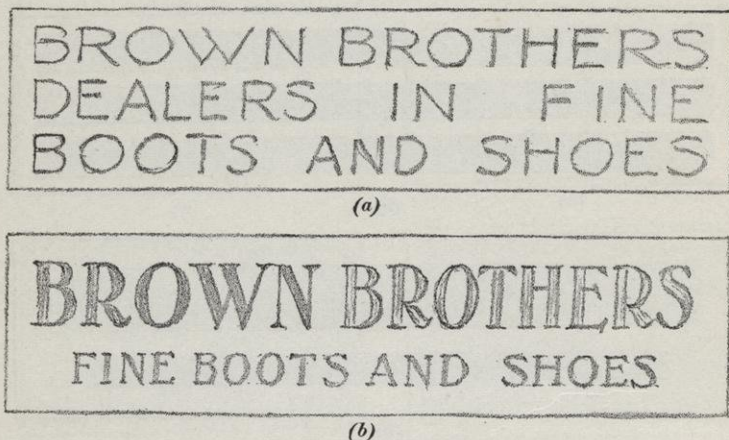


FIG. 19

of course, to use letters of the largest possible size, but the largest letters are not always the most legible, and certainly when they are crowded against the top, bottom, and side margins, they present an appearance far from pleasing.

23. The proper margins of white or unlettered space assist greatly toward the artistic effect as well as toward greater legibility. When the letters are crowded into the available space, even though they are large, they are not so attractive and so easily read as when smaller and surrounded by a margin of unlettered space. This is illustrated in the comparative diagrams shown in Fig. 20 (a) and (b). In (a)

the letters and words are as large as they can be made for the space available, and the crowded, unsatisfactory effect is very evident. But in (b) the margin helps to attract the attention, and to frame the wording so that it stands out more prominently, and is more easily read.

24. On smaller signs, such as interior store signs, temporary bulletins, etc., the best results are secured by making the right-hand margin and the bottom margin somewhat wider than the margins at top and at left. Such an arrangement gives a better effect and a more attractive



(a)



(b)

FIG. 20

appearance—particularly in a rectangular panel having a height greater than the width—than one where the four margins of unlettered space are of the same width all around.

25. Another very important point is that the proper words must be given the emphasis of size. For example, it would not be well to give the greater emphasis to the words "BOOTS AND SHOES," as shown in Fig. 21 (a), even though they are the names of the commodities being sold. The better plan is to emphasize the firm name, in this case "BROWN BROTHERS," as shown in Fig. 21 (b), for the important thing to impress upon the customer is that he bought

the shoes, and was doubtless satisfied with them, at Brown Brothers' store.

A still better arrangement is shown in Fig. 21 (c); that is, to letter the name of the firm in some unique type as a decora-



(a)



(b)



(c)

FIG. 21

tive script and then letter the words Fine Footwear, which is rather better than to say "BOOTS AND SHOES," in an upright Roman type.

STRAIGHT-LINE ARRANGEMENTS

26. Comparative Examples of Sign Arrangements.—The most effective method of becoming familiar with the proper arrangements of letters and words in designing a sign, is to learn to distinguish between the poor and the good arrangements, so that the poor ones will naturally be avoided and the good examples followed.

For this reason, some poor and some good arrangements are shown in Figs. 22 to 29, inclusive. These comparative examples should be studied very carefully and the accompanying explanations read with care, and understood, so that in each case the reason for the superiority of the arrangement called *good* may be appreciated and the principle applied in doing practical, original work.



(a)



(b)

FIG. 22

The first examples are shown in Fig. 22 (a) and (b). In view (a) the letterer has made the words "FIRE AND FLAMES," and "THOMPSON & DUNDY," quite large, and the name of the amusement resort and the date of the

attraction small. This is a mistake, because the most important message to be conveyed by an advertisement poster such as this is first, the place and then the date—after that should come the name of the attraction, and, last of all, the names of the proprietors of the amusement park. The correct form for the relative sizes of the words is shown in Fig. 22 (*b*).

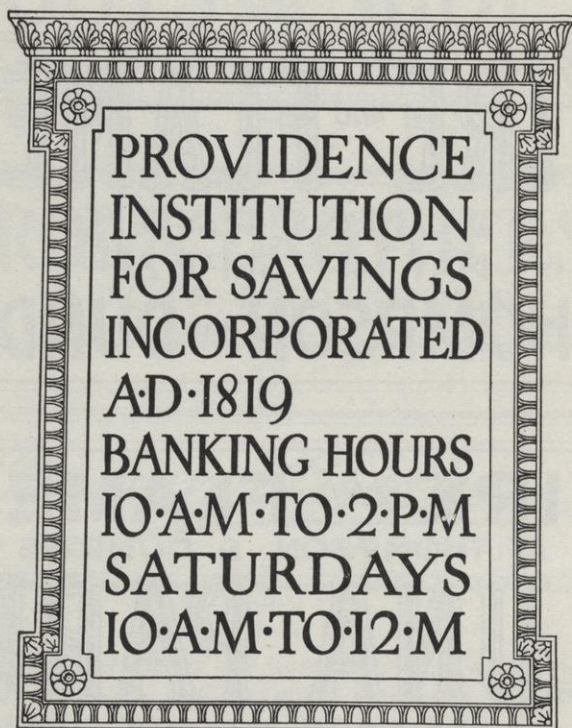


FIG. 23

27. In Figs. 23 and 24 are shown an unsatisfactory and a satisfactory letter arrangement, respectively, for a lettered panel where the wording fills all the available space. It is evident that if the letters and words were all one size, and spaced indiscriminately, as in Fig. 23, the lettered portion would not only lack harmony and interest, but it would actually be hard to read. The proper arrangement is shown in Fig. 24

where the name of the banking institution is given the greatest prominence by large lettering, with the incorporation date of subordinate importance. Then, next in size and importance, to the name of the bank, comes the data as to the hours of banking. In this way an artistic, well balanced, and, therefore, readable sign is secured.

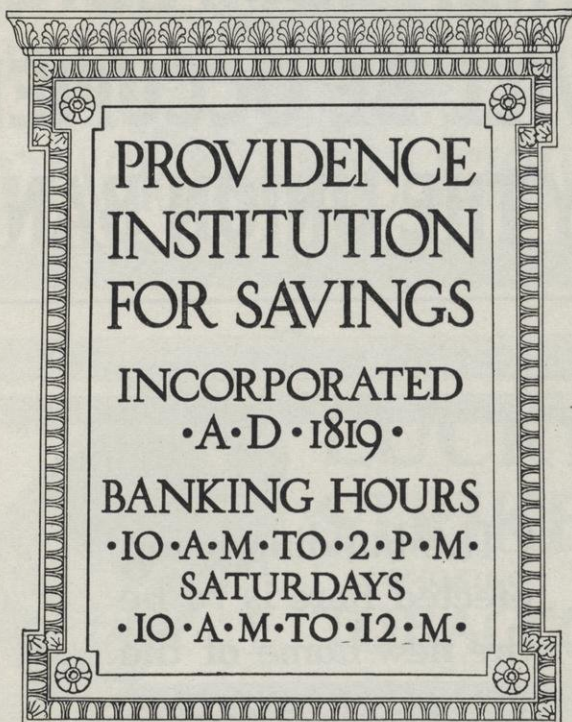


FIG. 24

28. In Fig. 25 (a) is shown a poor and amateurish arrangement of lettering for an announcement board placed in front of the site where excavations or actual building operations are in progress. An artistic arrangement is shown in view (b). Too frequently the board appears as shown in (a) where the lettering is made as large as possible and is crowded toward the edges of the available space. The result

**THIS BUILDING
WHEN COMPLETED
WILL BE OCCUPIED
BY THE UNION BANK**

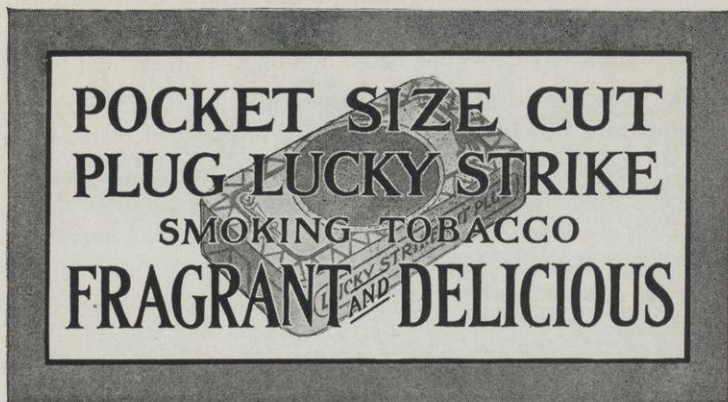
(a)

The building being
erected here is to be
the new home of the
UNION BANK
"The Bank of Service"

(b)

FIG. 25

is a sign that is not only inartistic but one that is hard to read. A much better arrangement, and one that is unusual and attractive, is to place the block of lettering in such a way



(a)



(b)

FIG. 26

that the right-side and bottom margins are wider than those at the left side and top, and to use combinations of upper-case and lower-case letters in the text of the announcement. This alternation in the widths of the margins can frequently be used to good effect, especially on signs of a temporary, or announcement, character.

Another effective scheme for an announcement board at the site of a proposed bank building, is to have the rectangular board taller than its width, and then to have generous margins around the block of lettering, using a tall slender Classic Roman letter, with V's for U's, etc., to be in keeping with the proposed Classic style of the bank building.

29. The comparative examples shown in Fig. 26 (*a*) and (*b*) illustrate still further the necessity for careful planning of sizes, in relation to the importance, of certain words in a sign.

In (*a*) the words are of such size and so arranged relatively that there is considerable confusion as to what is important. The trade-name, "LUCKY STRIKE," which really should be made most prominent, so as to get the buying public familiar with it, is really lost sight of here. The words "FRAGRANT AND DELICIOUS," while of themselves attractive descriptive matter, are enlarged and emphasized far beyond their importance. The word "TOBACCO," which is of great importance, is here given a minor place. In (*b*) these faults have been corrected and the letters and words arranged in positions according to their correct relative importance, and thus the sign conveys an attractive and compelling message. In the improved arrangement, Fig. 26, (*b*), the picture of the tin box of tobacco is given a prominent position and is not covered by lettering.

30. Additional comparative examples of poor and of satisfactory letter arrangements are shown in Fig. 27 (*a*) and (*b*), the pictorial feature in each case appearing at its proper place at the top. Inasmuch as the important things to be advertised are the name and location of these particular baths, the letter arrangement in (*a*) would be poor, because here Turkish baths in general are advertised. "OPEN DAY AND NIGHT" is also given undue emphasis. In (*b*), it is very evident, however, that it is the "HERALD SQUARE BATHS" that are being advertised; and next in importance is the location of these baths. The rest of the lettering occupies its proper subordinate position.

31. In Figs. 28 and 29 are shown two arrangements of an advertising device with accompanying lettering suitable

for a window sign. It might be said that the arrangement in Fig. 28 would suit the requirements, except for certain considerations. The arrangement in Fig. 29, however, is the better one for the following reasons: The words, "THE



(a)



(b)

FIG. 27

GLOBE," are arranged in Text style with the trade-mark at the center, so as to be a facsimile of the newspaper title itself. The device showing the globe and the running newsboy is placed more nearly on a level with the eye of the passer-by, so as to enable detailed descriptive matter of an advertising

character to be placed on the large white surface. The other lettering, also, while very readable, is in the proper relative position.

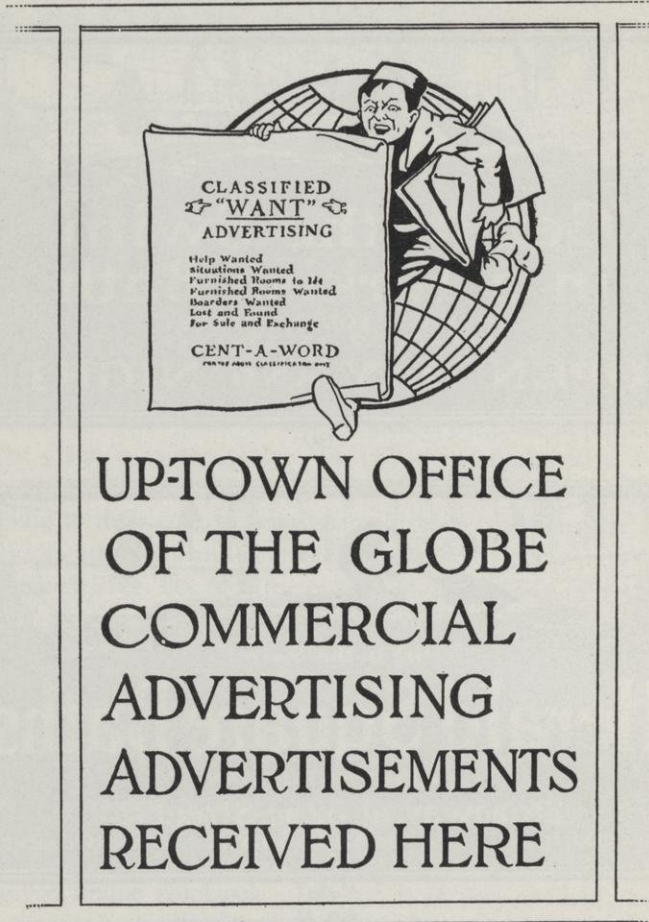


FIG. 28

32. Advantage of Analyzing Letter Arrangements.
These few examples of comparative letter arrangements for signs will be sufficient to start the student on the right road toward studying and analyzing signs and letter arrange-

ments that he may see about him. The general principles brought out in the analyses given in connection with Figs. 22 to 29 should be applied by the student to every example

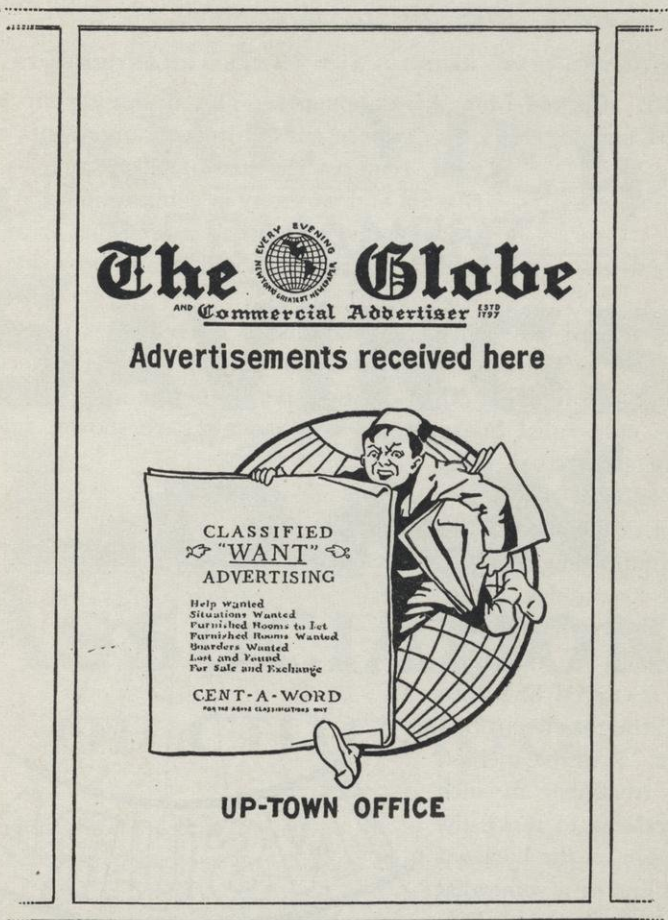


FIG. 29

of lettered work that comes to his notice, or that he may have the opportunity of inspecting.

Such analyses are absolutely necessary if the student wishes to learn to do original designing, and to produce

unique work. He must know exactly what is good arrangement and what is poor arrangement of lettering when he sees it, and in each case why it is so before he himself can get up attractive and effective letter arrangements.

CURVED-LINE, RIBBON, AND PANEL ARRANGEMENTS

33. Curved-Line Arrangements.—The designing of lettered panels, signs, etc., where curved-line arrangements are used, requires the use of the principles of *rhythm* and *harmony* in composition. When studying and using such curved-line arrangements reference should again be made to Figs. 9, 10, and 11.

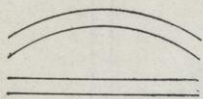


FIG. 30

A few of the many combinations of curved lines that may be used as the structural bases for curved lines of lettering, are shown in Figs. 30 to 38 inclusive. For the sake of clearness only ruled lines, curved and straight, are shown, rather than the actual lines of lettered work, except in the case of the accompanying illustrative examples. Fig. 30 shows the simplest possible combination of a curved line with a straight horizontal line. A simple method of treatment in such a case is to make the letters on the horizontal line of a somewhat bold Gothic, and those on the curved line lighter, as a Roman letter. How this principle is applied is shown in the upper part of Fig. 32. It must be noted in particular that the proper method of drawing letters to go on the curved line is to



FIG. 31

proper method of drawing letters to go on the curved line is to

make their members that are ordinarily vertical, be parallel to, or coincident with, the radius of the circle of which their curve forms the circumference. Fig. 31 illustrates the method of drawing the radial lines from the center of the arc, and then having the down strokes of the letters follow these radial lines. In such a case the members of the ordinarily

LAKE VIEW
PERMANENT
SAVINGS
~AND~
LOAN
ASSOCIATION
OF CHICAGO.

FIG. 32

horizontal letters follow the curve of the line of lettering. In Fig. 32 these principles are applied to the curving line of the words "LAKE VIEW."

34. Sometimes the down strokes of the letters on the curved lines are made vertical, the cross strokes following the curve, as before. This is illustrated in Figs. 34 and 35.

Sometimes, for the sake of variety, only the top line, or perhaps only the bottom line, of a name is curved, the other

limiting line being horizontal, as in the case of the word "LOAN," in Fig. 32.

Departing from the simple curve, or arc of a circle, the next arrangement to be considered is the compound curve combined with the simple one, and the straight line, as shown in Fig. 33. Such an arrangement is used when two words of nearly equal length are to be lettered in this middle space. If one long word is to be lettered at this position, a double continuous curve should be used, as shown in Fig. 36. The application of these principles is shown in Figs. 34 and 35.



FIG. 33



FIG. 34

35. Sometimes inclined straight lines are used instead of curves, as shown in Figs. 37 and 38. In Fig. 37 the top and bottom lines are parallel, and in Fig. 38 the letters are dimin-



FIG. 35

ished in width from the outside to the center of the inscription. When such combinations of curved and straight lines are used great skill is required in properly arranging and equalizing

the letters. Very frequently, in such arrangements the same style of letter is used throughout the entire inscription, except in varying sizes, as the arrangement may require.

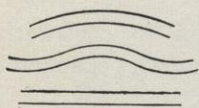


FIG. 36

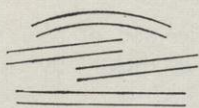


FIG. 37

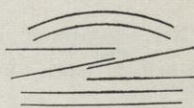


FIG. 38

36. Examples of Ribbon Arrangements.—The use of the ribbon or the imitation of a ribbon, to hold lettered inscriptions has been very common ever since hand lettering has been done in decorative devices. Doubtless the arrangement was suggested by the curving ends and edges of the parchment upon which old hand-lettering was done, before the sheets of machine-made paper and cardboard, as we now know them, came into existence. The field of a *ribbon* offers a logical area for the inscription, and the curving folds and ends give a pleasing contrast to the severity of the letter, and offer interesting decorative features.

37. In Fig. 39 is shown the form of a ribbon and its various parts, although the ribbon ordinarily used for inscription work should be simpler. Of course it should be understood that the reference here is merely to the picture of a conventionalized ribbon, to be drawn or painted on the sign, upon which the inscription would be lettered. The ribbon

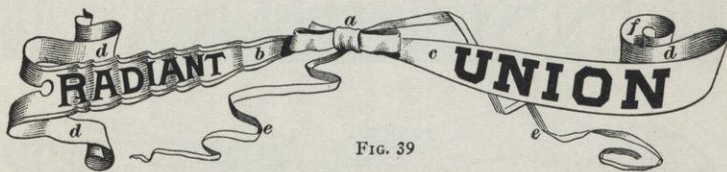


FIG. 39

may be drawn in a regular curve, or with irregular and broken edges. In Fig. 39 several forms of the ribbon are combined in one illustration to show its various parts diagrammatically. The names of these component parts are as follows: *a* is the bow; *b*, the broken or ruffled band; *c*, the regular band; *d*, the returning band; *e*, the streamer; and *f*, the roll.

The inscription placed on the curving ribbon must, of course, follow the same principles as laid down for letters to conform to curved lines.

38. A most artistic use of the ribbon for decorative lettering work is often made by well-known commercial

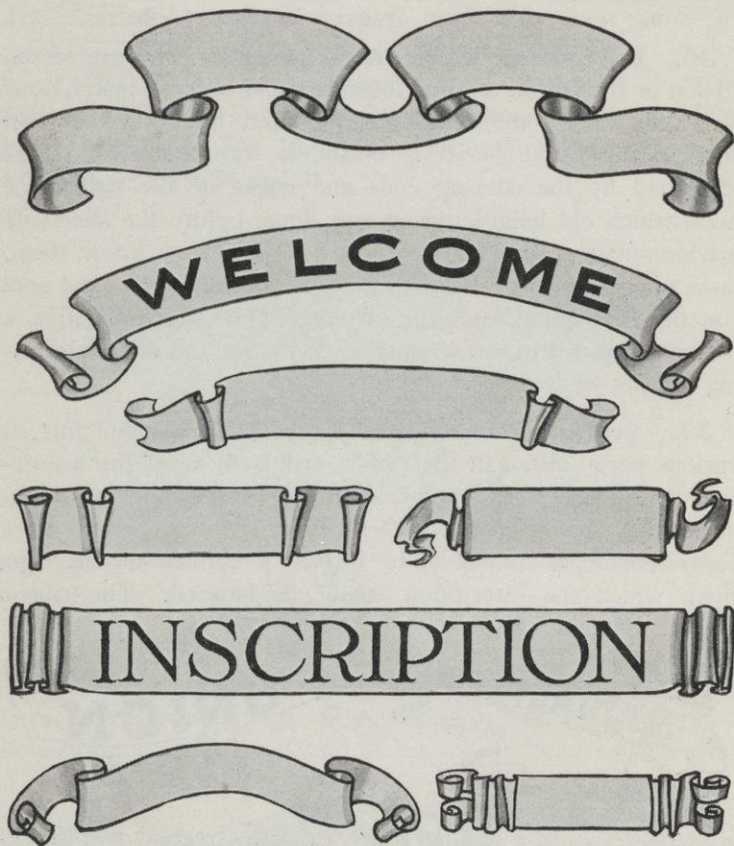


FIG. 40

illustrators and poster artists. In Fig. 40 are shown several of these lettered ribbons; and the student will profit greatly by studying them carefully, with a view to using later similar arrangements in signs.

For very formal work, the ribbon may be drawn in a severe geometric style, as shown in Fig. 41, in which case the graceful and natural wave does not enter.



FIG. 41

39. The ribbon may also be used in the form of a double or compound curve, and when used in this way it must be made symmetrical at both ends. The fold can also be made in the middle of the curve, as shown in Fig. 35, without distorting its symmetrical effect, but rather giving it ease and grace.

40. Rectangular Panels.—The *panel* has more forms than the ribbon and is made to serve many purposes. The simplest form is that of a rectangle within which is sometimes drawn an inner panel of the shape shown in Fig. 42. The surroundings of the panel can be made either simple or

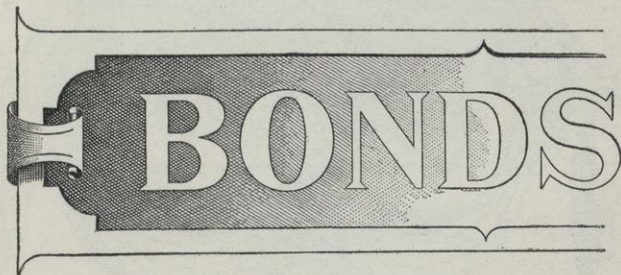


FIG. 42

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. 43. This work may be so elaborated that the inner panel on which the lettering is to

be placed becomes of minor importance, as shown in Fig 44. Such a design should not be used to display a conspicuous inscription, for the inscription, if important, is of greater



FIG. 43

value than the ornamentation. The latter is employed only as a setting for the inscription and must not be allowed to detract from its prominence.

41. Part Panels.—Another form of panel is that which is combined with some other design, in which the panel is not



FIG. 44

in the foreground of the design, as shown in Fig. 45. When the panel is left unfinished at one end, as in Fig. 45, it is

known as a part panel, and many beautiful effects may be secured by its aid. In this the damask principle is used, the panel being blended into the ground by means of color or



FIG. 45

with the pen. The lettering is also blended; the extreme of light color is thus contrasted against the darkest part of the panel, and the dark lettering is continued on the light ground outside the panel.

42. Elliptic Panels.—Elliptic panels are also used and may be made extremely ornamental. A touch of simple ornament

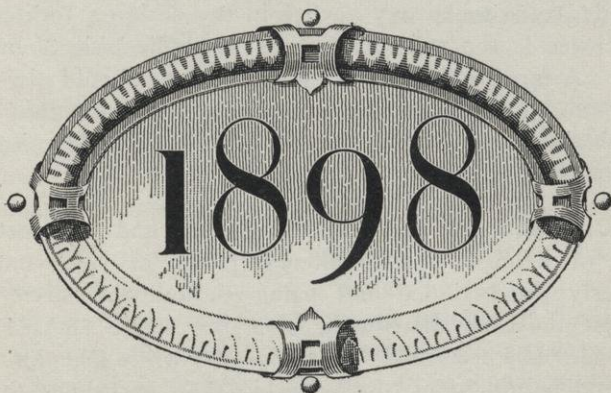


FIG. 46

in a design will often counterbalance a quantity of plain work and give a general effect of ornamentation throughout. Fig. 46 shows an elliptic design, with merely a frame of ornamentation, which is sufficient for the purpose of orna-

menting a design. When such work is placed on other plainer material in a design, it gives the whole the appearance of completeness.

43. Rococo Panels.—Another style of panel that has come into modern designs is the rococo panel; not only is the scroll work used for the panel itself, but it is frequently applied to the embellishment of many parts of the design. Fig. 34 shows one of the great variety of shapes the rococo panel assumes, as this style can be made to conform to the lines of any description, or to form a part of nearly any style of design.

44. 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 a trade, trade tools may appear in the design. If literature or science is the subject, various symbolic objects may be used. A large collection of choice designs should always be on hand for reference, from which a suggestion may often be obtained that leads the designer's thoughts into an original channel.

45. Additional Examples of Curves and Contrasts.—A piece of lettered work—sentence, panel, or sign—must be properly proportioned and balanced, and the strength or interest must be distributed over the entire surface after allowance has been made for the proper white margins. The top and bottom lines of the design that was shown in Fig. 32 are Roman; the words *permanent* and *association* are of heavier face, while the strength of the inscription is centered in the two middle lines. The selection of the proper style of letter 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 inscription of several words, the most important should be displayed in the most prominent style of lettering, such as heavy Roman, while the less important should be of smaller letters, and of such one-stroke styles as the lighter Roman. This rule does not interfere with the general effect produced in Fig. 32. If the inscription cannot be made to conform to one rule in designing, it is best to change the design accordingly. In Fig. 47 is shown an inscription of ten words in which the first and last words are the most important, and from which eight words, therefore, could be taken without



FIG. 47

destroying the principal feature of the whole inscription—the name of the manufacturer and the product manufactured by him. These words, therefore, should be given the greatest prominence by making them of large, solid-stroke letters.

46. There is no stronger contrast in lettering than that between black and white. If a design be prepared so as to separate clearly the lettering from the balance of the design, not only is it easily read, but it is rendered attractive as a consequence of its contrast. In Fig. 48 is shown an example of a contrast design. The palette used for a background for the white letters being a solid black, the letters are continued on the white ground in black. This necessitates an ingenious arrangement of the inscription so that too many letters may not fall on the outline of the black design. Letters that are

ART TO THE
SUPPLEMENT

The title is rendered in a bold, stylized font. The word 'ART' is in a large, black, serif font. The word 'TO' is in a smaller, black, serif font. The word 'THE' is in a large, black, serif font. The word 'SUPPLEMENT' is in a large, black, serif font. A large black circle is positioned behind the word 'ART'. Several thin, black, radiating lines extend from the circle towards the right, passing through the word 'TO' and the word 'THE'. The word 'TIMES' is partially visible behind the word 'SUPPLEMENT'.

FIG. 48

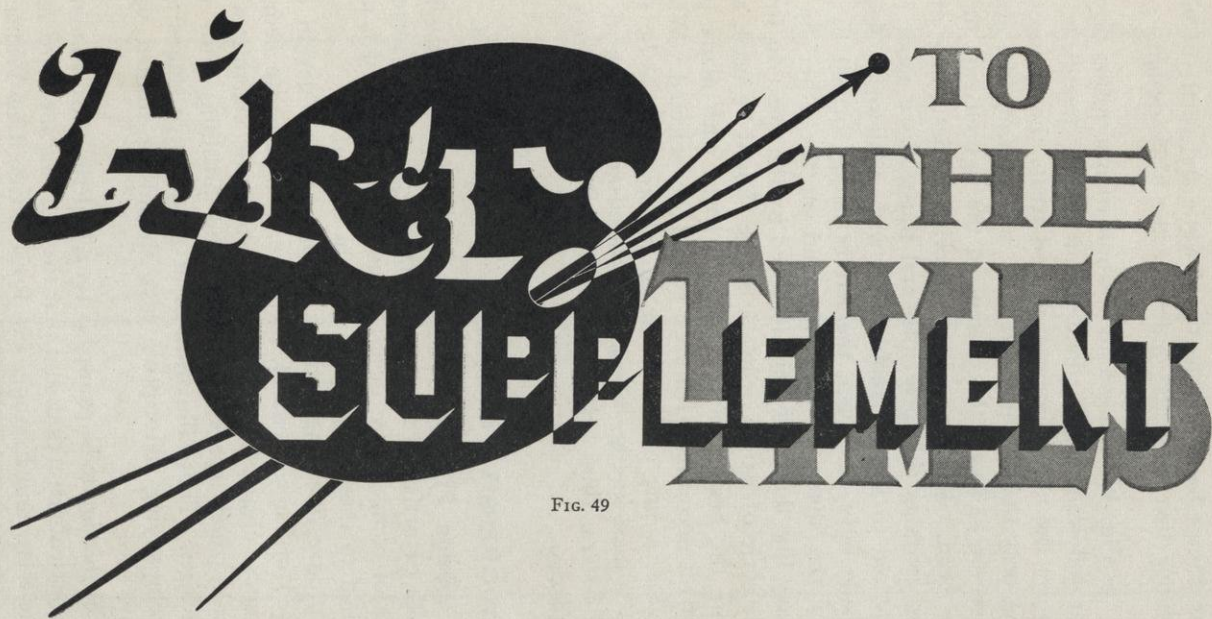


FIG. 49

so located must be formed partly of white and partly of black, the dividing line being the outline of the black design.

47. In Fig. 49 is shown an example of inscription designing that follows the half-silhouette method of treatment. In portraiture the half-silhouette method treats the features by showing only their deepest shadows and allowing the eye of the observer to locate the outline on the lighted side of the face or head. The example of inscription designing given likewise contains this principle, and illustrates a most suitable method to use in combination with a pictorial design. The shade only is shown, the letters being formed by the edge of the shade on one side, and on the other by an imaginary line that is readily followed by the eye. In forming this style of letters, a heavy shade should be used, and, to secure the best results, a style of letter with many projections or decorative features should be selected. Where practicable, a line of letters in an indistinct color or tint, such as is used in Fig. 49, may be placed at the back of the shaded letters, thus bringing out the outline of letters in many places.

PROGRESSIVE STAGES OF A SIGN DESIGN

48. Design Principles Applied to a Sign Layout.—The principles of artistic composition in design, and the general methods of composing a design, thus far discussed, can now be applied to the laying out of a sign design.

The progressive stages of developing a sign design are illustrated in Figs. 50 to 54, inclusive, in which are demonstrated most clearly the method of procedure, starting with the blank panel, space, or board, and finishing with the finished sign. These illustrations of progressive stages and the accompanying descriptive text should be studied very carefully.

Suppose the sign to be painted is for a bulletin board announcing a theatrical attraction, and that the wording, or copy, is to be: "The Klaw and Erlanger Co. Present Gen. Lew Wallace's Ben Hur, Arranged for the Stage by William Young."

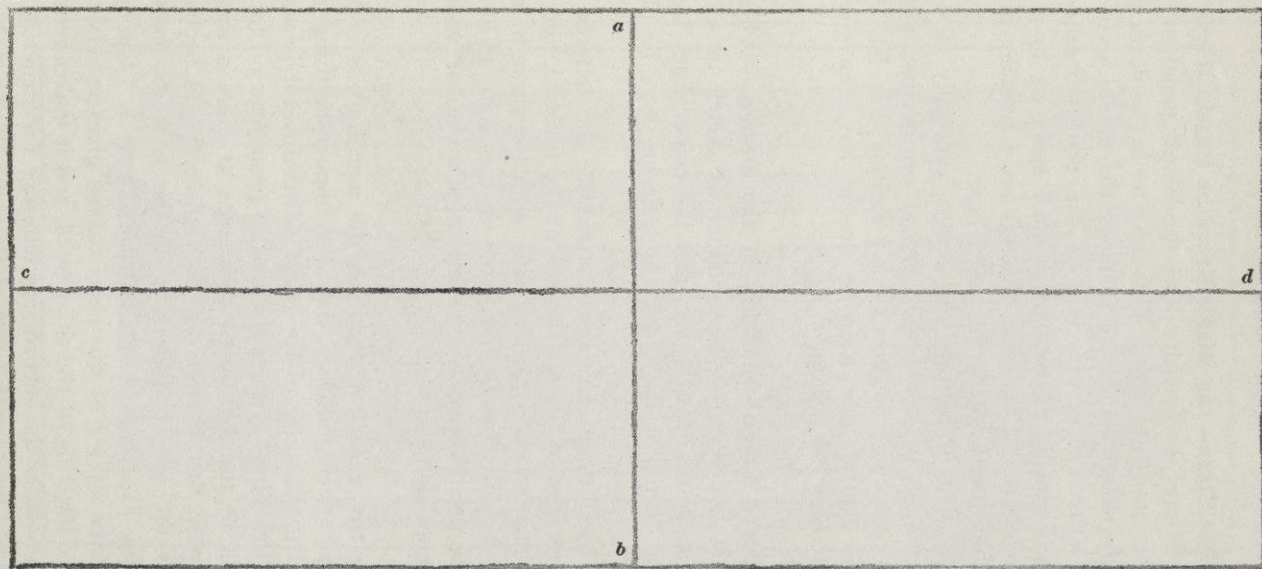


FIG. 50

49. First Stage—the Blank Board or Panel.—First of all the sign letterer has before him the blank panel or space that is to contain the sign. This may be in the form of the preliminary sketch or in the form of the actual wall space or board space. The principle of the proper methods of layout apply equally as well to a small space as to a large one. The matter of the size depends on a number of conditions which need not be discussed here.

The first step in plotting the design, especially if on the small sketch, is to locate the vertical center line, and the horizontal center line, as shown at *a b* and *c d*, Fig. 50. Occasionally no central lines need be drawn, but they generally help in plotting the layout.

50. Second Stage—Blocking in the Design.—When the blank panel has been prepared, either as sketch or as full-size wall space or board space, and the center lines located, the general forms of the blocks of lettering may be plotted in.

Before blocking in any lines or masses the letterer must have a clear idea of the appearance of the finished sign. He must not start to make the lettering with the thought in his mind that he will change and patch up the work as he goes along. He must always see in his mind's eye, or visualize, the completed sign.

51. In this case, for example, the wording, or copy, of the sign as given indicates that the important thing to be announced is the name of the play. Therefore, it is planned to make "Ben Hur" of such size and so prominent on the sign that it will be the first word seen even at quite a distance. To accomplish this, a relatively high space should be blocked out across the longer dimension of the sign, as shown at *e f g h*, Fig. 51, which is designated as Panel 1. The system of making the top *e f* of this panel curved gives variety to the form of the lettering of the chief word, and it makes room for and accommodates the subordinate lettering for Panel 3, without sacrificing the apparent size of the main letters in Panel 1.

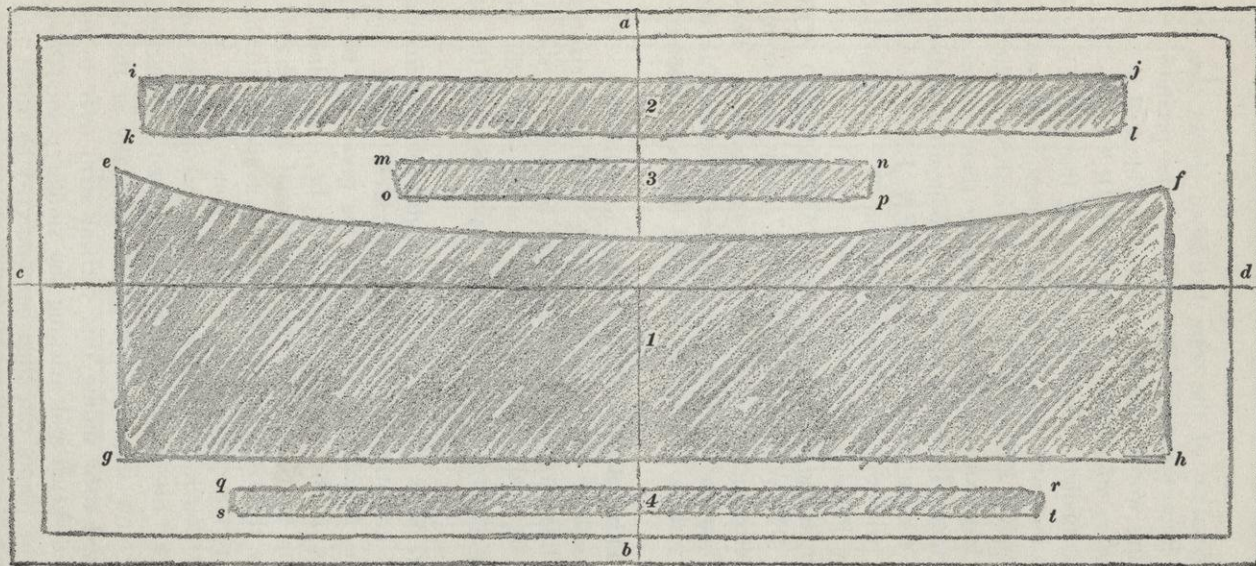


FIG. 51

Consideration of the copy furnished shows that the words next in importance are the name of the producer, with the announcing words; therefore, these are blocked in so as to be of secondary importance to "BEN HUR," but in letters considerably smaller. Therefore, Panel 2, like Fig. 51, is blocked in across the entire top of the sign to contain the words "THE KLAU AND ERLANGER CO. PRESENT," the first word and the last word to be made smaller than the others. Next in importance from the theatrical producer's standpoint is the name of the author of the play, "GEN. LEW WALLACE," and this, with the possessive mark and "S", is then blocked in to occupy Panel 3 at *m n o p*.

The remaining words of the sign, "ARRANGED FOR THE STAGE BY WILLIAM YOUNG", may then comprise, in smaller lettering, the make-up at *q r s t*, Panel 4. These four panels should be blocked in as masses, freehand, as shown in Fig. 51, with no attempt at ruling of lines or contours.

52. Third Stage—Ruling Lines of Lettering.—The third stage, namely: the accurate ruling of the horizontal and curving lines to limit the tops and bottoms of the lines of lettering, is really a part of the fourth stage, the blocking in of the letters, but it is listed separately for the sake of clearness.

In Fig. 52 is shown how the roughly blocked-in panels of Fig. 51 are translated into accurately ruled lines. Of course, no definite dimensions can be given for the heights and sizes of the letters. This must be determined by the size of the entire sign and by commercial considerations, but chiefly by the sizes and widths of the available brushes, particularly if one-stroke work is to be done.

On the sketch the positions and relative distances and spacings of the ruled lines can be determined by marking their positions on a slip of paper placed vertically at the left side or end, and then sliding this vertical strip over to the right end of the sketch and marking the similar points there. The two sets of points can then be connected by ruled lines, and the curved lines at *e e'* and *f f'* drawn in freehand, or by the

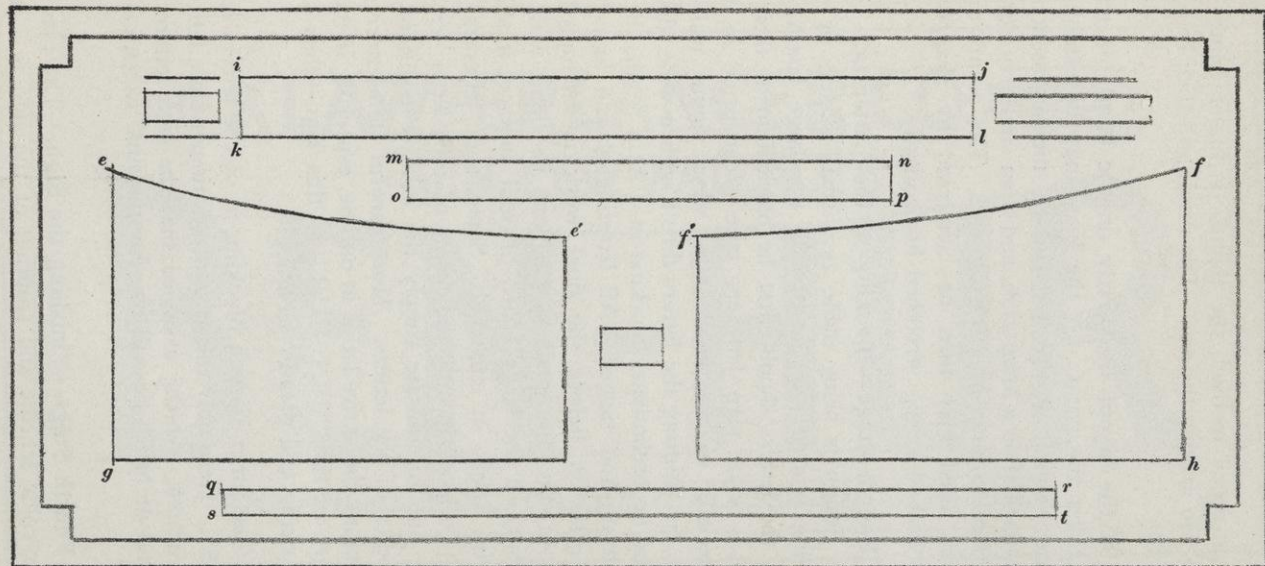


FIG. 52

string-and-pencil method, the thumb or finger being used as the center in making the arc. The result will then be as shown in Fig. 52.

53. If the layout is directly on the board or the large wall surface, the points for the lines may be established in a vertical column at the left end by measurements, or by notches marked on a long stick, and then similarly established in a vertical column at the right end. The points or markings thus fixed may then be connected by *snapping* lines with a chalked string stretched horizontally.

54. Fourth Stage—Blocking in the Lettering.—Whether the sign design is being made as a small sketch, or whether it is being plotted out directly on the large board or wall surface, the letters should first be blocked in at their proper positions. Some sign letterers take great pride in *showing off*, especially to the small boys, when doing wall-bulletin lettering, by painting the letters direct with a wide, flat brush, and doing no preliminary blocking-in. As a result, their work is inaccurate and ragged. All lettering should first be carefully blocked-in before the final work is attempted. This blocking-in, on the small sketch, can be done with a soft pencil, but, on the large board or wall surface, it should be done with chalk or charcoal. Some sign letterers find it sufficient to block in only the center of each letter stroke with a single line to indicate simply the relative positions of the main bodies of the letters. More careful sign-letterers, however, contour the entire letter in outline, especially if the letters are large, as the "BEN HUR" in this sign—thus securing better spacing and greater accuracy.

55. One form of such blocking-in of the letters is shown in Fig. 53. Here only the general positions of the letters have been indicated, it being assumed that the sign letterer knows what kind of brush he will use for the final execution of the letters.

56. Fourth Stage—Finishing the Sign.—The planning of a proper color scheme and painting of the sign is a technical

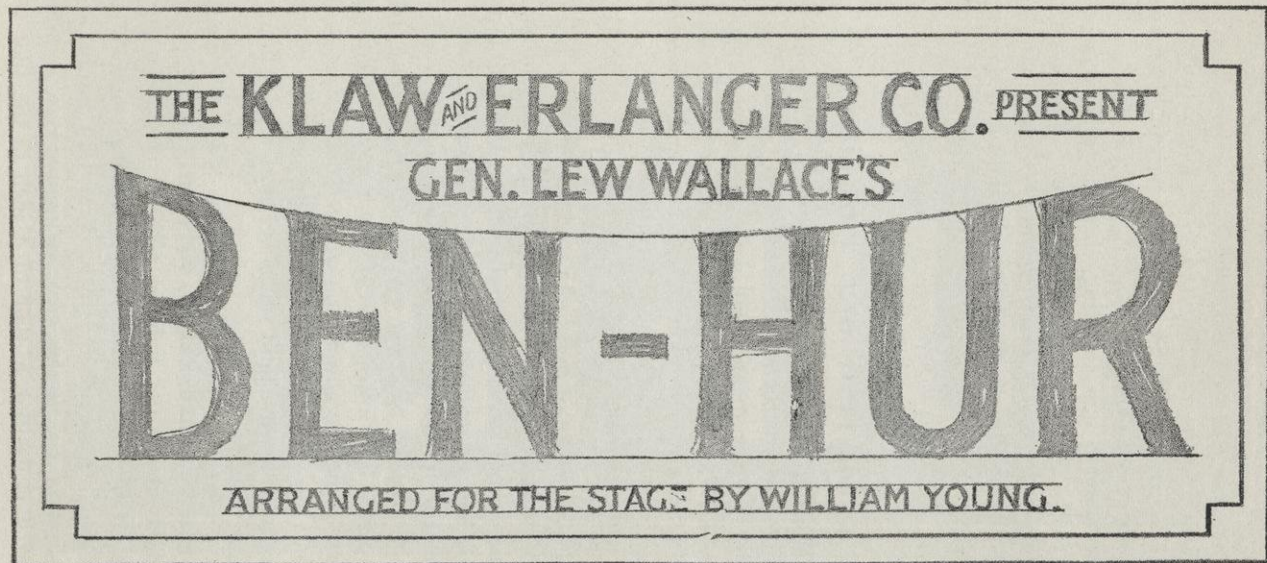


FIG. 53

or trade process that will be fully discussed in later Sections entitled *Color in Signs, Painting and Gilding, and Erection and Sale of Signs*. Fig. 54 shows the sign in black and white masses completely detailed.

The student of sign lettering should study very carefully the progressive stages of designing a sign as illustrated in Figs. 50 to 54, inclusive, and described in the accompanying text, for much depends upon the letterer's ability to design before he can letter. The stages of procedure here laid out apply to signs of any kind or size.

LAYING OUT THE SIGN

57. Making the Small-Scale Sketch.—Designers in all artistic lines, where their final work is to appear on a rather large scale, always make small-scale preliminary sketches, in color, to show just what the object, design, or decoration will look like when finished. The designer of signs, therefore, may follow with profit the custom of other workers in various lines of art activities.

58. The practice of making a preliminary sketch to scale is not followed by sign letterers as widely as it should be. Many a sign man takes great personal pride in being able to climb up on a ladder or scaffold and, with a large, flat brush, to letter direct the letters and words of a sign, without any preliminary plotting or planning except perhaps to *snap* chalk lines for the upper and lower lines of each row of letters. Such work may excite the admiration of the small boys on the curb below, but the sign will not be pleasing, and its irregularities and inaccuracies will stand out more and more plainly as the weeks and months pass.

59. Size of Small Sketch.—The size of the preliminary sketch depends on the finished size of the proposed job of lettering. For very large work—as a large sign on the side of a brick wall—a scale of $\frac{1}{2}$ inch to the foot would be proper. If the sign is not to be very large and yet a preliminary sketch of it is desired, a scale of 1 inch to the foot would be

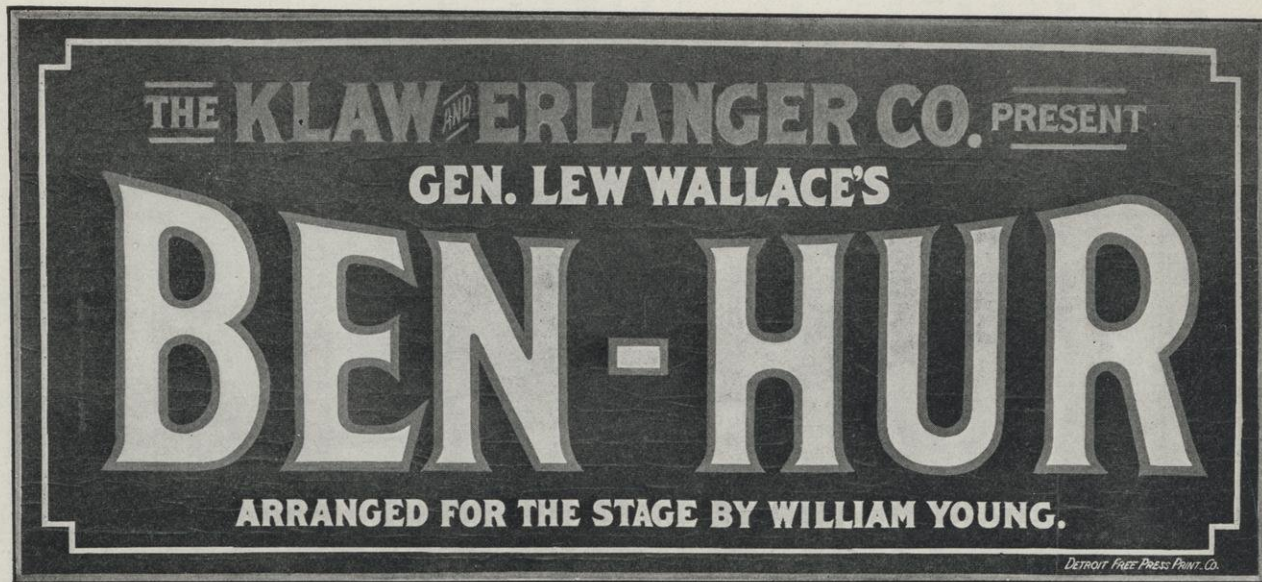


FIG. 54

about right. The term $\frac{1}{2}$ inch to the foot means that, for each dimension of 1 foot on the finished sign, one-half of an inch should be laid out on the small sketch. Thus, if the large sign were to be 20 feet long by 10 feet high, the small sketch should be 10 inches long by 5 inches high. Similarly, *1 inch to the foot* means that each foot on the finished sign is represented by 1 inch on the small-scale sketch. Thus, if a sign were to be 10 feet long by 2 feet high, the small-scale sketch would be made 10 inches long by 2 inches high.

The sketch itself may be made in pencil outline, or in washes, or in water colors; on water-color paper, or on illustrators' board, show-card board, or any surface that will take color. The drawing, lettering, and preparation of such small-scale sketches requires merely the application of the instruction given in this and preceding Sections.

60. Enlarging Small-Scale Sketches to Full Size.—The matter of actually laying out the signs on the boards, walls, windows, etc., and the use of the boards, walls, and equipment in this work, will be taken up in the following Section. However, it is appropriate in this connection that the method of making full-size enlargements from small sketches should be explained.

Enlargements may be made in various ways. If great accuracy is required, an enlarged solar print may be made, but this is rather expensive. Another method is to use any one of the various picture-projecting machines, known variously at times under such names as *polyopticon*, *photoscope*, *projectoscope*, etc. The small sketch, which, in this case would have to be quite small, or enlarged in sections, is placed in the *scope* and, by the aid of proper gas or electric lamps and an enlarging lens in the instrument itself, the enlarged lettering or pictorial matter is thrown upon a large sheet of paper and then traced with a soft pencil, a piece of charcoal, or lithographer's crayon.

61. Another method of enlargement is by the use of the pantograph. This instrument and the manner of using it, are

shown in Fig. 55. The general working principle of the pantograph is very simple. The clamp *a* is fastened to a drawing board; a tracing point *b* is carefully moved around the outline of the picture to be copied and at the pencil point at *c* this same movement is transmitted and a line drawn on the paper, but to a larger or a smaller scale. The main difficulty in the use of this instrument is in the adjustment of the arms to produce a drawing of specified scale. In Fig. 55, the neces-

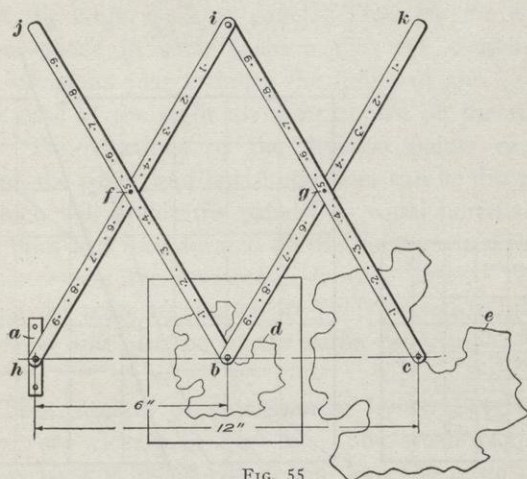


FIG. 55

sary enlargement is assumed to be twice the size of the original, which is shown at *d* and the enlarged copy at *e*. In setting the instrument, the two screw eyes, *f* and *g*, which connect the arms where they cross, are first removed, and the clamp *a* is attached to the drawing board at the left-hand side. Then, on a line *hc*, extending from the pivot *h*, to the right, any convenient distances may be marked off, in this case 6 and 12 inches, the latter dimension being just twice the former, as at *h* and *c*. The connected arms *hi* and *ic* are extended until pencil point at *c* rests on the 12-inch mark. Then the connected arms *jb* and *bk* are arranged as shown, with the tracing point at *b* resting on the 6-inch mark. The arm *bj* must be parallel with the arm *ci*, while the arm *bk* must be parallel

with the arm *h i*. In the illustration, the arms cross at holes marked 5, where the screw eyes are inserted and adjusted. The screw eyes must enter only the holes which bear the same number on each of the four arms, otherwise a distorted enlargement will result.

62. Perhaps the simplest and most commonly used system of enlargement is that by the use of ruled squares or rectangles. The principle underlying this system is shown

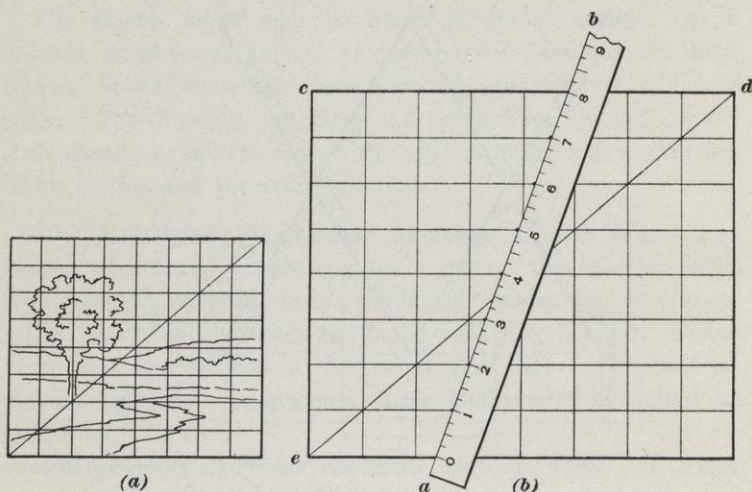


FIG. 56

in Fig. 56. The small sketch, which has been made of the same shape or proportions as the space in which it is finally to be used, is ruled into a number of small equal rectangles, as shown in view (a). Then the large space to be occupied by the design or lettered panel is ruled into a like number of rectangles, which, though larger, have the same proportions as those in the sketch.

The lines forming the letters or design are then drawn in the larger space in such a way that they have the same relation to the edges of the larger rectangles as similar parts of the design or letters have to the edges of the rectangles of the small sketch.

63. The method of dividing and ruling the large panel into equal rectangles having like proportions to the rectangles of the small sketch is as follows:

Outline the larger space or panel in the same proportions as the small sketch. On any convenient stick, as a rule, yardstick, or 10-foot pole, lay off as many equal divisions as there are horizontal spaces in the height of the small sketch (in Fig. 56 (a) there are eight), and make the length of these divisions such that their combined length is more than the height of the large space or panel. Then lay the measure on the larger space in such position that the combined length of these divisions just includes the limits of the larger space, as in the case of the eight divisions shown on the rule in Fig. 56 (b). The locations of the division points can then be marked on the panel, and horizontal lines can be drawn through them, which will divide the panel into equal horizontal spaces. Vertical lines are then located at the points where a diagonal, as *e d*, intersects the horizontal dividing lines. Then if the sketch and the large rectangles are proportional to one another, the divisions will also be in the same proportion.

64. This method of enlargement by the use of squares is shown very clearly in Fig. 57. The small picture at the top of the page is the small sketch, and the large one at the bottom is the full-size design or sign. Of course, in practice, the contrast in sizes would actually be much greater, the full-size sign being, probably, twelve or more times the size of the small sketch. For convenience, the corresponding vertical and horizontal lines have been numbered similarly 1, 2, 3, etc., on both the small sketch and the enlarged layout.

Suppose, now, it is desired to draw the long cat-tail leaf with the turned-over end shown at the right of the picture. A beginning is made between points 2 and 3 on the top horizontal line, but slightly nearer to 3 than to 2. The turned-over end or point of the leaf is drawn downwards toward the lower left corner of this square, and extending about half way down in the square. The long tapering portion of the leaf is then drawn, starting at the point first indicated, going down at an

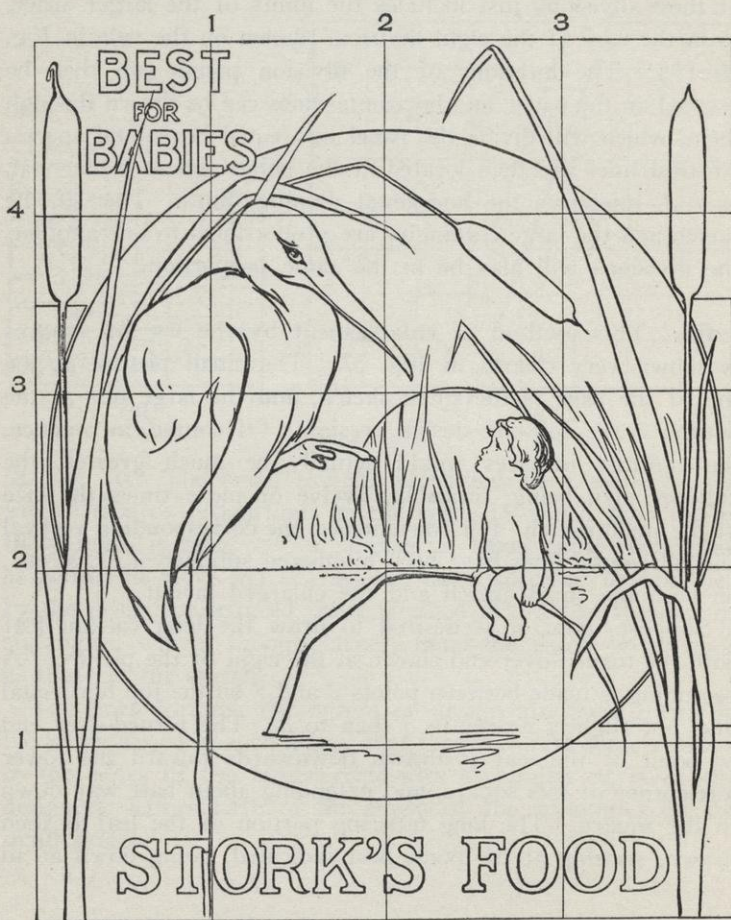
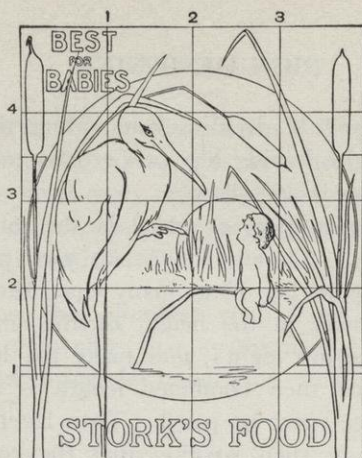


FIG. 57

angle toward the right, crossing vertical line 3 a little above its junction with horizontal line 4, and crossing horizontal line 4 a little to the right of vertical line 3. The leaf then continues downwards at about the same angle, crossing horizontal line 3 about half way between its junction with vertical line 3 and the right-hand vertical edge of the design. Continuing down at the same angle, and with a slight curve, this long leaf joins the other leaves and the stems about on horizontal line 2 at a point about two-thirds of the distance from vertical line 3 to the right-hand edge of the rectangle. This same system, if followed in all the details of the design or lettered panel, will result in an accurate enlargement of the small sketch. The system is also equally applicable to lettered signs, as that shown in Fig. 54, for example.

THE LETTERING PLATES

MATERIALS AND METHODS OF WORK

65. Paper, Pencils, Brushes, Pigments, etc.—No directions for the use of materials beyond what have already been given in the preceding Sections need be given for the work of this Section. The work required on the plates will consist of the preparation of original designs; and, inasmuch as these designs are composed of lettering and accompanying ornament only, no new and untried technique is required. Instruction in rendering has already been given.

66. Method of Preparing and Submitting Plates.—Each one of the plates in this Section is to consist of a 20"×15" sheet, the plates being prepared and submitted in pairs. Plates 1 and 2 are sent first, then Plates 3 and 4, and so on.

Plates 1, 3, 5, and 7 are to contain the small-scale full design, and Plates 2, 4, 6, and 8 are to contain as many full-size letters from the sign as it would be when painted full-size, as can conveniently be placed on the 20"×15" sheet. If, in any case, the student desires to work out more letters or details

full-size, he may send additional 20"×15" sheets containing full-size letters, marking them as "Second sheet," "Third sheet," etc., of Plates 2, 4, 6, or 8, as the case may be. If desired, the full-size letters on these second and third sheets may be so laid out that, when the sheets are afterwards placed end to end or side to side, a large section of the proposed full-size sign can be laid out. The sending of the second sheets, third sheets, etc., is not absolutely required, only the regular plates being asked for, but the student can readily see the advantage to be gained in preparing as much full-size material as possible.

67. The sheets used for the plates should be, as before, the 20"×15" white drawing paper. The amount of space to be filled on the sheet will be specified in each case. Each plate should be prepared with the greatest care and exactness. The term *sketch* should not create the impression that these drawings may be made hastily and in a rough, sketchy style. The small-scale drawings should be approximately exact pictures, in line and mass of the proposed signs as they will appear when finished.

Plates should be submitted in pairs, as specified above, and in no case should more than two plates be submitted at one time. No advanced plates should be prepared and submitted unless the preceding plates have been successfully passed.

As each set of plates in this Section is returned with passing marks, it should be carefully preserved, for the plate is to be used again in making a corresponding plate in the following Section.

PLATE 1

68. Purpose.—Plate 1 is to serve as a test of the student's understanding of what constitutes a poor and a good sign design. The student will select a specimen of each kind from the text illustrations and reproduce, with as much fidelity as possible, both of them, enlarged, for Sheet 1 of Plate 1.

69. Laying Out Plate 1.—From the examples of poor and good design arrangements for signs, as shown in Figs. 22 to 29, inclusive, select any one set. Then draw these comparative arrangements enlarged to fit well on the 20"×15" sheet of paper, and render them so that they will be actual enlarged reproductions of the text illustrations.

Leave enough white margin at the bottom of the sheet so that a few lines of explanation may be written thereon as to the reasons why the good design is better than the poor one, and write such explanation.

70. Final Work on Plate 1.—After the work of the plate has been completed, place at the top the title, Plate 1: Sign Designing, and on the back, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then use this sheet in laying out the full-size, detailed letters for Plate 2, after which Plates 1 and 2 may be mailed to the Schools for examination.

Proceed now with the work of Plate 2.

PLATE 2

71. Purpose.—The purpose of Plate 2 is to train the student to draw as many full-size sign letters from a finished wall, board, or window sign as can be placed on a 20"×15" sheet of paper.

It is suggested that the student pin on the wall, or lay out on the floor, large sheets of wrapping paper, with edges pasted together if necessary, so as to be as large as the finished sign is to be (see dimensions given later). Then the sign can be blocked in full-size. Then on the 20"×15" sheet of white paper some of these full-size letters can be drawn very carefully, and the white 20"×15" sheet sent to the Schools.

The sheets of wrapping paper for the entire sign are not to be sent. Send only the white 20"×15" sheet, to comprise Plate 2.

72. Laying Out Plate 2.—Plate 2 is to consist of as much of the good design drawn for Plate 1 as can be included,

when drawn at full size, on the 20"×15" sheet, with a small white margin; that is, the letters are to be of the same size as they would be if the design were lettered on the sign-board, window, etc., at its full size. For example, in the good sign shown in Fig. 29, if the board containing the words "Advertisements Received Here" were 5½ feet long and 1 foot high, each letter in the word "Advertisement" would each be about 5½ inches high and 3½ inches wide. In this case, one could place, full size, the large letters "Adver", with the letters "rec" underneath "ver", within the limits of the 20"×15" sheet of paper. This example should serve as a guide for the laying out of Plate 2. Read again the suggestions in Art. 71.

73. Final Work on Plate 2.—After Plate 2 has been completed, place at the top the title, Plate 2: Sign Designing. On the back, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then mail these two plates to the Schools for examination.

Proceed now with the work of Plate 3.

PLATE 3

74. Purpose.—Plate 3, which will be made on the 20"×15" sheet of paper, will give actual practice in designing a sign to scale and then laying out a portion of it full-size. Considerable judgment and originality will be required, but the student is not asked to do anything beyond his ability. If he has studied very carefully the text and illustrations of this Section, he will have learned the principles that underlie the making of a good design, and will know what are good designs and what are poor ones.

75. Laying Out Plate 3.—The design to be made for Plate 3 is for a sign 7½ feet long and 4½ feet high. The design is to be drawn to a scale of 2 inches to 1 foot, and will, therefore, be 15 inches long by 9 inches high, and it is to be placed on the usual 20"×15" sheet of drawing paper.

The wording of the sign is to be as follows:

THE QUALITY BOOK SHOP—THE BETTER BOOKS
AND PERIODICALS—MISS GRAY IN CHARGE.

Carefully consider the style, or styles, of letters that should be used for such a sign; also the proper spacing, capitalization, punctuation, etc. Design an attractive sign for such a store or shop, or even for a bill-board sign, advertising such a shop.

Lay out and draw all the letters accurately, just as the sign would appear when finished and in place. The sketch design may show the letters in black, or other monochrome, on a white or toned background.

In the case of this sign, the entire design is left to the judgment and originality of the student, but he is expected to carry out the principles of designing, composition, spacing, etc., as taught in this Section.

76. Final Work on Plate 3.—After all lettering has been completed on Plate 3, place at the top of the sheet the title, Plate 3: Sign Designing, and on the back in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Hold Plate 3 to aid in the work of Plate 4. When both plates are completed, mail them to the Schools for examination.

Proceed now with the work of Plate 4.

PLATE 4

77. Purpose.—Plate 4 will give the opportunity of laying out certain full-size letters from the sign designed for Plate 3. The student should refer again to the suggestion made in Art. 71 relative to laying out the full-size sign, and then draw a few of the letters on the 20"×15" sheet of white drawing paper. This plan should be worked also in the case of Plate 4. The 20"×15" white sheet only is to be sent to the Schools.

78. Laying Out Plate 4.—Select from the design made for Plate 3 any word or words that can be drawn full-size

within the limits of the usual 20"×15" sheet of paper. Then draw and render these letters or words solid on the white background.

Select letters or words that are of the smaller sizes on the full-size sign, so that as many letters as possible may be placed on the white 20"×15" sheet.

No further detailed directions need be given; the student is expected to use his judgment in selecting and arranging full-size letters on the sheet for Plate 4.

79. Final Work on Plate 4.—After the full-size letters on Plate 4 have been completed, place at the top the title, Plate 4: Sign Designing, and on the back in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then mail Plates 3 and 4 to the Schools for examination.

Proceed now with the work of Plate 5.

PLATE 5.

80. Purpose.—The purpose of Plate 5 is to train the student to make a layout for a temporary sign such as is employed for a bold and startling advertisement bulletin or for announcement purposes. The exercise of considerable judgment will be required in making this layout.

81. Laying Out Plate 5.—Within a rectangle approximately 15 inches long by 9 inches high, on the 20"×15" sheet, design and lay out a sketch for a sign, that when executed full-size will be 15 feet long by 9 feet high. The sign is to be an announcement of a fire sale of shoes, which is to last 3 days; the shoes are very much reduced in price on account of slight soiling and damage by smoke and water, and are, therefore, a good bargain.

The exact wording of the sign will not be given here. The student is expected to get up the most attractive wording, and to arrange it in the most attractive and compelling manner and within the space designated.

82. Final Work on Plate 5.—After the work of the plate has been completed, place at the top of the sheet the title, Plate 5: Sign Designing, and on the back in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Hold Plate 5 as an aid to preparing the full-size letter layouts for Plate 6. Then, when both plates are completed, mail them to the Schools for examination.

Proceed now with the work of Plate 6.

PLATE 6

83. Purpose.—Plate 6, like Plates 2 and 4, is intended to give practice in laying out full-sized letters from signs that have been designed. Such practice should be of value to the student, as it will add to his skill and judgment in executing such work.

84. Laying Out Plate 6.—Plate 6 is to be composed of as much of the full-size detail of the sign designed for Plate 5 as can be conveniently placed on a 20"×15" sheet. The proper method of estimating the full-size dimensions of the letters and other details of the sign, and of determining how much of the full-size sign, letters, and ornament, can be contained on the 20"×15" sheet, was explained in connection with the directions for laying out Plate 2, which should be referred to. (See Art. 71.)

85. Final Work on Plate 6.—When the work on Plate 6 has been completed, place the title, Plate 6: Sign Designing, at the top, and on the back, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then mail Plates 5 and 6 to the Schools for examination.

Proceed now with the work of Plate 7.

PLATE 7

86. Purpose.—Plate 7 is arranged to give a training in the preparing of the layout for a permanent high-grade sign for a store dealing in artistic products. The requirements will be quite different from those applying in Plate 5, and the exercise of considerable good judgment will be required.

87. Laying Out Plate 7.—Within the usual 15"×9" rectangle, on the 20"×15" sheet, design and lay out a sketch for a sign that, when made full-size, would be appropriate for use in front of, in connection with, or as a billboard advertisement for, a high-class jewelry store, an art store, or an exclusive millinery establishment.

The exact wording must be devised and arranged by the student. It should include the firm name, the kind of articles sold in the store or shop, and some descriptive matter relative to the high-grade quality of the goods, etc. Before preparing the wording and arrangement for this sign, the student should look over very carefully the specimens of artistic signs illustrated in a previous Section, and also should take notice of examples of high-grade signs that he may see in his own city or town.

88. Final Work on Plate 7.—When all the work for the plate has been completed, place at the top of the sheet the title, Plate 7: Sign Designing, and on the back, in the lower left-hand corner, place the class letters and number, name and address, and date of completion.

Hold Plate 7 so that it may serve as an aid to preparing the full-size letter layouts for Plate 8.

Proceed now with the work of Plate 8.

PLATE 8

89. Purpose.—Plate 8 will give an opportunity for laying out, full-size, some of the letters of the sign shown as a scaled design on Plate 7. The suggestions given under

directions for doing Plate 2 (see Art. 71), should again be carefully noted.

90. Laying Out Plate 8.—Plate 8 consists of full-size details such as letters, ornaments, etc., from Plate 7. As many such details as will go on a 20"×15" white sheet should be drawn in the manner that has been described for previous plates.

91. Final Work on Plate 8.—On completion of the drawing of Plate 8, place at the top of the sheet the title, Plate 8: Sign Designing, and on the back of the sheet, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then mail Plates 7 and 8 together to the Schools in the usual manner for examination.

If any redrawn work on any of the plates of this Section has been called for and not yet completed, it should be satisfactorily finished at this time.

SPECIAL NOTE

92. After each plate of this Section has been passed as satisfactory by the Schools and returned to the student, it should be carefully preserved, because the work of the next Section, entitled *Color in Signs*, will be to render in colors certain ones of the designs of the plates that have been prepared in connection with this Section.

COLOR IN SIGNS

THE PRINCIPLES OF COLOR

COLORS IN SIGN WORK

1. Eighth Stage in Learning Sign Lettering.—The student who has faithfully studied all the work of his Course so far, and has executed the required Lettering Plates, has passed through the six preliminary stages, and the seventh stage that has introduced him to sign designing. He should now be able to lay out any kind of sign lettering, or finished sign, in pencil or brush work, but only in blacks, grays, and white, in outline or in mass. He is now ready to receive training in the crowning feature of all design work, namely, color and color harmony. The purpose of this Section, therefore, is to give the student training in the principles of color and color harmony, and their application to the designing of signs.

2. Method of Study in This Section.—The method of studying the work of this Section and of preparing the lettering plates will be the same as was used when studying former Sections. The text should be carefully read from beginning to end, and then reread and studied, the necessary supplementary sketching being done as the student goes along. After the contents of the Section have been thoroughly understood and tested out by practice, the student should prepare and submit to the Schools for examination and comment, in their proper order, the lettering plates for which directions are given at the end of this Section.

3. Necessity for the Use of Colors.—There was a time when the work of the sign letterer consisted merely of painting letters in black or a color on a white board. Sometimes the letters were in white on a black surface; at other times the sign man would experiment by using colored paint, such as brown, red, yellow, etc., on a white background; but this was simply the same as using the black paint on the white ground except that he got it from another can. There was no planning or study of colors or color combinations; the painting was done with the pigment the sign man happened to have on hand at the time.

With the multiplying of commercial concerns, retail stores, shops, etc., and the increasing use of signs, there arose the necessity for having more attractive and artistic signs than those in simple black, gray, and white. The use of several colors, and even of multicolor, also became popular, and in this day the sign letterer who does not understand colors and color harmony, and who does not know how to get up signs in color, is greatly handicapped, and his usefulness as a sign letterer is seriously interfered with.

4. Necessity for Studying Color Theory.—The letterer and sign designer cannot depend on his so-called "natural" color sense, or upon mere happy accidents of color combinations, to secure for him satisfactory and harmonious color effects in his signs. The method of designing harmonious and attractive color effects must be studied, just as music is studied. The belief has been prevalent that certain elements in art work, as atmosphere, color, etc., exist of themselves in the artist's brain and find their expression on paper or canvas through a sort of special gift or inspiration. This idea has been exploded thoroughly, and it is now well understood that the artist-designer is dependent on exact scientific rules and discoveries relative to color. This is particularly true in the case of color; for here there is the necessity for exactness perhaps in greater degree than in any other feature of art work. There are certain laws of optics, of color combinations, etc., that are as definitely established as certain principles in

mathematics, and, if these scientific laws are followed, the so-called color sense and good taste in color work on the part of the designer become a certainty and not guesswork.

COLOR PERCEPTION

5. The Sensation of Color.—What is familiarly called *color* is the sensation or impression produced upon the optic nerve by the number and character of rays of light that come to the eye. They are part of the action of one's sense of seeing. While there are five senses—the senses of sight, hearing, touch or feeling, taste, and smell—it must be understood that there is no sensation outside of oneself. An example may make this clearer. It is well known that the sense of hearing, or the sensation of sound, is due to the vibration of the drum of the ear, and that where there is no ear present to receive these vibrations that are transmitted through the air there is no sound.

In a similar manner, one can study the sensation of light. The effect of light is produced by the vibration of what are usually termed *light waves*, and these vibrations affect the retina of the eye to produce the sensation of light somewhat after the manner that the vibrations of the air affect the drum of the ear and produce the sensation of sound.

If all the rays of light that come from the sun and fall upon objects were reflected from those objects to the eye of the observer, all objects would appear white; that is, nothing would have color. But the texture and composition of the exterior surface of an object, or of the covering (paint, dye, etc.) of that object, differ from the texture and composition of the surfaces of other objects in such a way as to absorb certain light rays and to give out, or reflect, others. For instance, if an object is painted with a certain pigment which makes the object appear to be yellow, this means that the paint has the property of absorbing and retaining all the colored rays of the spectrum except the yellow rays, the yellow rays being reflected to the eye.

6. The Spectrum.—The phenomenon just described is based on the fact that sunlight, or other white light, consists of a number of rays of colored light, as can be determined easily. The breaking up of white light into its component parts may be seen in the rainbow, where the sunlight passing through drops of rain is refracted and broken up into seven colors. A more satisfactory breaking up of sunlight into its component rays of colored light may be accomplished by using a glass prism upon which a single ray of sunlight is allowed to fall. Thus it will be demonstrated that sunlight is composed of a combination of seven separate colors: violet, indigo, blue, green, yellow, orange, and red, and they can be remembered by noting that the initial letters of the colors taken in the order just named form a word, VIBGYOR. These colors, arranged in the order mentioned, comprise the **solar spectrum**.

In Fig. 1 is shown a diagram portraying, as faithfully as colored inks can portray, the solar spectrum—the long horizontal band at the lower part of the illustration, broken up into short vertical bands. The meaning of the lettered notations under the vertical bands will be explained later.

NOTE.—In Fig. 1, the reference figures in white called Fig. 1 and Fig. 2 may be ignored. When figure numbers are referred to, the numbers printed in black beneath the illustration, are meant.

An object absorbs and retains certain of the colors, as violet, indigo, blue, green, yellow, and orange, and gives out, or reflects, the remainder, as red, and is therefore referred to as a *red* object. Or, should the object absorb all color rays except yellow, it would be called a *yellow* object.

In Fig. 1, the spectrum colors are shown from right to left, reading backwards, and the indigo is not noted, because it is frequently left out of color notations in commercial work. Indigo, in this figure would come about where the BV or BBV vertical strip is located, near the right-hand end of the spectrum strip.

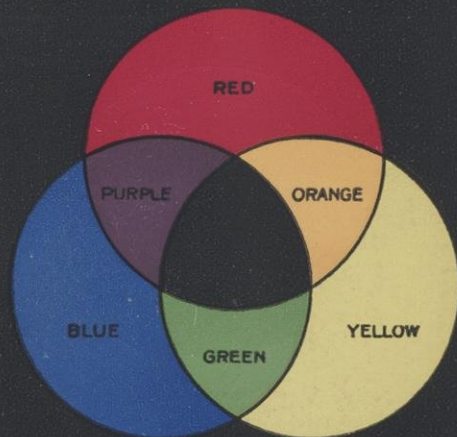


Fig.2

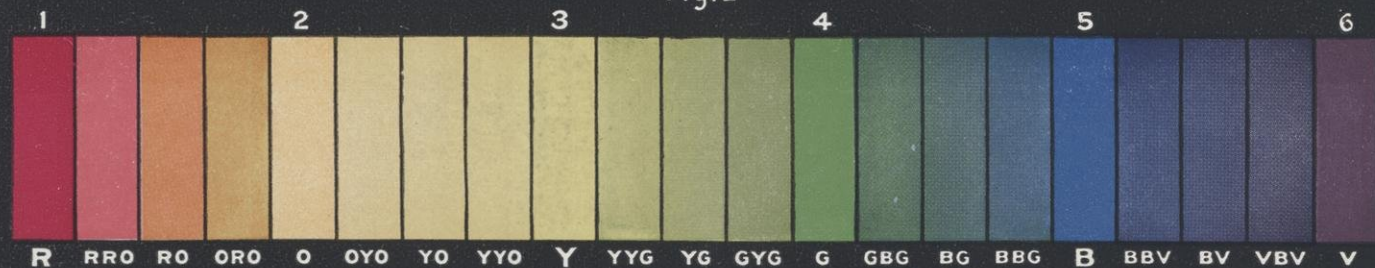
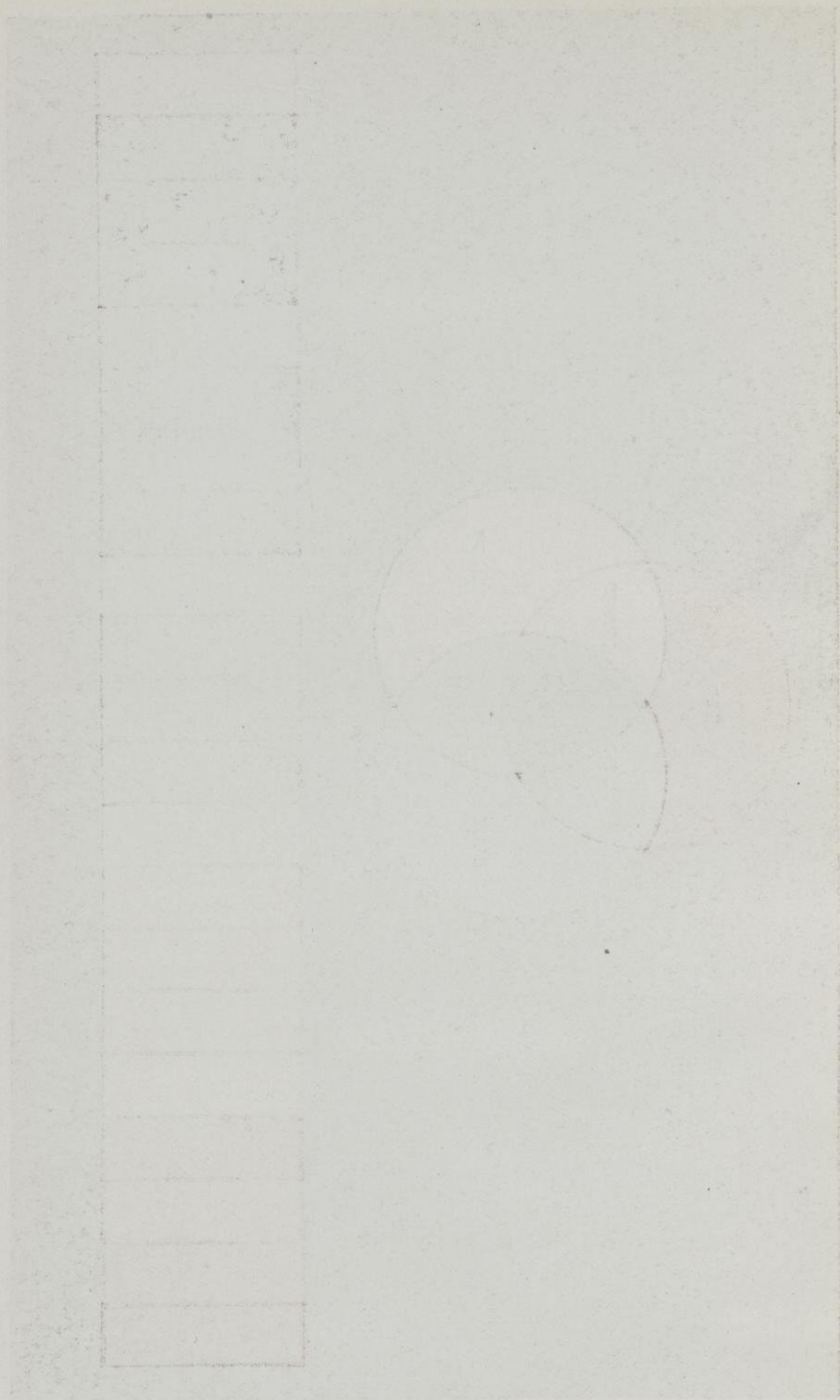


Fig.1



CLASSIFICATION OF COLORS

7. Basis of Classification.—All classifications of the various spectrum colors—violet, indigo, blue, green, yellow, orange, and red—must of necessity be arbitrary. The only reason for such classification is to give the worker in colors a basis upon which to proceed when using colors and when harmonizing them.

For the practical worker with colors, any classification adopted must be from the standpoint of actual pigments; that is, paint applied to the paper or canvas, and not from the standpoints of optics, colored lights, etc., which is purely scientific, and only confusing to the student. The designer of lettered signs need not confuse himself by juggling with the scientific laws of colored lights; such a task belongs to the province of the scientist and not that of the artist. The former deals with color sensations, but the artist deals with colored pigments. The former, in his experiments, would make yellow and blue, for instance, to be complementary colors while the practical user of colors, the letterer, finds that yellow and blue are primary colors—that is, indissolvable colors. The explanation is that the scientist finds that color sensations are carried to the eye in a confusion of different sensations, but when the designer of signs uses pigment colors, the result is carried to the eye in one definite sensation.

This explanation is made to put the student on his guard against being confused by so-called color systems that attempt by experiments with colored lights to establish an arbitrary classification of colors at variance with the well-established classification presented here.

For convenience, and to serve the designer's purpose best, in working practically with colored pigments, the classification will be: *primary colors*, *secondary colors*, *tertiary colors*, and *color grays*.

8. Primary Colors.—In the seven spectrum colors, in pigment form, there are three colors each one of which stands alone and cannot be broken up into any other component colors.

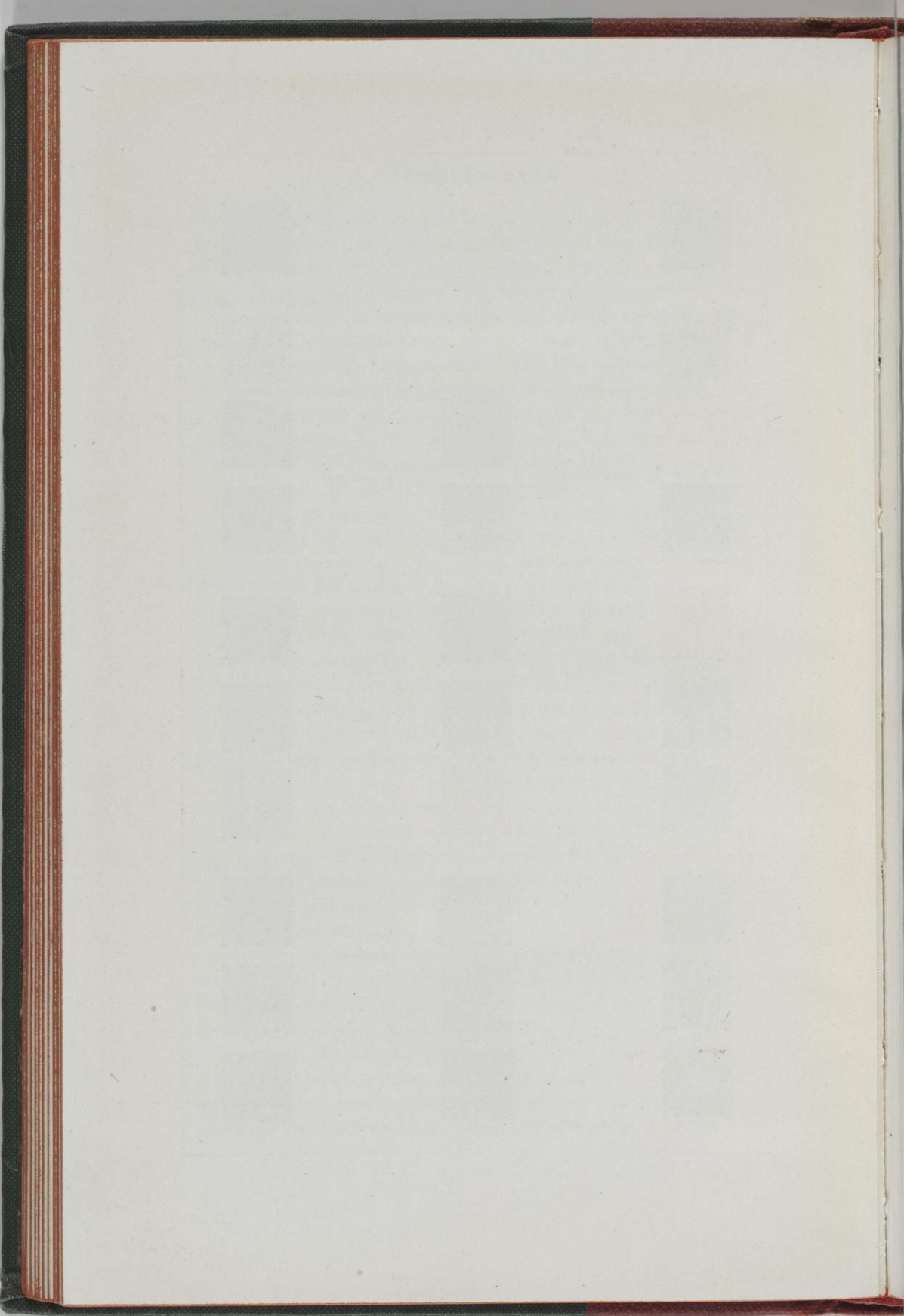
These are **red**, **yellow**, and **blue**. One can see, in the pigment colored red, only red and nothing else. Similarly, in the pigment colored yellow, one can see only yellow. Likewise, in blue pigment, one sees only blue. But, with the other colors of the spectrum, the result is different. Violet contains a great deal of red and a little blue; indigo contains a little red and a great deal of blue; green contains some blue and some yellow; orange contains some yellow and some red. Thus, red, yellow, and blue are the only spectrum colors in pigment form that cannot be broken up into any other colors; and they could be just as well called the indissolvable colors. However, for convenience, they are called the *primary colors*.

Again, it is necessary to preserve the distinction between colored pigments and colored lights. So far as the classification of colored lights is concerned, opinions differ as to what are the primary colors. Sir Isaac Newton called the entire seven colors primaries. Later Sir David Brewster performed experiments from which he concluded that red, yellow, and blue were the primaries. Then Professor Maxwell announced that the primaries are red, green, and blue, from direct examination of the light rays. Later investigations have resulted in the conclusion that red, green, and violet are the simple, or primary, colors, so far as colored *lights* are concerned.

Certain modern color theories and systems that have been devised are not content with announcing other colors as primaries, but even attack the well-established classification of red, yellow, and blue as the primaries. The matter as to whether the primaries red, yellow, and blue are to be used in their crude brilliant form, or in a subdued form, is a point that does not enter here.

The primary colors, red, yellow, and blue are shown in the upper part of Fig. 1 on those segments of the three circles on the outside of the group, those portions that are not overlapped by any other color. Each segment is marked with the appropriate name, the name of the primary color it represents, red at the top, yellow at the lower right, and blue at the lower left. The three primary colors, red, yellow, and blue, are also shown in the three squares at the top of Fig. 2.

THE PRIMARY COLORS					
					
RED			YELLOW		BLUE
THE SECONDARY COLORS					
	+		=		
RED	combined with	YELLOW	produces	ORANGE	
	+		=		
YELLOW	combined with	BLUE	produces	GREEN	
	+		=		
BLUE	combined with	RED	produces	VIOLET	
THE TERTIARY COLORS					
	+		=		
ORANGE	combined with	GREEN	produces	CITRINE	
	+		=		
GREEN	combined with	VIOLET	produces	OLIVE	
	+		=		
VIOLET	combined with	ORANGE	produces	RUSSET	
THE COLOR GRAYS					
	+		=		
CITRINE	combined with	OLIVE	produces	GRAY	
	+		=		
CITRINE	combined with	RUSSET	produces	GRAY	
	+		=		
RUSSET	combined with	OLIVE	produces	GRAY	



9. Secondary Colors.—The secondary colors are those produced by a mixture, or union, of pigments of two primary colors. The union of the two primary colors, red and yellow, produces the secondary color **orange**. The union of the two primary colors, yellow and blue, produces the secondary color **green**. The union of the two primary colors, blue and red, produces the secondary color **violet**. Since there can be only these three combinations of the primary colors, there can be only three secondary colors, as described above; orange, green, and violet.

The secondary colors, orange, green, and violet, and the combinations that produce them, are shown in the overlapped sections of the three circles at the top of Fig. 1, these sections being marked orange, green, and purple, the latter being another name generally used commercially for violet. The secondary are also shown in the right-hand vertical row of the second section from the top in Fig. 2.

10. Tertiary Colors.—The tertiary colors are those produced by a mixture of pigments of two secondary colors. The two secondary colors, orange and green, produce **citrine**. The two secondary colors, orange and violet, produce **russet**. The other two secondary colors, violet and green produce **olive**.

The tertiary colors, citrine, russet, and olive, and the combinations that produce them, are shown in the third section from the top in Fig. 2, the tertiary colors being shown in the right-hand vertical row.

11. Color Grays.—When two or more tertiary colors, (each composed of secondaries, which in turn are composed of primaries), are mixed together, the result is known as a *color gray*. It is called color gray to distinguish it from neutral gray, which is a mixture of black pigment and white pigment, or black thinned with water. No individual names have been assigned to these color grays, because, on account of the varying proportions of each tertiary used in their mixture, no two attempts at a certain gray ever result the same.

Examples of the grays that result when the tertiaries are mixed are shown in the right-hand vertical row of the bottom section in Fig. 2. For instance, if the tertiaries citrine and olive are mixed, a sort of cool gray results, as shown in the third row from the bottom. If the tertiaries citrine and russet are mixed, a sort of dark tan results, as shown in the second row from the bottom. If the tertiaries russet and olive are mixed they produce a warm tan color, as shown in the bottom row. While each of these three results is undoubtedly a color, yet it is referred to as a *color gray*.

In Fig. 3 (*a*) to (*i*) are shown additional examples of color grays, produced by combining water-color pigments of the names mentioned. The gray in (*a*) was produced by mixing crimson, new blue, and yellow ocher; the one in (*b*), by orange and green; the one in (*c*), by burnt sienna and blue; that in (*d*), by gamboge, blue, and crimson; that in (*e*), by new blue and orange; that in (*f*), by burnt sienna and new blue; the one in (*g*), by gamboge, new blue, and crimson; the one in (*h*), by crimson and green; and the one in (*i*), by Vandyke brown and green.

THREE ELEMENTS OF COLOR

12. Value, Hue, and Intensity.—Each individual color of the primaries, secondaries, and tertiaries possesses three well-defined elements, or properties: *value*, *hue*, and *intensity*. This triple division is possessed by everything that has color; and unless one can name the gradation of value, the explicit hue, and the proportion of intensity of that color, not only does he himself not have a clear idea of the exact nature of that color, but he cannot describe that color to some one else, nor can he place that color upon paper by means of pigments.

13. Mechanical Measurement of Value, Hue, and Intensity.—The uncertain, hit-or-miss method of measuring relative amounts of color was long ago abandoned. It is now possible to obtain accurate measurements of color values, color hue, and color intensity by means of certain definite pieces



(a)



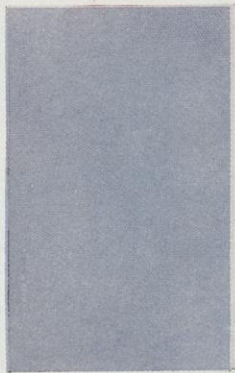
(b)



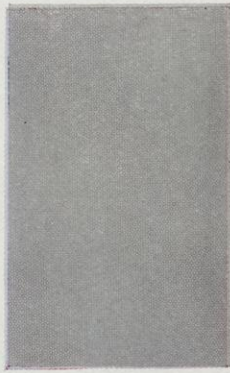
(c)



(d)



(e)



(f)



(g)



(h)

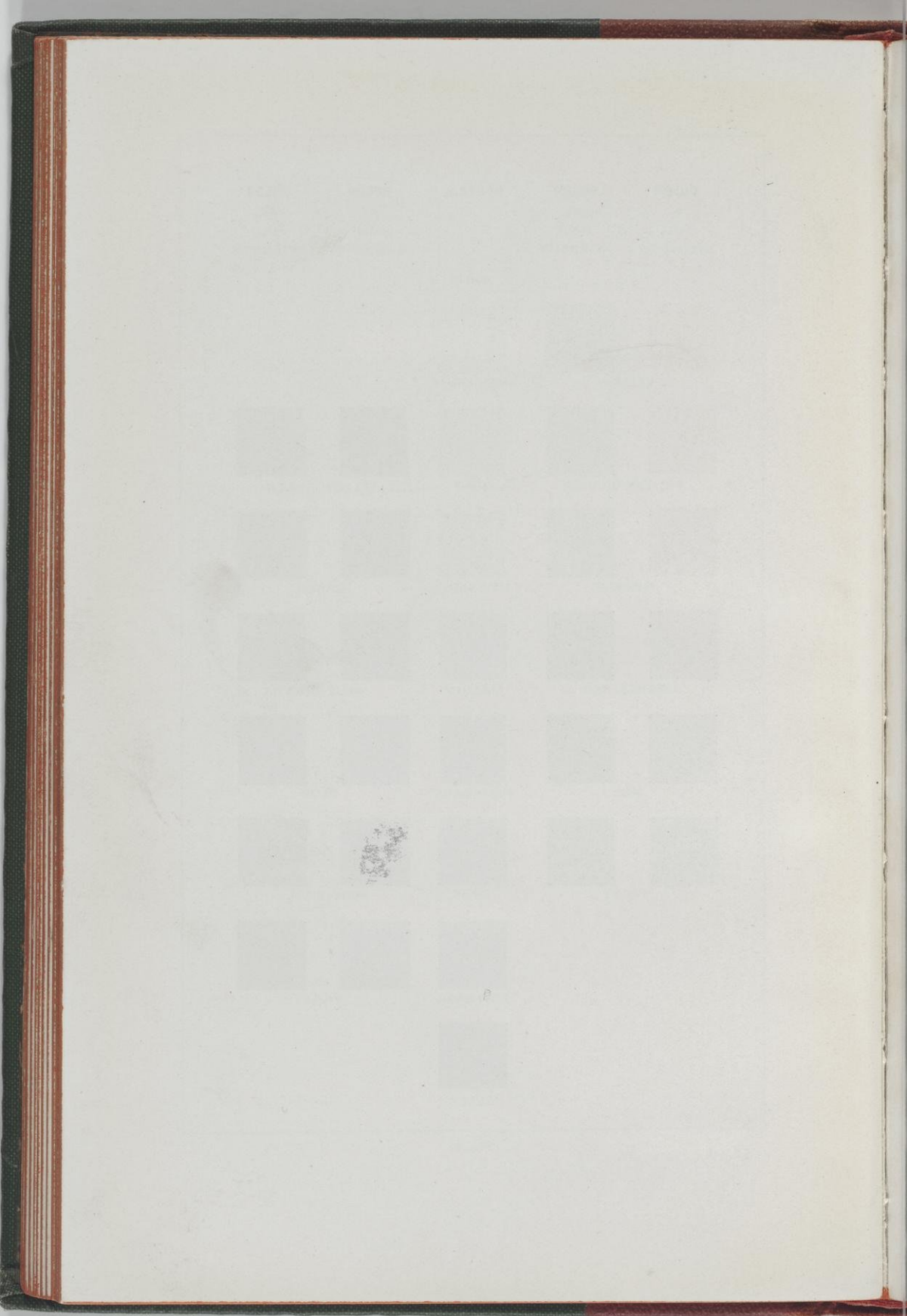


(i)

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FIG. 3





of apparatus, charts, color standards, etc., just as one can measure meter and rhythm in music.

For the average student of color that is to be used in practical work, extremely accurate mechanical methods of securing color measurements are impracticable and not necessary; therefore, only the general results of such color notation and measurement are given here.

VALUE

14. Meaning of Value.—The term *value* is used to describe the different amounts of light and dark in a scene in nature, a painting, or a design. In nature, these black-and-white values range from the most brilliant white, as of snow in the sunlight, down through the most subtle gradations of light gray, gray, darks, etc., to the most intense black, as that of a dark night or the deep interior of a cave. But the limitations of pigments are such that neither the brilliant whites nor the intense blacks of nature can be painted. However, it is necessary to establish some sort of a scale of comparative values to serve as a standard with which other values and colors may be compared. Such a scale, made up of nine white, gray, and black squares, is shown in the middle column in Fig. 4. For convenience in referring to them, these gradations, running from top to bottom, are known as *white*, *high light*, *low light*, *medium*, *high dark*, *dark*, *low dark*, and *black*. These values are equidistant in the scale from one another. There are many minor gradations between white and black, as actually observable in nature; but, for the limitations of actual pigments and for the needs in the present work, the nine gradations shown in Fig. 4 are sufficient for all practical purposes. The values of this scale should be committed to memory so that the powers of observation may be increased and the ability be acquired to make sharp discriminations in the black and white tone values of everything that comes in the view.

15. Use of Black and White Values.—The chief object in becoming familiar with black and white value gradations is that they may be used in designing lettered work.

In Fig. 5. (a) to (d) are shown various methods of using certain values from the scale to get different effects with the same design. From the designs in (a) and (b) the values selected from the scale are *white*, *medium*, and *black*. In (a) *white* is used only for the small background portions of the palmette-shaped device. *Medium* is used for the larger portions of the palmette shape; and *black* is used for the main background and for the outlining portions rendered in *medium*. In (b) the scheme is reversed from that shown in (a), just like the other side of a reversible rug or drapery. *White* is used, as before, only for the small background portions of the palmette shape; but *medium* in this case is used for the main background; and *black* is used for the larger portions of the palmette shape. Other arrangements of *white*, *medium*, and *black* could be made for the rendering of this same design, thus showing the diversity of forms of treatment possible.

A more harmonious treatment, however, is shown in (c) and (d), by using values that are closer together in the scale, namely, *high light*, *light*, and *medium*. In (c), *high light* is used for the forms of the palmette, *light* for the background of the palmette, and *medium* for the main background and for the outlining. In (d), *high light* is used for the background of the palmette, *light* for the main background, and *medium* for the palmette. By careful inspection the student will understand why (c) and (d) are better than (a) and (b).

HUE

16. Meaning of Hue.—The term *hue* is applied to that element of color that essentially characterizes it as the color associated with its name. Hue is the element of any color that characterizes it as a color instead of a black-and-white value. The image seen on the ground glass of a camera shows the landscape, the floral group or whatever it is, just as it looks to the eye; that is, with all its colors and its light and dark values. But the photographic print of the very same landscape or floral group shows everything in the picture in only black-and-



(a)



(b)



(c)



(d)

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FIG. 5

white values. That which appears on the ground glass but is absent from the photographic print is *hue*.

17. Standard Hues.—The actual colors in nature and the ones in pigment form as considered so far, are the spectrum colors, violet, indigo, blue, green, yellow, orange, and red. These colors, to be properly classified and compared with the scale of values, must be rearranged, and certain eliminations and modifications must be made. Indigo may be eliminated as not being needed in average practical work. Six colors thus remain; but, to make a more complete set of colors, there must be considered a color coming in between each two main colors and tinged slightly with portions of each adjoining color. Thus, in making the step from red to orange there is a half-way color that may be called orange-red, because it is tinged both by red and by orange.

There may also be other subdivisions between these half-way colors, making quarter-way colors, such as red, red red-orange, red-orange, orange red-orange, orange, orange yellow-orange, yellow orange, yellow yellow-orange, yellow, yellow yellow-green, yellow green, green yellow-green, green, green blue-green, blue green, blue blue-green, blue, blue blue-violet, blue violet, violet blue-violet, and violet.

The capital initials of these various colors and their subordinates are: letters, R, RRO, RO, ORO, O, OYO, YO, YYO, Y, YYG, YG, GYG, G, GBG, BG, BBG, B, BBV, BV, VBV, and V. These letters, printed in white in the lower part of Fig. 1, designate the main and subordinate colors in the short vertical strips above the reference letters.

18. Colors Related to the Value Scale.—It is not only in the case of black-and-white objects that values exist. Colors also have values of different gradations; and unless one can recognize and use these values, his color knowledge benefits him little. In looking over the examples of the spectrum colors so far considered it is found that some hues are lighter than others; that is, they approach more closely to pure white, while others are darker, or approach more nearly to intense black. In Fig. 4 is shown a convenient classification and

graphical arrangement, whereby each color is shown side by side with the particular black-and-white, or neutral, value that it matches in value. It is the full-intensity, or undimmed, colors that are referred to, and these are shown in the extreme left and the extreme right vertical rows.

The lightest color known is yellow, but it is not so light as *white* of the scale of neutral grays; it corresponds to *high light* of the same horizontal level in Fig. 4. A color next in brightness to yellow is yellow-orange, which is placed opposite *light* of the neutral grays. Next comes orange, which corresponds to *low light*, then orange-red, which corresponds to *medium*; next red, which matches in value *high dark*, and then violet, which matches *dark*. On the left the color values do not go any lower. As will be seen in the row at the extreme right, there are other colors that match some of the neutral grays. While there is no other color besides yellow that is as light in value as *high light* of the neutral values, yet yellow-green corresponds to *light*. Green corresponds to *low light*, blue-green to *medium*, blue to *high dark*, and blue-violet to *dark*. The color that goes lowest in the black-and-white scale of values is violet, or purple, as it is called in commerce.

The graded scale of colors, as shown in Fig. 4, can be made only when the actual pigments are used as brilliant as possible. It must also be remembered that the limitations of printing relative hues and values by means of printing inks are such that absolute accuracy of relation cannot be secured. The hues and values, however, are shown with sufficient accuracy in Fig. 4 to make a usable chart.

19. Value of any Selected Color.—Each color, when at its full strength, is found in only one value. However, each color may appear in different values. It used to be the fashion to refer to the lighter values of a color as *tints*, and the darker values of the same color as *shades*, but this is hardly accurate when studying colors scientifically, even though these terms are used commercially. These differences in values must be classified as *high light*, *light*, *low light*, *medium*, *high dark*, *dark*, and *low dark*. In Fig. 6 is shown how the hue



COMPLEMENTARY
COLORS



RED and GREEN



YELLOW and VIOLET



BLUE and ORANGE



ORANGE-RED and BLUE-GREEN



ORANGE-YELLOW and BLUE-VIOLET



GREEN-BLUE and RED-ORANGE

known as *violet* may vary all the way from *high light* to *low dark*. A similar range of values, although not so great, will apply to any color except the very light ones like yellow, orange, etc.

INTENSITY

20. Meaning of Intensity.—A color is said to be at its full intensity when it is made as brilliant as possible. A pigment color may be said to be at full intensity when it is taken clean and at full strength from the color box; that is, when just enough water has been mixed with the pigment to make it flow well when placed on the paper. A color at full intensity is the exact opposite of a neutral gray of the same tone value. As a color loses intensity it approaches neutral gray; as a neutral gray loses its grayness and gains in color, it is approaching full intensity.

Intensity is best illustrated by referring again to Fig. 4. The outside vertical columns, left and right, show the colors at full intensity; that is, undimmed. In the second and fourth vertical columns, the colors are shown at half intensity, being so tinged with gray as to make them half way between the brilliancy of full intensity and the dullness or quietness of neutral gray. In Fig. 4, only full intensity and half intensity are shown, but it is quite possible to show the colors at more subtle gradations, such as one-fourth intensity, or even one-tenth intensity, but such subtle gradations are not needed in this connection.

COMPLEMENTARY COLORS

21. Meaning of Complementary Color.—The practical worker in color will need to be familiar with colors as related to their complementary colors. Complementary colors are those that, by their union, will, theoretically, produce white. This applies in the case of colored light rays, but while it is also impossible to produce pure white by a combination of pigments, yet a neutral gray can be produced by such a mixture, either as primaries or as secondaries. Thus, each sec-

ondary color becomes the complementary of the primary color that does not appear in its own make-up; for by mixing any secondary color with its opposite primary, there are employed the elements that go to make up all the colors of the spectrum.

22. Examples of Complementary Colors.—In Fig. 7 are shown in six horizontal rows examples of complementary colors. These colors are complementary for the following reasons:

In the first row, green is the complementary of red, because green, being made up of yellow and blue, represents the complement, or remainder, of the three primary colors, red, yellow, and blue, that go to make up the spectrum.

In the second row, violet is the complementary of yellow, because violet, being made up of red and blue, represents the complement, or remainder, of the three primary colors, red, yellow, and blue, that go to make up the spectrum.

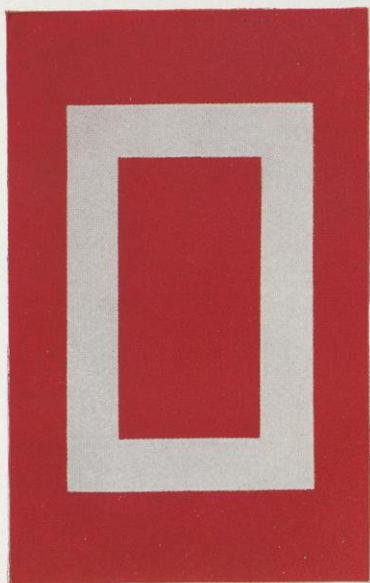
In the third row, orange is the complementary of blue, because orange, being made up of red and yellow, represents the complement, or remainder, of the three primary colors, red, yellow, and blue, that go to make up the spectrum.

In the fourth row, orange-red is the complementary of blue-green, because the red, the complementary of the green, in the first color is tinged with orange, which is the complementary of blue, the modifying hue in the second color.

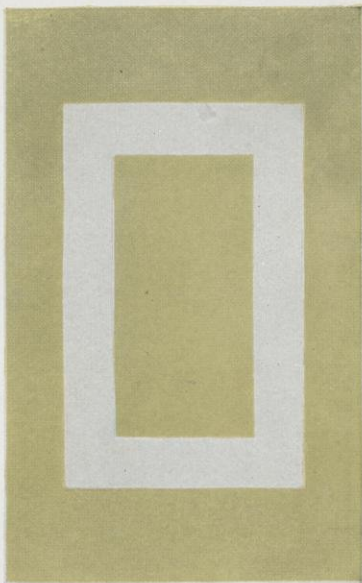
In the fifth row, orange-yellow is the complementary of blue-violet, because yellow, the complementary of violet, in the first color is tinged with orange, which is the complementary of blue, the modifying hue in the second color.

In the sixth row, blue-green is the complementary of red-orange, because blue, the complementary of orange, in the first color is tinged with green, which is the complementary of red, the modifying hue in the second color.

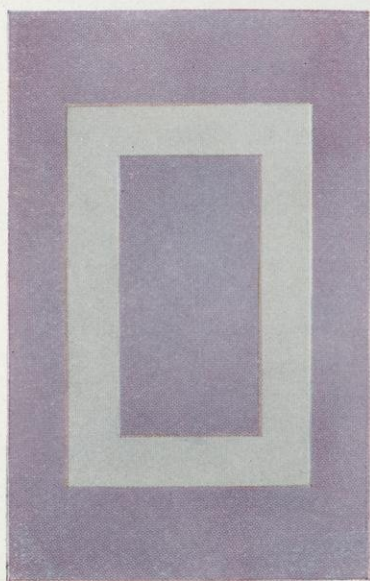
The list of complementary colors could be extended, and the complementaries of each hue determined as above. However, enough have been described and illustrated to show how complementary colors are determined.



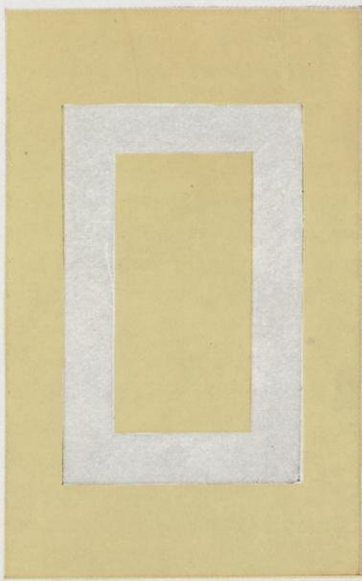
(a)



(b)



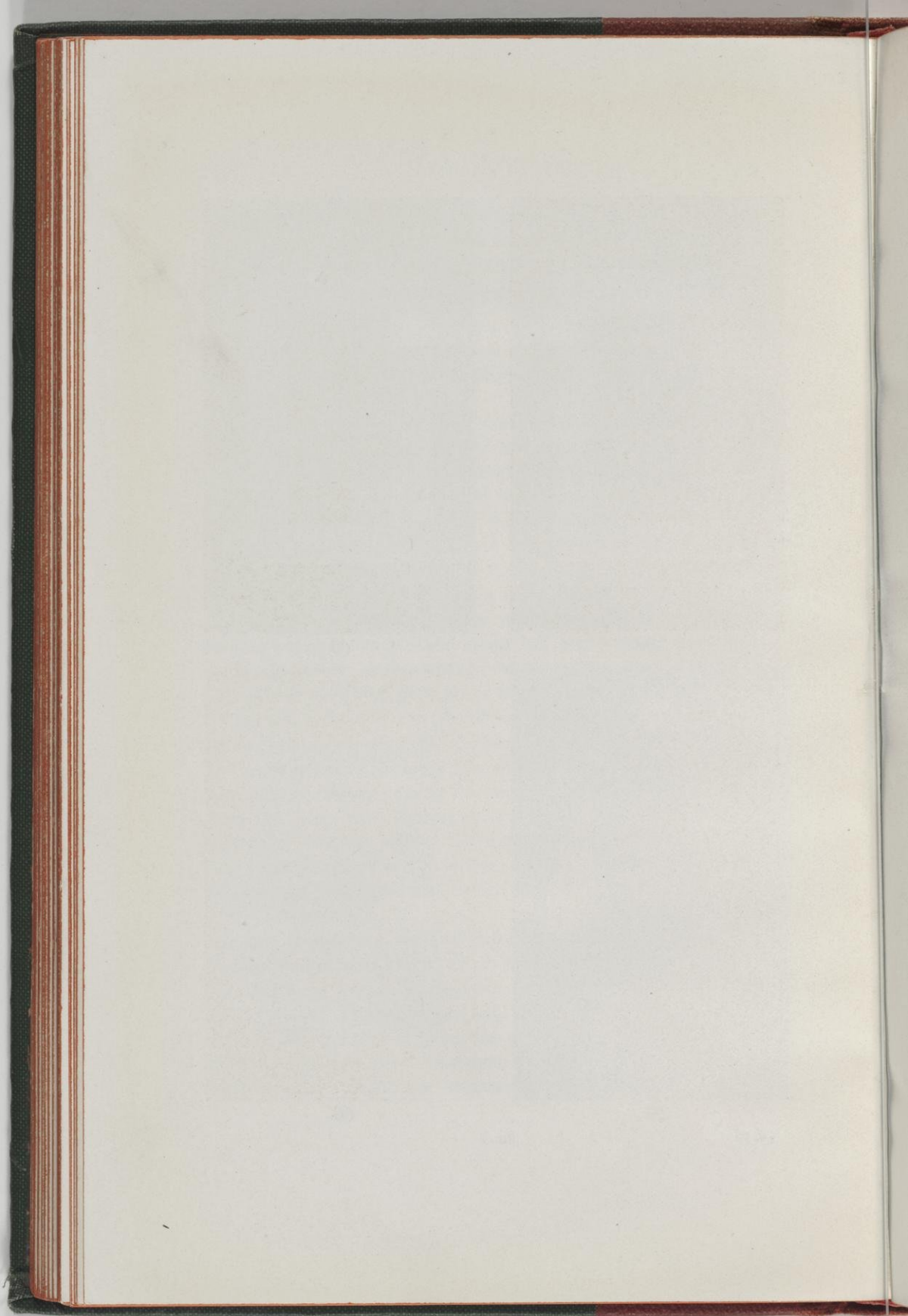
(c)



(d)

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FIG. 8



SIMULTANEOUS CONTRAST

23. Simultaneous Contrast With Gray.—The term *contrast* is applied to the effect produced when a color and a gray, a hue and a neutral value, or two or more colors, or two different values, hues, or intensities of the same color, are placed next to each other. There may be contrast of value, contrast of hue, or contrast of intensity, each of which can be readily recognized or arranged by one who has become familiar with value, hue, and intensity. One of the most interesting forms of contrast is termed *simultaneous contrast*.

The first form of simultaneous contrast is that where a color is contrasted with a neutral gray. When a positive color, that is, a standard hue of full intensity, is placed next to a neutral gray, the effect on the retina of the eye is such that the neutral gray becomes tinged *with the complementary color* of the adjoining hue of full intensity. For instance, when a red is placed next to, or surrounding, a gray, the gray appears tinged with green, green being the complementary color of red. This is illustrated in Fig. 8 (*a*), (*b*), (*c*), and (*d*), where four rectangles of neutral gray are surrounded by four colors of full intensity, each of which appears to add a color hue to the gray to a certain extent. This change to color may not be apparent at first, but a careful study of the four rectangles will show a difference; and by closing the eyes slightly or viewing the rectangles through a piece of tissue paper, the decided hue of the complementary color will make itself apparent. Thus, the gray rectangle surrounded by red has a tinge of green when compared with the others, while that on the violet appears lighter and somewhat yellow. The gray rectangle on the green appears tinged with a red, while that on the yellow appears decidedly darker and tinged with a reddish blue, or violet. It is difficult for the beginner to realize that the grays of the four rectangles are of exactly the same tone value and hue, and that this apparent difference in color is simply effected by the force of contrast. The student should prove to himself the accuracy of this statement by making the inspection and tests recommended.

24. Simultaneous Contrast Between Colors.—In the same manner as with the gray, there can be simultaneous contrast between two colors; thus, when blue and orange are placed next to each other, the blue affects the orange with an orange tinge that is much brighter and more intense than the orange itself; and there is both an increase in light and a contrast of hue. The orange, on the other hand, tinges the blue with a more intense blue, and a mutual increase in brilliancy is the result.

This explanation of simultaneous contrast is given, not merely as an interesting property of color, but to prepare the sign letterer to use the proper colors when coloring signs, etc. For instance, the shaded parts of an object, as well as the shadow cast by it, are parts that receive very little illumination. To the untrained observer they may appear a neutral gray; but, after the beginner's color observation has been trained, he can see that these shaded portions and shadows become tinged with the complementary of the adjacent positive color, which is an effect of the law of simultaneous contrast. For example, a shadow cast on a stretch of green grass appears tinged with a reddish hue, red being the complementary of green. The letterer who wants to be a good colorist must understand this principle of simultaneous contrast between colors and apply it when doing the coloring even of conventional decorative work.

SUBDUED OR GRAYED COLORS

25. Reasons for Use of Subdued Colors in Design Work.—The observant student of design work, who also keeps in touch with pictorial work, will note that the best illustrators and designers who work in color do not use crude, glaring colors, but those that are subdued or grayed. The reason is that the true artist does not violate conditions that exist in nature; and the necessity for care and thought on this point applies to color as much as to any other feature. Similarly, the letterer must conform to the colors of nature when planning color schemes for his designs.

While colored lights and colored pigments may be very brilliant, that is they may be at the fullest intensity, such intensity is very rarely seen in nature. Because one knows that a certain poppy or a certain rose is red, he is not warranted in using only crude vermilion or crimson paint from the color box to paint a study of the poppy or the rose. A careful inspection of the flower will reveal that there is considerable blue or purple in it, due probably to the flower being in shade or to the peculiar grain or texture of the petals of the flower, or to some other cause. Any brilliant color in nature will be found, upon examination, to be grayed. What is thought to be the brilliant blue of a summer sky is really a grayed blue on account of the particles of dust in the atmosphere; the supposedly brilliant yellow-green field in the distance, even though in bright sunlight, is not bright yellow at all, but a grayish yellow, due also to atmospheric conditions.

26. Securing Proper Hues.—To secure the proper grayed hues in color schemes, the principles of intensity, half intensity, etc., as previously discussed and illustrated, must be applied. There are two extremes to be avoided: first, the use of crude, glaring, brilliant colors; and, second, the use of colors that have been subdued and grayed so much as to take away from them all brightness and warmth, thus resulting in a mere artistic affectation. While it is true that one is obliged to work with brilliant and sometimes crude pigments, when he comes to use this color theory and these pigments, he must secure the same effects of subduing and graying that are shown in nature.

27. Practical Use of Color Combinations.—The student of sign lettering must understand that these descriptions and illustrations of complementary colors, simultaneous contrasts of colors, subdued and grayed colors, etc., have practical application to the designing of signs, especially those in color, and these applications will be made at the proper time. However, the theory and principles of color must be first understood before he makes certain color combinations to produce well-colored designs.

COLOR HARMONY

SOURCES OF COLOR INSPIRATION

28. Three Sources of Good Color Schemes.—The designer who desires to get up good color schemes for his work cannot expect to evolve harmonious colors *out of his head*, as it were, without reference to some authoritative source, any more than he can evolve good designs without reference to some authoritative source.

The three main sources from which he draws color inspiration are: First, the scientific analysis of light, which is the source of all color, from which the spectrum results; second, various combinations of color seen in nature; and, third, the combinations of color used throughout all ages in the best periods of decorative art. From these sources various rules that give valuable aid in practical work have been deduced. These rules not only help one to form intelligently and to judge his own color scheme, but they also give the key to the solution of numerous different color schemes for the same subject and assist him in deciding which one to select.

29. Color Schemes From Analysis of Light.—In securing suggestions for color schemes from the analysis of light, various practical plans may be followed. The experiment may be tried of breaking up a ray of sunlight by letting it fall upon one of the faces of a glass prism thus throwing the spectrum colors onto a screen, and note may be made of the beautiful resulting color harmonies. Another plan is to secure and look into a kaleidoscope. This is a toy that may be purchased at a department store or toy shop. It consists of an octagonal tube with a mirror in one end. On looking into the end opposite the mirror, and turning the tube, the pieces of glass fall into different positions, making various color com-

binations. Such a device is actually used by certain practical designers.

30. Color Schemes From Nature.—It is, of course, from nature that the most effective color schemes may be secured; and they may be had in endless variety. The colorist who is awake to his studies can see in every object before him combinations of lights and shades, hues and values, that in themselves are pleasing. Observe, for instance, the beautiful blending of color in the rainbow. The spectrum colors are here softened by the atmosphere, modified from simple contrast, and blended one into the other to form a beautiful arch that is not harsh in its combinations, as the effect is softened by atmospheric influence. However, the colorist is not to deal with such brilliant objects as this in studying nature for color schemes. In all objects the range of color effects is so varied that in two examples of the same subject separate ideas are found. In the sky, in the water reflecting the sky, in the earth and all vegetation growing therefrom, are found a myriad of forms and suggestions abundant in color wonderfully harmonious and fit. While it hardly seems necessary to enumerate the natural forms from which one might draw a color inspiration, a few of them are pointed out as follows: Flowers and leaves, fruits and vegetables, insects, such as butterflies, dragon flies, bees, etc., the plumage of birds, the coats of animals, shells, fish, metals, minerals of all kinds, and all articles that have been affected in color by age, action of the elements, or heat. Gold, silver, copper brass, bronze, and steel furnish a multitude of suggestions for color schemes, particularly when color-tarnished, oxidized, or discolored through unequal heating.

The success of a color scheme depends as much on the proportion as on the combination, and in changing a particularly pleasing scheme of color from nature, one must be able to estimate, as nearly as possible, the proportions in which nature has used the various colors if he would produce the apparent effect, and also he must note the arrangement of the hues and direct digressions in order to blend one color into

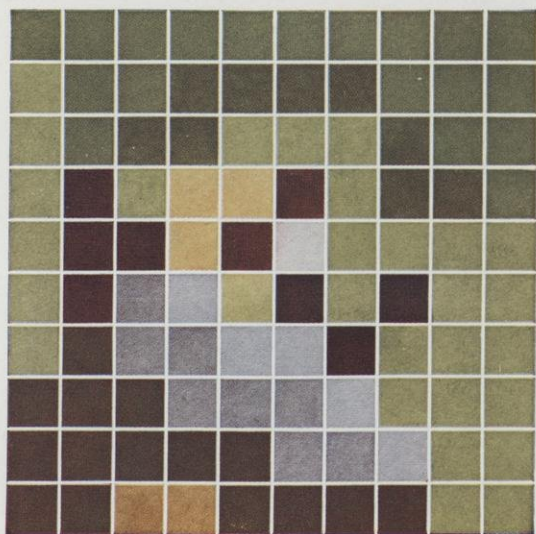
another, as an unwise combination of these will result badly.

In Fig. 9 is shown a chart of a color analysis about $2\frac{1}{2}$ inches square. This is subdivided at intervals of $\frac{1}{4}$ inch so as to make a series of 100 squares, 10 on each side. Thus, in analyzing a color scheme, the percentage of each value, hue, and intensity can be estimated and painted with a brush on the series of squares in order to produce a proper record. In Fig. 9, the scheme is from a butterfly's wing. Experiments of this kind are very interesting, and exceedingly valuable in training the eye and the mind to appreciate color and proportion.

31. Color Schemes From Historic Examples of Decorative Art.—A third source from which inspiration for good color schemes may be secured is furnished by the examples of historic styles of decorative art that have been handed down from age to age. Some of these old decorations are to be seen in Egypt, Greece, Italy, Spain, India, France, Germany, England, etc. However, there are numerous books published on historic decorative art in colors that may be seen in reference libraries.

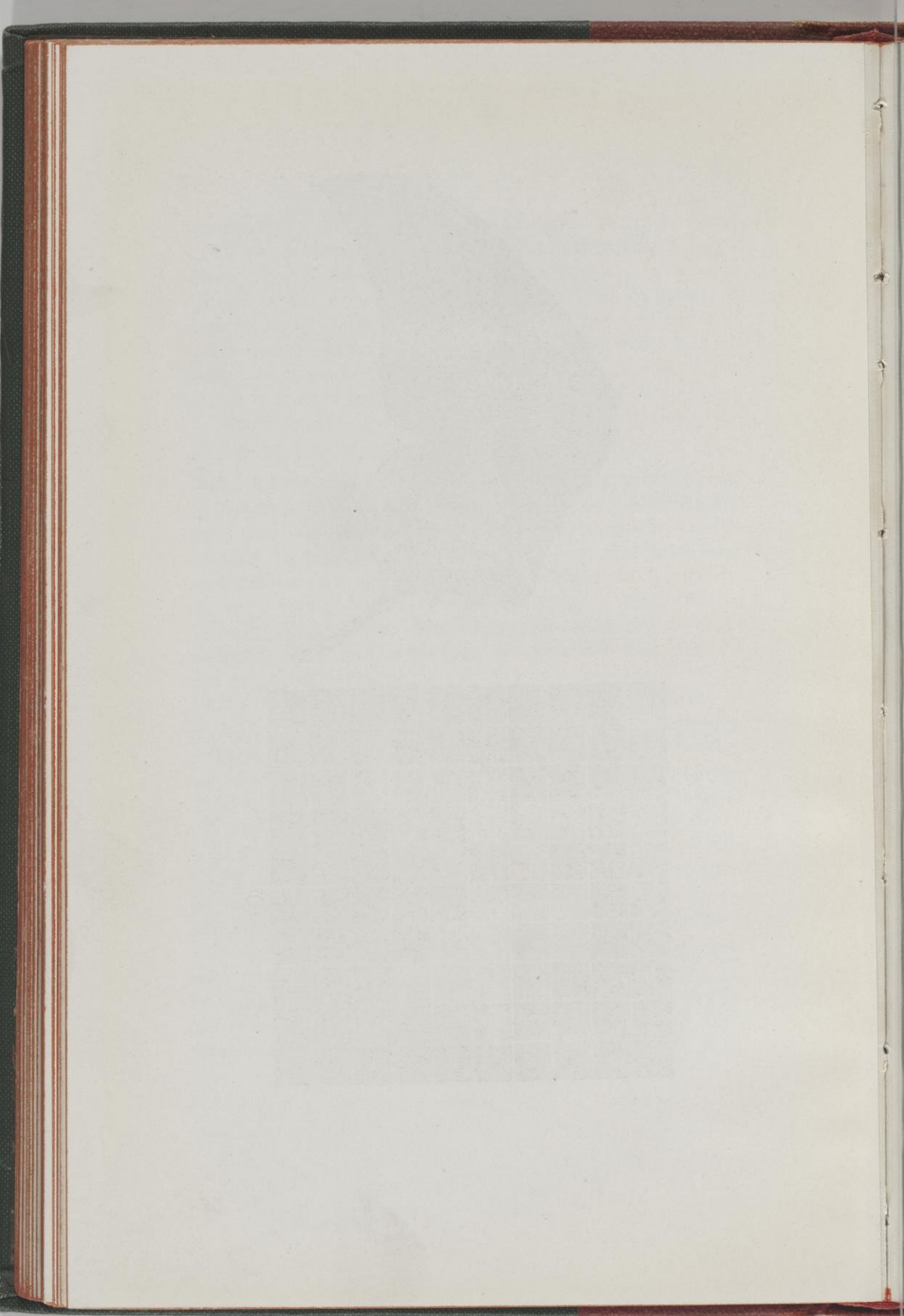
Whether or not these ancient peoples had any system in getting up their color schemes, it is evident that their schemes are harmonious, starting with the simple and almost crude coloring of the Egyptians; going down through the more refined coloring used by the Greeks; continuing on to the brilliant coloring of the Moors; thence to the soft and beautifully subdued warm coloring of the people of India and Persia; thence to the dull somber coloring of the Germans; down through the brilliant and vivacious coloring used by the French, to the refined schemes of the English and American decorative artists.

The observant designer will always be able to get good color suggestions from these ancient styles of decorative art for modern adaptations of historic styles or for modern original designs. Color suggestions from this source will in many cases be very valuable.



§ 8, § 9

FIG. 9



SECURING OF GOOD COLOR HARMONY

32. When the color inspirations and color harmonies as observed in the scientific analysis of light, the various combinations of color as seen in nature, and the various combinations of color seen in historic period styles, have been observed and color notes made thereof, the student is ready to put together these data so as to prepare original color schemes that are harmonious. There are definite laws and rules for color harmonization which enable one to produce with mechanical exactness color schemes that are good; but before considering them it is well to look at some simple methods of securing harmonious color schemes.

33. Schemes From a Restricted Range of Values.
A simple method of securing color harmony, and one that cannot fail, is to use colors whose values are not widely separated in the neutral scale. In other words, when using two or three colors in a color scheme, select colors whose contrasts of value are not great. For instance, referring to the chart in Fig. 4, if two or three colors are employed, they should be colors somewhere between high light and low light; or between light and medium; or between medium and low dark, in the neutral scale. With the chart of Fig. 4 in front of him, the student can make no mistake in getting up such harmonies. For instance, yellow-orange and blue-green; orange and blue; orange-red, blue, and violet will all harmonize because they are close together in the neutral scale. Thus the harmony will be better than it would be if the colors were widely separated in the scale and of sharp contrast.

34. Schemes From a Predominating Value.
Another plan of arranging harmony is to have one value predominate. Suppose a number of colors are to be used; several of them may be high light in value, or perhaps low dark in value, with the other color or colors of some neighboring value. For instance, referring again to Fig. 4, yellow-orange and yellow-green, both light in value, may predominate, and some

neighboring color may be used with them. Or, again, red and blue, both high dark in value, may predominate, with some neighboring color occupying a subordinate place.

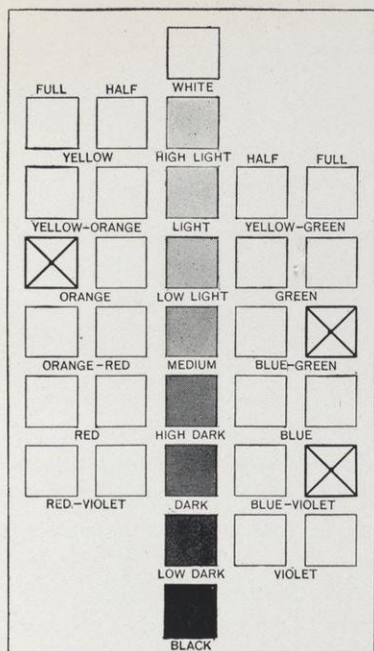
35. Schemes From a Predominating Hue.—Another plan of securing good color schemes is to have some hue predominate in the scheme. For instance, if, in using a certain number of colors in a scheme, a tinge of red is allowed to run through them all, it at once gives them something in common and draws them together, such a color scheme being a warm color scheme. If blue, for instance, is used to tinge all the colors in the scheme, it becomes a predominating color, and the scheme will likely be a cold color scheme.

36. Schemes From a Predominating Degree of Intensity.—Still another method of using some predominating, or common, element, is to employ a common degree of intensity throughout all the colors in the scheme. This can readily be seen by noting how, when colors that are too harsh are placed together they can be made harmonious by toning them down or diminishing their intensity; that is, by graying or subduing the brilliancy of the colors.

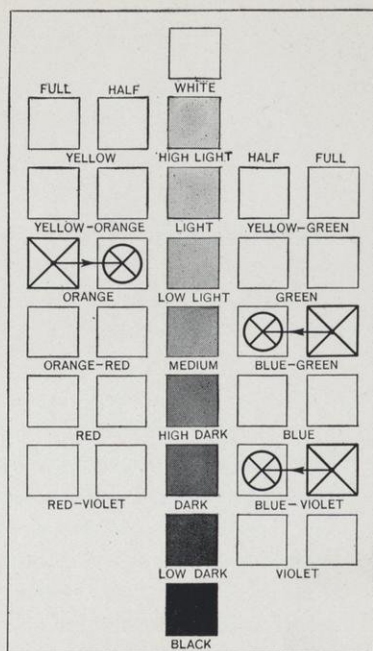
37. Methods of Securing Color Harmony Mechanically.—The mechanical means of securing harmony in colors are purely graphical, and are based on the color chart of value, hue, and intensity shown in Fig. 4 and as illustrated in Fig. 10. In this way, while having accuracy as a basis for locating the colors, the matter of personal taste and judgment of the designer is allowed to have some influence.

38. Method of Reducing Intensity One-Half.—In Fig. 10 (*a*) is shown, on a small scale, the same chart of hue, value, and intensity as shown in Fig. 4. However, in Fig. 10 (*a*) none of the colors are actually filled in on the proper squares, but are simply designated, the selected colors being marked with X's so as to show clearly the ones to be harmonized.

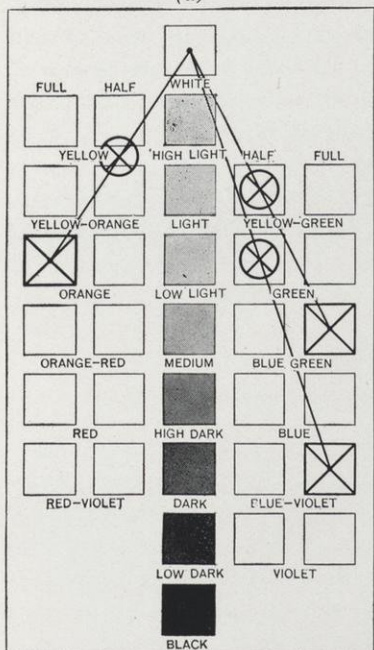
Let any three colors be selected, as orange, blue-green, and blue-violet, as shown in Fig. 10 (*a*). These colors in their full intensity are not particularly harmonious. A simple method



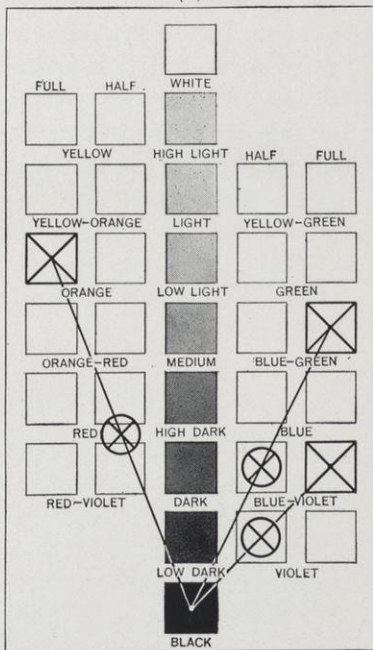
(a)



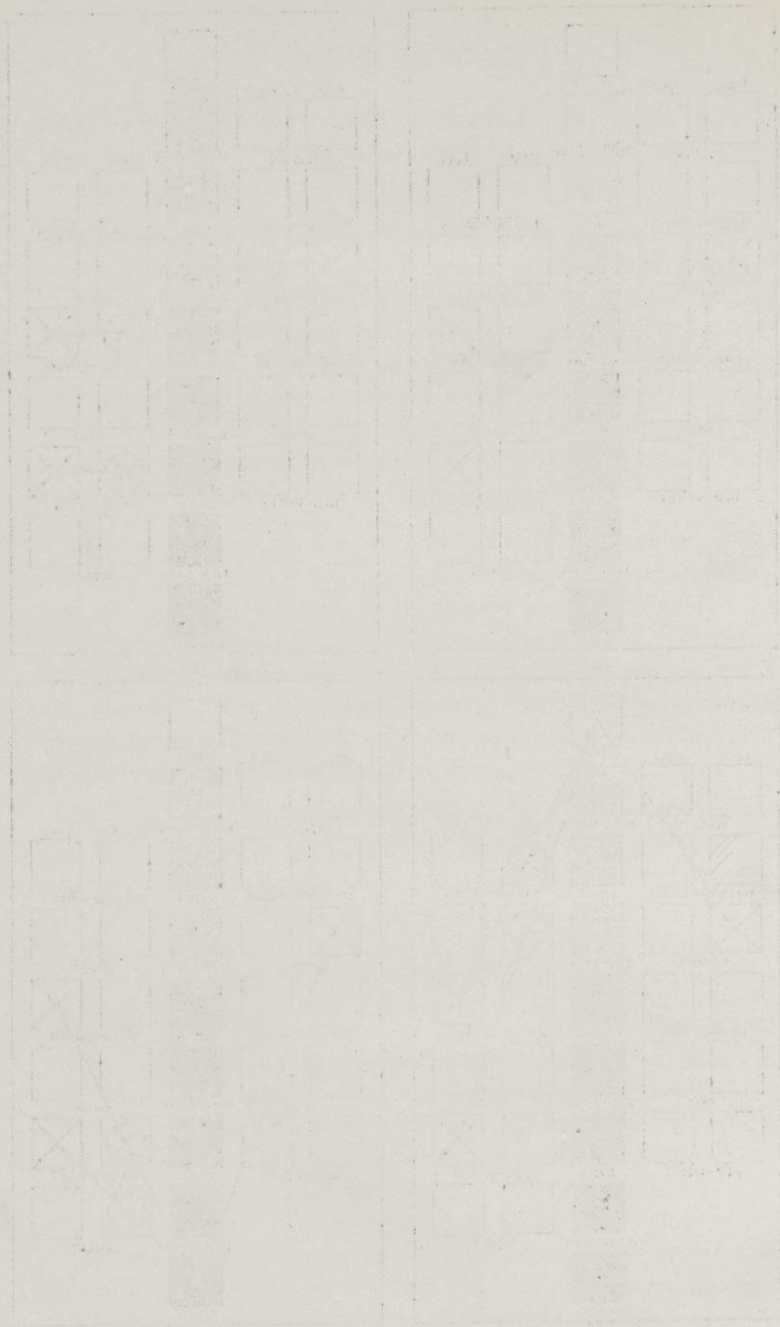
(b)



(c)



(d)



of harmonizing them mechanically is shown at (b), where they have simply been moved over to the position of half intensity, and thus grayed or subdued one-half.

39. Method of Raising Colors Half Way to White.

Another graphical method of harmonizing the colors is shown in (c), where the colors are all lifted half way toward *white* in the neutral scale, and at the same time reduced in intensity. By drawing straight lines from the center of each square occupied by the three colors orange, blue-green, and blue-violet at full intensity, to the center of square white of the neutral scale, and dividing each line in half, and noting where the half-way points fall, the proper values and intensities of the colors may be located so as to secure harmony. For instance, in (c) these half-way points are located as shown, being a *light to high light*, half-intensity orange; a *light*, half-intensity blue-green; and a *low light*, half-intensity blue-violet.

40. Method of Lowering Colors Half Way to Black.—In Fig. 10 (d) is shown a method of harmonizing the colors similar to that in (c), except that instead of being raised half way to *white* the colors are lowered half way to *black*. Lines are drawn from the centers of the three squares of selected color down to the center of the *black* square in the neutral scale, and then halved, the half-way points being noted, and colors so arranged. The resulting orange becomes a *dark*, half-intensity orange; the blue-green, a *dark* half-intensity blue-green; and the blue-violet a *low dark*, half-intensity blue-violet.

CLASSES OF COLOR HARMONIES

41. Various Systems of Classification.—It is sometimes convenient to classify various forms of color harmonies so that the designer may refer to them readily and communicate his ideas to others. Various authorities have endeavored to establish a system that would embrace, under a limited number of heads, every possible combination. One classification is that of bad, inoffensive, satisfactory, attractive, and com-

manding; but such a classification is entirely too vague, and does not deal with the component colors themselves, but simply makes reference to the schemes as being good or bad.

A classification that is perhaps as clear and explicit as any, is to include all colors under the following heads: *dominant*, *complementary*, *analogous*, *perfected*, and *contrasted*. These classes of color harmony are illustrated in Figs. 11 to 18, inclusive, good examples being Figs. 12, 14, 16, and 18.

42. Dominant Harmony.—In Fig. 12 is illustrated an example of dominant harmony, in which class of harmony different values of the same color are combined in one scheme. In this example six different values of half-intensity yellow have been employed to produce the effect. Combinations of this kind are sometimes termed self-color, because they consist only of various values of the same color.

43. Complementary Harmony.—The example shown in Fig. 14 illustrates complementary harmony. In this class of harmony, complementary colors are contrasted, such as orange with blue, red with green, etc. In combinations of this character it is desirable that the values should be opposed to one another as well as colors, or there is an unpleasant effect of movement in the color called *dancing*. Red and green possess this peculiarity to a very marked degree, particularly when the hues are actually equal in value. Light values of one color opposed to dark values of the complementary color will overcome this difficulty, and the introduction of several values of the same color will tend to lessen it, as shown in Fig. 14, where two values of blue with a dark outline are contrasted with two values of orange, thus forming a complementary harmony.

44. Analogous Harmony.—Analogous colors are those that stand near one another in the spectrum scale, such as yellow, yellow-orange, and yellow-green, or blue, green-blue, and violet-blue. When such analogous colors are used in a color scheme, analogous harmony is produced. In analogous harmony the intervals between the neighboring colors should not be too great. Such harmony is well illustrated in Fig. 16,

POOR COLOR SCHEME



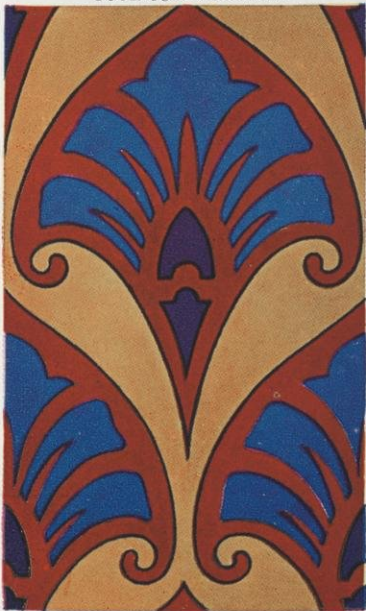
FIG. 11

GOOD COLOR SCHEME



FIG. 12

POOR COLOR SCHEME



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FIG. 13

GOOD COLOR SCHEME

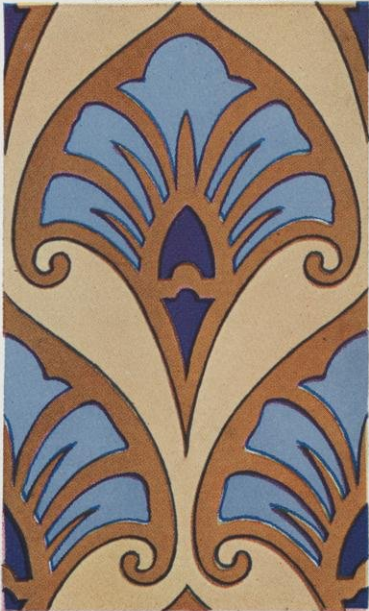


FIG. 14



POOR COLOR SCHEME



FIG. 15

GOOD COLOR SCHEME



FIG. 16

POOR COLOR SCHEME



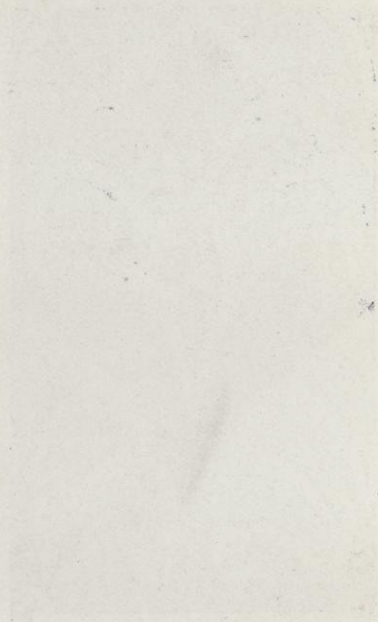
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FIG. 17

GOOD COLOR SCHEME



FIG. 18



where half intensities of green, green-yellow, and deep values of grayed orange are employed with great softness of effect.

45. Perfected Harmony.—To understand how perfected harmony is employed there must first be understood what is the *key color*, of the color possessed in common by both colors in an analogous scheme. For example, yellow-orange and orange-green may be used in an analogous harmony, their key color, the color possessed by each being orange. Now, perfected harmony consists in finding the complementary of the key color, in this case blue, and then contrasting the analogous colors with this complementary color. In Fig. 18, therefore, the yellow-orange and the orange-green are contrasted with blue, thus forming perfected harmony.

Perfected harmony exists also in combinations where two sets of analogous colors are complementary to each other. Such a harmony is of very wide latitude, for it takes in colors on either side of the opposing pairs of analogous colors; for instance, the group surrounding orange is opposed to the group surrounding blue.

46. Contrasted Harmony.—A fifth class of color harmony, which need not be illustrated here, is where color is opposed to, or contrasted with, non-color; that is, with neutral gray. For instance, a design of rich deep red could be placed on a background of light neutral gray. Or a light orange design could be placed on a deep gray field.

Examples of contrasted harmony where color is contrasted with silver or gold will be given and illustrated when the application of color theory to practical sign-designing is discussed.

47. How to Use Classified Harmonies.—Knowledge of the classified harmonies is of the utmost importance to one using positive color for the first time, as it gives him a firm understanding by which he may proceed, and prevents wild and erratic attempts to produce effects without knowing the reason or the theory. Some persons seem to be possessed naturally of a color sense so that they can make good combinations and

satisfactory harmonies without any apparent effort, while others of equal intelligence seem utterly helpless when confronted with the color problem, and, if left to themselves, frequently make the most inharmonious combinations without being able to avoid this bad practice.

By this system of classification of color harmonies, the student is not possessed of the mere mechanical means for the formation of the best color combinations, but rather is given a suggestion as to what constitutes a safe combination of colors in the direction of harmony.

It will be good practice to prepare, with water colors, several schemes of color, illustrating two or more of the classes of color harmony. A very useful exercise is to attempt to classify, under each of the different classes of color harmony, such color combinations as may be observed in colored lights, in nature, and in historic examples; and then to record these classifications in systematic order with water-color pigments.

48. When experimenting with colors that are closely related in the spectrum scale, it is by no means necessary that one should confine himself strictly within the limits set forth, as further variations of light and shade are always permissible, provided the judgment of the student sanctions them. In combining colors closely related to each other, it is a good rule to bear in mind that it is bad practice to combine a dark value of a brilliant color with a light value of a somber color, as this destroys the characteristics of the two colors. Such combinations should be so graded that the brilliant color will always be the lighter and the somber color the darker of the two. For instance, dark values of orange with light values of red, or dark values of yellow with light values of green, make a very bad combination.

49. In employing combinations that involve a contrast of the warm and cold colors, the warm colors advance and make themselves conspicuous, while the cold colors are retiring and tend to withdraw toward shadows. Where a design is executed in a reddish orange on a blue background, it will stand out

and appear to detach itself from the ground and give forwards an effect that is particularly noticeable in designs for stained glass, where the lead lines increase the effect of difference in plane between the two colors. This is an exceedingly important point in the consideration of backgrounds; for, as a rule, dark cold colors make satisfactory backgrounds for patterns in warm hues, and dark warm colors are satisfactory as backgrounds when the pattern is in light cold hues. But if the intensity of the background and the pattern is about equal, the warmer colors advance and the cold colors retire. The success of these combinations is dependent as much on the proportioning of the masses as on the hues themselves. Some colors combine harshly if used in equal masses, but if skillfully proportioned one to the other, the harshness is overcome and a satisfactory harmony produced. Any of these combinations can be varied without limit by the introduction of several values of the various colors given, or by combining these colors with neutrals—black, white, gray, silver, or gold—using these neutrals in outlines or in small masses in order to emphasize the effect.

These hints on color harmony are given, not as hard and fast rules by which one can mathematically calculate exactly what is required in each instance, but as suggestions along lines on which he can experiment and secure combinations that are efforts in the right direction and likely to produce successful color schemes.

50. One must study very closely the relations of two simple colors to each other before any attempt is made to more complex arrangements. Red and blue used together in their full strength are harsh, and light and dark values of these colors should be experimented with, as well as combinations of each of them with another color, until one is thoroughly familiar with the mental effect that is produced by the combinations of certain hues, values, and intensities. Combinations of three colors can then be experimented with, increasing the intensity of one over another in order to give it prominence. But the mind should be thoroughly familiar with the effect

that one color has on another before complex arrangements requiring two or more colors in combination with neutrals or with other colors are attempted.

COMPARATIVE EXAMPLES OF COLOR SCHEMES

51. Importance of Comparative Examples.—It will greatly assist the student in preparing good color schemes to see concrete examples of poor or inharmonious color schemes for certain designs placed side by side with good or harmonious schemes for the same design, and to note explanations as to why the one is bad and the other is good. The information derived from these concrete examples may then be combined with the rules and suggestions previously given for color harmonization, and the result should be a fair ability to prepare original color schemes.

In presenting these examples of good color schemes as contrasted with bad color schemes the same illustrations will be used as were employed when the various classes of color harmony were discussed; namely, Figs. 12, 14, 16, and 18, and also those on the left-hand side of the page in each case; namely, Figs. 11, 13, 15, and 17.

In examining Figs. 11 to 18, inclusive, to compare poor color schemes and good ones, the lower two on each page, as Figs. 13 and 14, and Figs. 17 and 18, should be covered with an envelope or a piece of blank paper, while the upper two on each page, as Figs. 11 and 12, and Figs. 15 and 16, are being examined. Similarly, the upper two should be covered while the lower two are being examined. Unless this is done the eye will be disturbed and confused by other colors on the page.

52. Poor Color Scheme for Dominant Harmony. In using dominant harmony, that is, a number of values of the same color, in coloring the design, it is very easy to get a poor color scheme, as shown in Fig. 11, unless care is observed. The reason the color scheme in Fig. 11 is poor is because all the yellows are at brilliant full intensity, and there is too great a jump, or interval, between some of the values used. One

of the secrets of securing good harmony is to reduce some or all of the colors or values to half intensity

53. Good Color Scheme for Dominant Harmony.

In Fig. 12 the defects of Fig. 11 have been remedied. The yellows in most cases have been reduced in intensity, and more graded and progressive stages have been employed in arranging the different values. This statement should be proved by referring to the charts in Figs. 4 and 6, or the water-color charts that were prepared from these illustrations, and noting the graded intervals of tone values.

54. Poor Color Scheme for Complementary Harmony.—In coloring the design according to complementary harmony, it is again easy to fall into error. One might think that all that is required is to use complementary colors; but the mistake as made in Fig. 13 is an easy one. It is true that blue and orange are complementary colors, but a pure warm orange must be used with pure blue, and not a dark muddy orange, as in Fig. 13. Further, the violet-red fringe introduces still more blue, and thus makes the design still more inharmonious. A further element that interferes with harmony is the fact that all the colors are used at full intensity, and have not been graded in values.

55. Good Color Scheme for Complementary Harmony.—In Fig. 14 is shown the manner in which a good color scheme may be arranged for complementary harmony. The colors are not only complementary, being various values of pure blue and pure orange, but the colors have been properly grayed and arranged in interesting values. The orange used for the fringe of the spot ornament is a *medium* value at half intensity; the darker blue is of a *low dark* value, and at half intensity; the lighter blue is of *low light* value and at full intensity; and the background is an orange-red or *hight light* value at at half intensity. Reference should be made again to the charts in Figs. 4 and 6, and the values and intensities checked up.

56. Poor Color Scheme for Analogous Harmony.

The tendency to fall into error in getting up the proper color schemes for an analogous harmony is much greater than in the case of any of the classes of harmony previously considered, on account of the rather complicated nature of analogous harmony. Such an error is illustrated graphically by the poor scheme shown in Fig. 15. It is known that analogous harmony is produced by analogous colors; that is, those colors that stand near one another in the spectrum scale. The mistake made in Fig. 15 is in using colors that are not near one another in the spectrum; the yellow grass-green is quite widely separated from the dark green, and the latter is widely separated from the rich red orange of the background. Again, the error here is in failing to neutralize the colors; that is, to reduce the intensity.

57. Good Color Scheme for Analogous Harmony.

In Fig. 16 the defects of Fig. 15 are remedied. The greenish-orange, the yellow-green, and the lighter green stand very near one another in the spectrum. Further, good judgment has been shown in selecting the intervals of the tone values. But, that which again assists strongly in securing harmony is the reducing of the intensities. The blue-green fringe around the palmette in Fig. 16 is of *medium* value and half intensity; the light green of the palmette shapes is of *light* value and at half intensity; the yellow-green is of *light* value and half intensity; and the red-orange background is of *low-light* value and grayed to half intensity.

58. Poor Color Scheme for Perfected Harmony.

To secure perfected harmony it is necessary to contrast analogous colors with the complementary of the key color, or color common to all the colors. Since this is a rather complicated procedure, care must be exercised to find the key color and then get its complementary. Thus it can be seen that one may easily make an error in judgment that will result in a poor color scheme, as illustrated in Fig. 17. The colors that have been used for the palmette, blue-green and red-orange, have no pronounced key color, or common color. It might be said

that yellow would be the common color, because there is yellow in both green and orange. This is true, theoretically, but the yellow is not sufficiently pronounced actually to be a common color visually. Even if yellow were the key color, the contrasting color in the background, blue-violet, would not fulfil conditions, for it would not be the exact complementary of the very weak amount of yellow. If it were pure rich violet, not blued, and of full intensity, it would be the complementary color. Thus, several discrepancies work against making Fig. 17 a good color scheme for perfected harmony.

59. Good Color Scheme for Perfected Harmony.

In Fig. 18 the discrepancies referred to as existing in Fig. 17 are eliminated, with the result that a good color scheme is secured. The main colors of the ornament, orange-red and orange-yellow, are analogous colors, orange being the key color. The complementary of orange is blue, which is the color used in the background, thus securing a good color scheme. The intervals of value are well managed, the orange-red being *high dark* at full intensity, the orange-yellow being *light* at full intensity, and the blue being *dark* at full intensity. As the color contrasts in perfected harmony are rather subtle, it is found expedient not to gray them, but to use them at full intensity. However, the color scheme could be improved still further if the hues were reduced somewhat in intensity.

60. Testing for Good and Bad Color Schemes.—If ability to judge which color schemes are good, that is, harmonious, and which are bad, or inharmonious, is desired, analysis of color schemes should not terminate with the examples that have been shown in Figs. 11 to 18. A good test for one to make would be to draw in pencil outline the design shown in Fig. 5, and in Figs. 11 to 18, and then color it to the best of his ability. This color scheme should then be subjected to searching test and criticism such as has been given for Figs. 11 to 18; and then a second, or even third, trial should be made at producing a good scheme, remedying therein any discrepancies that may have appeared in the first attempt. In making these repeated tests and trials at new schemes, a

good plan is to pin a piece of white transparent tracing paper over the pencil drawing of the design and then make the different experiments for color schemes on the tracing paper.

Another plan is to collect a number of designs for various fabrics and objects, such as wallpapers, rugs, etc., which designs have actually been made up commercially, and subject these to tests and analysis. Not every commercial design will be found to have a good color scheme; but by making these analyses it is possible to learn what is bad and what is good and thus be able to avoid the bad and work only to secure the good in color schemes.

It must be remembered that the present discussion refers to the methods of producing *harmonious* color schemes; not glaring or startling ones. The superficial observer, with an untrained color sense, might select the glaring color schemes of Figs. 15 and 17 as good color schemes; but they are not. Such a selection would simply reveal the need of that person to have a training in correct harmony.

COLOR APPLIED IN SIGN DESIGNING

WHITE, BLACK, AND GRAY CONTRASTS

61. Outlines Only.—The best way to illustrate the practical application of color principles and color theory in the actual designing of a sign is to select a certain panel of lettering in the form of a sign and then to illustrate the main forms in black and white and colors in which it could be painted. This has been done in Figs. 19 to 30, inclusive, and the student is urged to study these examples very carefully and, with the aid of the explanations that are given herewith, to understand just why certain black, gray, white, and color combinations have been used to get desired effects.

The illustrations shown in Figs. 19 to 30 inclusive must not be looked upon by the student as something to be copied or used just as they stand, but must be considered as showing the principles of color and the application of these principles,

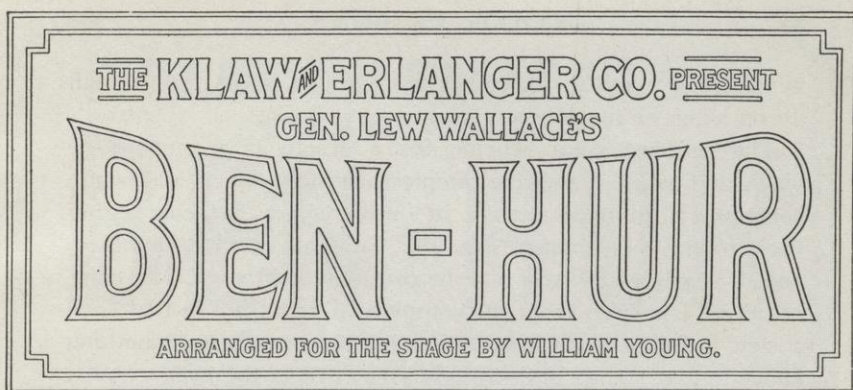


FIG. 19

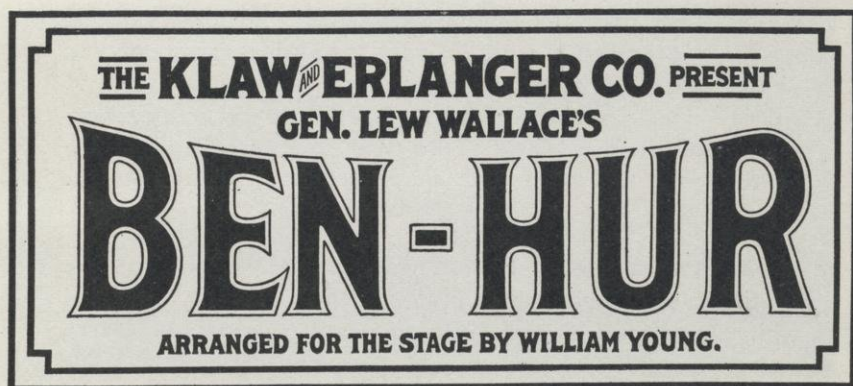


FIG. 20

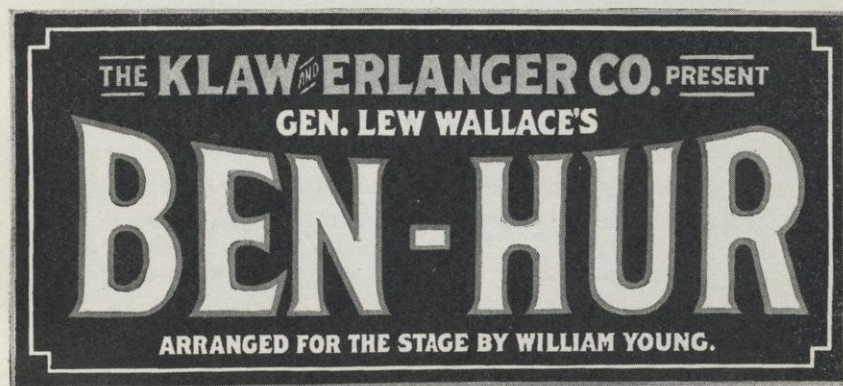


FIG. 21

which he is to apply to the original work in colors that he will do on signs he may design later.

The simplest color scheme for a design is a contrast of black and white. and the simplest form of black and white contrasts is to make letters in outline on a flat contrasting background, as shown in Fig. 19. Such an effect is dignified, and in nearly every case may be considered artistic. The chief criticism, however, from the commercial viewpoint is that such a sign lacks attractiveness and *snaps*, because there is nothing about it that stands out strongly and attracts the eye.

62. Contrasts of Black and White Masses.—An improvement over the outline method is made, however, if the letters are filled in with black, as shown in Fig. 20, the fine outline being allowed to remain around the main central words. This makes the name BEN-HUR stand out strongly and attract the eye, which is the effect desired. The lettering of the other words is then made properly subordinate, as shown.

63. Contrasts of Black, Gray, and White Masses. A still greater improvement in the schemes of black, gray, and white contrasts is to use, with the sharp contrasts of blacks and whites, the contrasts of light grays and dark grays. The principles under which such contrasts of grays should be used are illustrated in Fig. 5, and described in the accompanying text. The application of these contrasts of black, gray, and white to actual color schemes for signs is made in Fig. 21, where the word BEN-HUR stands out prominently, as before, but in a manner that relieves the prominence of the sharp, glaring contrasts shown in Fig. 20. The higher-grade and more artistic signs of the black and white variety apply the principles of contrasted grays, as shown in Fig. 21.

64. Reverse Effects.—The same principles will apply if the values that have been described, and illustrated in Figs. 19, 20, and 21, are reversed. For example, in Fig. 19 the background could be black, and the lines white. In Fig. 20 the background could be black, and the letters white, instead of



FIG. 22

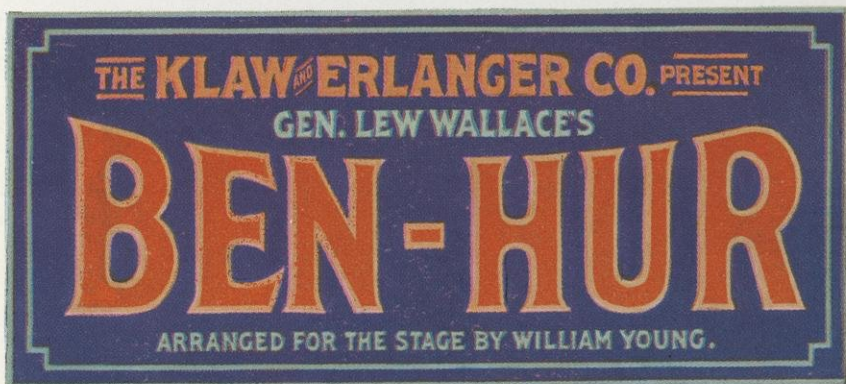


FIG. 23

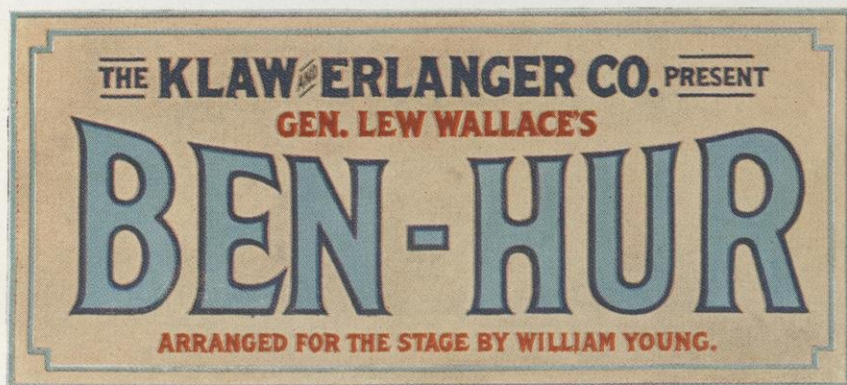


FIG. 24

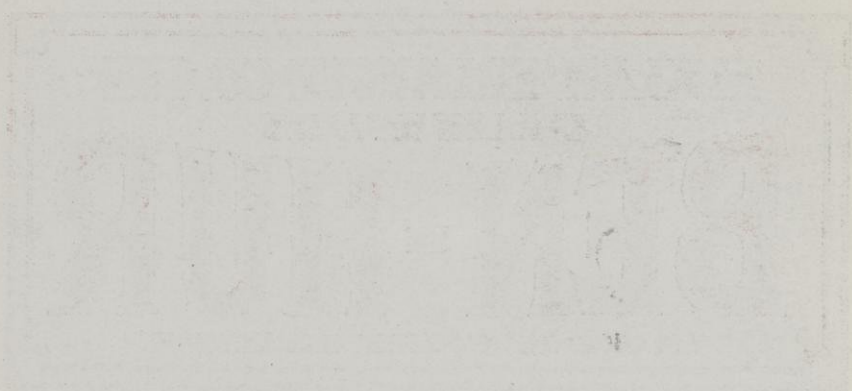




FIG. 25



FIG. 26

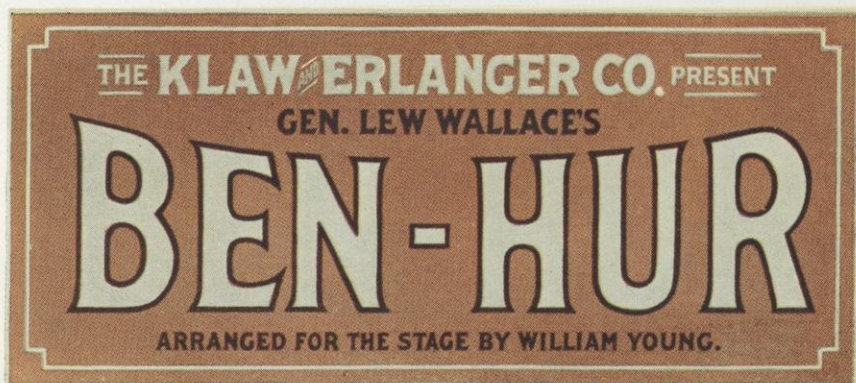


FIG. 27

THE UNIVERSITY OF CHICAGO
LIBRARY

THE UNIVERSITY OF CHICAGO
LIBRARY

THE UNIVERSITY OF CHICAGO
LIBRARY

black letters on a white field. In Fig. 21 the background could be a very light gray and then the main words could be made a very dark gray the two lines of small lettering immediately above and below BEN-HUR also being made a dark gray. Reverse effects can very often be used with good results where the black letters on a white field would appear somewhat crude.

NEUTRAL GRAY AND COLOR CONTRASTS

65. Nature of Neutral Gray.—The first step toward the use of color in a sign is to make the letters of some strong attractive color, and to place them on a neutral gray background. The grays shown in the rectangular outlined shapes in Fig. 8 and in Fig. 3 are all neutral color grays produced by a mixture of a number of tertiary colors. A gray to be used with a color should be a neutral gray; therefore, when the lettering of a sign is in colors the background should be a neutral color gray.

66. Example of a Sign in Neutral Gray and Color Contrasts.—In Fig. 22 is given an example of a sign that shows gray and color contrasts as its color scheme. This is the same sign design previously shown in black, white, and gray contrasts. The background is a light neutral gray, the main words BEN-HUR being a rich, deep red, surrounded by an orange band or outline. The letters of the subordinate lines and words are made in greens and violet, and the double lines for the border are violet or purple.

67. These colors could be used in other arrangements, for, no matter how the words would be colored, the colors would harmonize because of the influence of the neutral gray in drawing them together.

The principle of simultaneous contrast applies particularly in the case of a sign with such a color scheme. For example, if deep, rich, red alone is used for the main letters, BEN-HUR, the gray background will appear lighter than if yellow were used; and the red of the letters will give the slightest greenish

tinge to the gray background. If bright yellow alone were used for the BEN-HUR, the gray background would appear darker, and would be of a bluish or purplish hue.

COMPLEMENTARY COLORS

68. Nature of Complementary Colors.—Earlier in this Section it was explained that the complementary of any selected color is a color composed of the remaining colors of the spectrum that do not appear in the first selected color. For example, we know that the seven spectrum colors are all comprised within the primary colors: red, yellow, and blue. To find the complementary color of red, therefore, we simply combine yellow and blue, and the result will be green. A reference again to Fig. 7 will show the complementary colors, from which it is seen that other complementary colors are yellow and violet, blue and orange, orange-yellow and blue-violet, green-blue and red-orange, etc.

69. Example of a Sign in Complementary Colors. Some very warm and harmonious color effects can be secured in a sign by means of complementary colors. One of the best sets of complementary colors is blue and orange, as shown in the sign in Fig. 23. Here the background is a pure, rich blue, and the main body of the letters is a deep orange. The same principle would be carried out if the background were made of a rich orange and the letters in blue; but this color scheme would not be so satisfactory as the other one, because in this color scheme the brilliancy of the orange background would overbalance and to some extent destroy the full effect of the blue letters.

HARMONIZED COLORS

70. Possibilities in Harmonized Colors.—In the earlier part of this Section, dominant, complementary, analogous, perfected, and contrasted color harmonies have been described. Color schemes for signs can be devised in any of these classes of harmony, but only a few need be shown. One of these is shown in Fig. 24.

So far, in connection with signs only color contrasts have been considered; there will now be considered color harmonies, which are quite different from color contrasts. Contrasts of color may be used to attract attention, but harmonies of color not only attract attention but also satisfy the eye from the standpoint of beauty. Therefore signs in which the harmonies of color are used can be employed most appropriately for advertising beautiful products such as dress goods, millinery, art objects, etc.

71. Example of a Sign in Harmonized Colors.

The color scheme in Fig. 24 is the same as that shown in Fig. 14. The background is a light orange of *high light* value and at half intensity, and the dark blue is of *low light* value at half intensity, thus producing a very pleasing color scheme.

In Fig. 25 the colors are the same as those used in Fig. 18, which should again be referred to. The blue of the background is of *dark* value at full intensity; the orange red of the top line of lettering is of *high dark* value at full intensity; and the light green of BEN-HUR is of *light* value at half intensity. Such a color scheme would be very attractive for billboard and bulletin work, and at the same time would be considered artistic even by those who are unusually critical.

BRILLIANT AND STARTLING COLORS

72. Startling Colors Allowable in Publicity Work.

From the purely aesthetic standpoint, startling colors and sharp contrasts have no place in the consideration of artistic color harmonies. However, they are used legitimately in theatrical scenery and costumes, book and magazine covers, posters, billboards and certain kinds of sign work, in order to attract attention to the subject portrayed.

The matter, then, is not of pure beauty, but simply one of color attraction; and when this is used in the field of display advertising, as is the case with work, its use is perfectly legitimate. To refer to it as being artistic, however is out of place.

73. Example of a Sign in Brilliant Colors.—In Fig. 26 is shown a sign in brilliant colors. While somewhat crude and glaring, such color effects certainly attract the eye, and are, for that reason, suited to sign and billboard and poster work. While the green, the orange, and the purple might be considered crude, yet the harshness is relieved by the outlining. There is no reason why such a color scheme as this, if the pure, standard colors are used, should not be attractive as well as pleasing to the eye.

SUBDUED OR GRAYED COLORS

74. Reasons for Subduing or Graying Colors. The chief reasons for subduing or graying colors is that colors as we see them in nature are subdued by atmosphere, particles of dust in the air, frequent absence of direct sunlight, etc. Another reason is that such artistic grayed or subdued colors are actually expected, when signs or publicity announcements are used for certain lines of business, such as art stores, fine dressmaking, or millinery establishments, jewelry stores, etc.

75. Example of a Sign in Grayed Colors.—A good example of the use of subdued or grayed colors is shown in Fig. 27. The effect is secured by reducing the intensity of each pure color. The dark orange background is of *low light* value, grayed to half intensity; the green of certain letters is of *light* value and at half intensity; and the dark blue of the smaller lettering is of *low dark* value, and at half intensity. This is the same color scheme used in the decorative motif illustrated in Fig. 16, and its superiority over a glaring color scheme using the same colors, is noted by comparing Fig. 16 with Fig. 15. A sign painted in subdued colors, as in Fig. 27, is more artistic and more suited for artistic commercial commodities and wares, than the more brilliant and glaring ones.

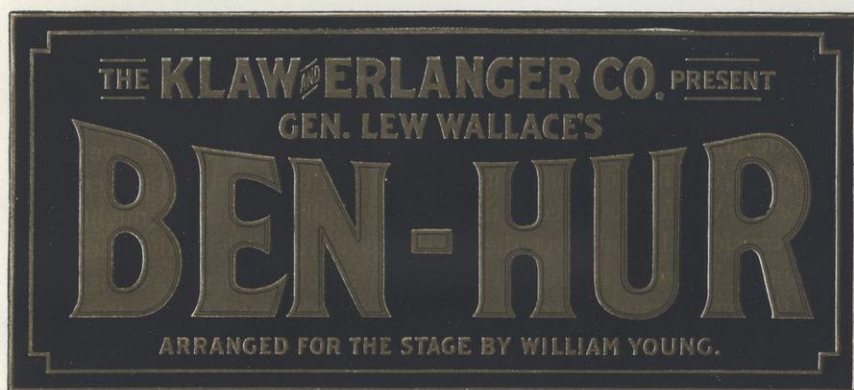


FIG. 28

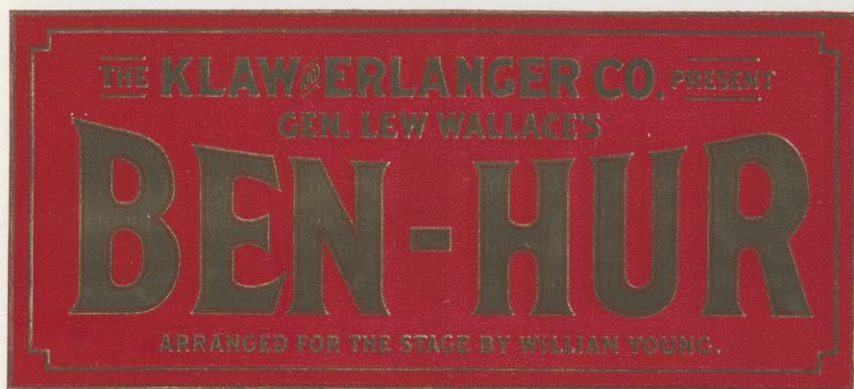


FIG. 29

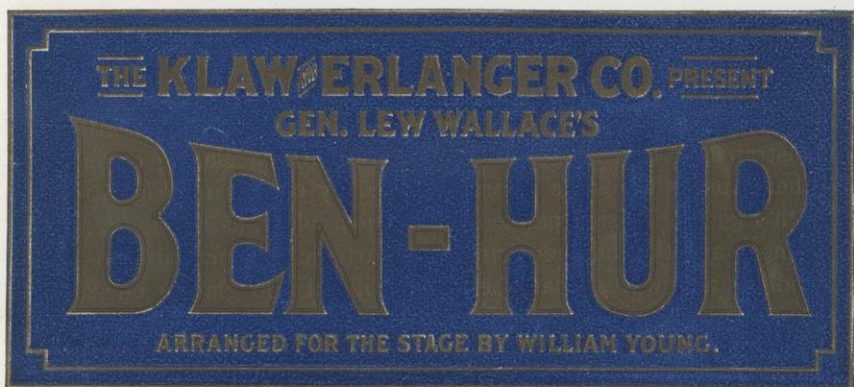


FIG. 30

GOLD LETTERS ON BLACK OR COLORS

76. Various Uses of Gold Letters.—In the consideration of the theory of color and color harmony, gold is not classed as a color but as a pigment or substance. It may be applied in the form of gold paint, either as a water color or oil color, or in the form of gold leaf. Its colors might be called lemon, yellow, chrome, orange, etc., depending on the gold pigment or leaf used. But even though gold in combination with black and colors may not come within the classification of color contrast and of color harmony, it must nevertheless be considered in color schemes for sign work, because gold is very frequently used in all kinds of signs.

Gold letters on plain black and smalted backgrounds are often used for store signs above entrance doors and show windows, and for smaller announcement signs. Other colors are used for backgrounds of the gold letters. One widely known chain of 5- and 10-cent stores uses gold letters on a rich red background, and a different chain of stores uses gold letters on a bright green background. Another very general use of gold is for lettering on glass panels and windows.

77. Examples of Gold Lettering on Black and Colored Grounds.—In Fig. 28 is shown the same BEN-HUR sign that has already been shown in various color contrasts and color harmonies. In this case, however, the background is a solid black and the letters are in bright gold. The general effect on a painted sign would be somewhat more attractive, because the black background would probably be smalted, which would add snap and life, and the letters would be of burnished gold leaf, which would give a much more brilliant effect than gold ink such as the printer must use to produce a printed illustration such as Fig. 28.

Gold lettering on a rich, red background, is illustrated in Fig. 29. The effect here is even richer and warmer than gold on black, and for some purposes more suitable. The gold letters on a black field, however, will always be refined and dignified. Gold on red may be used for less formal purposes,

where attractiveness is considered more important than dignity or refinement.

78. The rich effect of gold lettering on a blue field is illustrated in Fig. 30. Other rich, dark colors such as purple, dark green, etc., may be used as backgrounds for gold lettering. Obviously light colors like yellow would not be at all suitable for backgrounds for gold letters.

PRACTICAL SUGGESTIONS FOR COLOR SCHEMES

79. White, Gray, and Black Color Schemes.—Following is a list of white, gray, and black color schemes. The letters (*a*), (*b*), etc., in the list refer to Fig. 31, where each scheme is illustrated in the part similarly lettered.

(*a*) White background; gray letters with black shade; gray ornament and black border.

(*b*) White background; black letters with light-gray shade; gray ornament and gray border.

(*c*) Light-gray background; black letters with white shade; black ornament and black border.

(*d*) Dark-gray background; white letters with black shade; black ornament and white border.

(*e*) Black background; white letters with dark-gray shade; dark-gray ornament and white border.

(*f*) Black background; light-gray letters with white shade; dark-gray ornament and white border.

80. Cool-Color and Warm-Color Schemes.—Six examples of cool-color schemes and warm-color schemes shown in Fig. 32 are lettered from (*a*) to (*f*), as are the descriptions in the following list, and therefore they can be readily identified.

(*a*) Light-blue background; very dark-blue letters with blue shade; blue ornament and dark-blue border.

(*b*) Dark-blue background; white letters with blue shade; blue ornament and light-blue border.

(*c*) Blue background; light-blue letters with very dark-blue shade; dark-blue ornament and light-blue border.



(a)



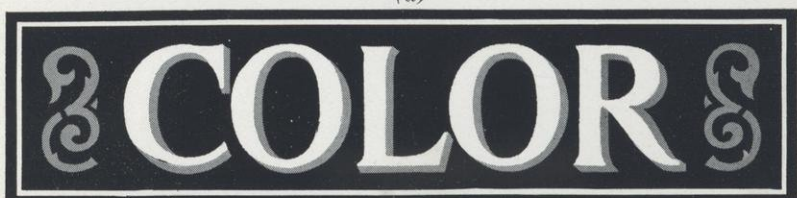
(b)



(c)



(d)

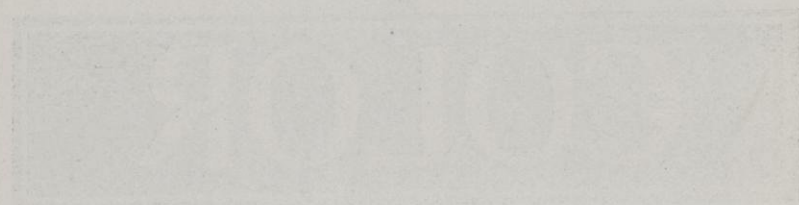
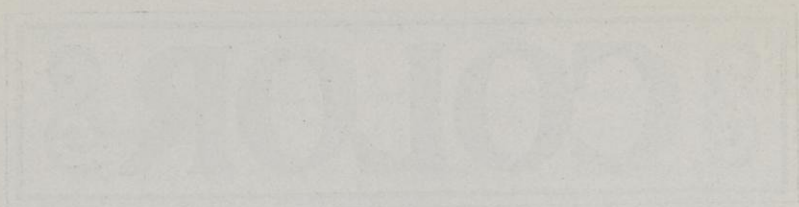


(e)



(f)

FIG. 31





(a)



(b)



(c)



(d)



(e)



(f)

(d) Yellow background; dark-olive letters with orange shade; orange ornament and dark-olive border.

(e) Deep red background; pink letters with red shade; red ornament and pink border.

(f) Red background; pink letters with carmine shade; carmine ornament and pink border.

81. Strong, Brilliant, Color Schemes.—In Fig. 33 are shown six examples of strong, brilliant, color schemes. The reference letters (a) to (f) in the illustration agree with the reference letters in the text descriptions.

(a) Yellow background; black letters with orange shade; orange ornament and black border.

(b) Orange background; dark-red letters with white shade; white ornament and red border.

(c) Pink background; dark-green letters with red shade; red ornament and green border.

(d) Red background; white letters with black shade; black ornament and black border.

(e) Light-green background; black letters with light-red shade; red ornament and black border.

(f) Black background; white letters with orange shade; blue-green ornament and white border.

THE LETTERING PLATES

MATERIALS AND METHODS OF WORK

82. Paper, Pencils, Brushes, Pigments, Etc.—In addition to the other materials already mentioned, it will be advisable to secure a box of water colors, in cake or pan form, and several sable water-color brushes. A box with ten or twelve assorted colors will be suitable.

When about to use the water colors, place a drop or two of water on each pan or cake of color, and test out the colors by marking them with a brush on a piece of white paper to see what the colors are. Then the colors for immediate use should be moistened still more by water taken from a saucer or

from the sunken compartment in the lid of the color box. If the mixture, when tried out on the paper, appears too thin and pale, add more pigment; if it is too heavy and dark, add more water.

When executing the lettering and other work in colors on the plates of this Section, use heavy white paper, preferably water-color paper, with a smooth surface, or water-color bristol board, or illustrators' board. If the cardboards are used, the painting may be done without preliminary preparation. Do not use any paper or cardboard with a rough or pebbled surface. If the water-color paper is used, it must be mounted and stretched on the board according to the following method.

When about to stretch the water-color paper, obtain some good library paste, a small brush, a sponge, some water, and a dry cloth. Be sure that the drawing board is perfectly clean and free from oiliness. Lay the paper right side up on the board. The right side of any water-marked paper is that which is toward one when the water-mark is in its proper sequence of letter. Turn up an edge about $\frac{3}{8}$ -inch or $\frac{1}{2}$ -inch wide all around the four sides of the paper, so that the paper resembles a large flat dish or tray with a raised edge. Now reverse the paper so that the wrong side will be up, the paper resting with its folded edges (reversed) touching the board. Apply the paste with a brush to this folded edge, so that the paste is on the "wrong" side of the paper, and then go quickly over the paper with the wet sponge, taking care not to touch the paste. Then reverse the paper so that the right side will be up and the pasted edges down, in contact with the board, and smooth it from the center toward the edges with the dry cloth, pressing down with the bare fingers the pasted edges until they are sufficiently dry to adhere to the board at every point. The surface may then be slightly moistened with the damp sponge. If the edge of the paper does not adhere tightly at certain places when the paper and paste are still moist, several thumbtacks should be placed at these points. Lay the board flat and give the paper time to dry by evaporation; do not try to hurry it by placing it in the heat, for this will probably cause the paste to crack loose from the drawing board. The

paper will at first look wrinkled and spoiled, but it will soon dry and be perfectly smooth.

After the water-color painting has been finished, and is perfectly dry, the paper may be removed by running a knife blade under the edge and cracking off the pasted edge; or a knife point may be used to cut the paper from the board, allowing the pasted edge to remain. This pasted edge is afterwards removed by soaking it with hot water and scraping it with a knife.

When applying the color, the brush should be well filled with good moist color that flows freely. Always wash the brush in clean water when through using a certain color, and when about to use another color.

There will be no objection to the use of the opaque colors used by designers, decorators, and show-card letterers. These colors already mixed come in moist form in bottles and screw-top jars.

83. Methods of Preparing and Submitting Plates.

The chief purpose of the lettering plates in this Section is to give the student the opportunity of trying out practically the principles of color and color harmony as applied to signs, by preparing practical, original color schemes for sign lay-outs.

Each plate of this Section will consist of only one 20"×15" sheet, and the rendering of the plate must be done with the greatest care, so that a finished, artistic design and lettered sign in colors will result.

The student will note, in reading over the directions for the plates in this Section, that he should use for these four plates the same four original designs that he prepared for the plates of the preceding Section. These four designs, however, are to be shown *in colors* to constitute the plates of this Section.

PLATE 1

84. Purpose.—Plate 1 will give the student an opportunity to try out his ability to devise and render a suitable color scheme for the design that was made for Plate 1 of the Section entitled *Sign Designing*. Great latitude of choice is permitted in this work, but the rules and examples of color harmony that have been given in the preceding pages of this Section must be adhered to.

85. Laying Out and Coloring the Plate.—It is assumed that the drawing and design made for Plate 1 of the preceding Section has been carefully preserved. This design, or a careful copy of it, should now be rendered in colors on a 20"×15" sheet of white paper, in accordance with the principles of color harmony and rendering.

86. Final Work on Plate 1.—After the color rendering of Plate 1 has been completed, and the colors are entirely dry, place the title, Plate 1: Color in Signs, at the top of the sheet; and, on the back of the sheet, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then mail the plate to the Schools in the usual manner for examination.

Proceed now with the work of Plate 2.

PLATE 2

87. Purpose.—Plate 2 also will test the student's ability to get up color schemes that will be appropriate for the specific purpose for which the sign is to be used.

88. Laying Out and Coloring the Plate.—Plate 2 is to be a layout in colors, of the design for a sign for "The Quality Book Shop, Miss Gray in Charge", which was made for Plate 3 of the preceding Section entitled *Sign Designing*. The layout is to be on a sheet of 20"×15" white paper.

In devising and executing the color scheme, not only must the rules of color and color harmony be observed, but the fact

must also be kept in mind that this sign is for a business that is refined, dignified, and suggestive of culture. Gay, brilliant, light-toned hues, therefore, are not appropriate; but such color schemes as black and red on a cream background; gold and black on a dark oak board; gold on red, etc., are quite appropriate. These schemes are given merely as suggestions for each person to use or modify according to his own ideas.

89. Final Work on Plate 2.—After the coloring for Plate 2 has been finished, and the colors are dry, place the title, Plate 2: Color in Signs, at the top of the sheet; and, on the back of the sheet, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. Then mail the plate to the Schools in the usual manner for examination.

Proceed now with Plate 3.

PLATE 3

90. Purpose.—Plate 3 is a test of the student's ability to devise and execute a color scheme for a temporary sign. Directions for preparing the plate will be given herewith.

91. Laying Out and Coloring the Plate.—For Plate 3, the design (or a copy of it) that was made for Plate 5 of the preceding Section, *Sign Designing*, it to be laid out in colors on a 20"×15" sheet of white paper. This sign announces a fire sale of shoes, which is to last for 3 days, during which the prices will be very much reduced on account of slight soiling and damage to the stock by smoke and water, and therefore there are good bargains.

The rules of color harmony should be observed, but special consideration should be given to the fact that this is to be a temporary sign. The effect aimed at in this case is a brilliant color scheme that will attract the passerby. Large red letters on a white muslin or oilcloth with the letters touched up or shaded with yellow, are often used for such work. Occasionally white letters are shown cut in on a red background. Another scheme would show black and red, while another one would

show the flames or the fire apparatus, in which case a realistic color schemes would be used. These are offered merely as suggestions, but not necessarily to be followed closely.

92. Final Work on Plate 3.—Upon the completion of the plate, the title, Plate 3: Color in Signs, should be placed at the top of the sheet; and, on the back of the sheet, in the lower left-hand corner, the class letters and number, name and address, and the date of completion. The plate should then be mailed to the Schools for examination.

Proceed now with Plate 4.

PLATE 4

93. Purpose.—Plate 4 is a test of the student's ability to devise and execute a color scheme for a refined and dignified sign of a permanent character. Detailed directions are given herewith.

94. Laying Out and Coloring the Plate.—For Plate 4 the design (or a copy of it) made for Plate 7 of the preceding Section, *Sign Designing*, is to be laid out in Color on a 20"×15" sheet of white paper.

The design is for a sign of a permanent character, and artistic and high-grade, for a store or shop dealing in jewelry, fine garments, millinery, art goods, etc. The color scheme, therefore, should be dignified, refined and harmonious. Naturally, the color scheme for a sign of this character will be quite different from the gay colors allowable for a sign of a temporary character, as the fire-sale sign used for Plate 3.

95. Final Work on Plate 4.—When Plate 4 has been completed, place the title, Plate 4: Color in Signs, at the top of the sheet; and, on the back of the sheet, in the lower left-hand corner, place the class letters and number, name and address, and date of completion. The plate should then be mailed to the Schools in the usual manner for examination.

If any relettered or recolored work on any of the plates of this Section has been called for and has not yet been completed, it should be satisfactorily finished at this time.

96. Conclusion of Required Work of Sign Lettering Course.—The next two Sections, or Instruction Papers, that are sent to the student at the same time that this present Section is sent, will serve simply as manuals, or handbooks of information, dealing with trade practices in the field of sign lettering. There will be no required work in those manuals, and no Lettering Plates are to be submitted in connection with them.

The student will therefore understand that when all the plates of this Section, *Color in Signs*, and of all preceding Sections, have been satisfactorily completed and passed, the technical training in Sign Lettering, and the services of the Instructors, will have been concluded.

PAINTING AND GILDING

MATERIALS FOR PAINTING

INTRODUCTION

1. Application of Training.—In the previous Sections the instruction was intended solely to give a thorough training in artistic sign lettering. If the student has conscientiously studied the instruction, has made the required drawings, and has received all the passing marks, he is well equipped from an artistic standpoint to do sign lettering. In actual practice, artistic ability in lettering must be supplemented by a knowledge of the trade of sign painting and construction, and of business practices and requirements. This knowledge is best acquired through practical experience, and until one has acquired this experience he should not expect to be able to do the highest grades of work. A novice should not attempt to do difficult work like gold-leaf lettering on glass, for example, until he has had considerable experience in ordinary sign work, like painting signs on cloth or boards, etc.

2. Purpose of This and the Following Sections. The object of the instruction given in the Sections that have preceded this one was to give the student a training in artistic sign lettering, and this training was completed in the preceding Section. It is not possible to substitute book instruction for trade experience in painting and sign construction, and no attempt will be made to do so here. The object of this and the following Section is to present what may be termed a manual,

which will be useful to a beginner as a guide to the actual handling of paints, brushes, etc. No lettering plates or other work are to be submitted by the student, because no proficiency tests are necessary here.

In this Section will be given some practical suggestions as to the equipment and material needed by the sign letterer, and how the brushes, colors, etc. are handled. The next Section will give valuable hints on the erection and sale of signs. Although no work is required from the student on these subjects, he will find it profitable to study these two manuals very carefully.

GENERAL EQUIPMENT

3. Equipment of Studio or Shop.—Local conditions alone determine just how large an equipment is necessary for a sign-lettering shop or studio. To begin with, a rather limited outfit will suffice to do a limited amount of work, but as the business expands added equipment will be necessary to keep up with a growing enterprise. Some of the tools required at the outset are brushes, T square, boxwood squares, compass with pencil attachment, straightedge, yardstick, triangles, easel, compasses, drafting table. For heavier work, swings, scaffolds, tackle blocks, ropes, trestle horses, etc. will be found necessary.

All of these materials should be of the best quality obtainable. The T square with swivel top and thumbscrew is adjustable. Three compasses are necessary, the largest of which, a wooden one, should have an expansion of 3 feet. The sign easel, on account of the fact that heavy signs will have to be made, should be strong and well made. The drafting table should be high enough to save the letterer from stooping while at his work, and low enough to allow him to bend down closely over his work if necessity should demand it. In either case, the angle of incline should not exceed 60°, 6 inches rise to 20 inches width.

4. Paint Stand.—The paint stand, an important piece of sign-shop furniture, should be made wide enough to permit of two marble or plate-glass ends, 12 to 14 inches square. At

the rear, a top should be constructed with two cupboards, one at each end; between these there should be fourteen small drawers, in two tiers, and underneath these two shelves should be fitted. The cupboard is most convenient for gold and silver leaf, bronzes, and all other material that should not come in contact with paints and oils. The drawers are used for dry colors, and the shelves for colors and paint cups.

On the plate glass or marble, all colors are ground and mixed by the use of palette knives, but large quantities of color that does not require grinding may be mixed in large pails or cans.

5. 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, supported at each end by blocks placed on the table, and thick enough to raise the rest above the sign on which the letterer is working; the adjustable frame on which cloth signs are stretched while being lettered, the frame usually being fastened at each corner by setscrews; the glass-sign racks, used to hold glass signs and insure their safety during the process of lettering; or the adjustable frame used for the finished work. The ordinary tools necessary in a sign shop, such as palette knives and palettes, are too well understood to need any description. A firm, level-topped table, 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.

6. Muslin Board, Show-Card Board, Etc.—If muslin signs are to be painted to any extent, there should be a suitable board for this purpose; say 6 or 7 feet wide and 25 feet long. It can be made to slide up and down in vertical grooves. The uprights could be so arranged as to slant forward slightly at the top, so that no drip from the brush will fall on the muslin, which may be held in place on the board by clips.

Sign lettering and show-card lettering are usually kept distinct, but in some sign painting shops a certain amount of show-card work is done, and for this purpose a special bench or board should be provided. A regular tilting drawing table can be provided, but if a less expensive arrangement is desired, a slanting board, say 3 ft.×5 ft., can be made with the rear edge hinged to wall or window sill, and the front edge supported at the desired angle by a movable support. The board should be about 3 feet 2 inches high in front, if the letterer is to stand when working.

BRUSHES

7. Classes of Brushes for Sign Work.—With the exception of the large paint brushes, which can be obtained at any paint store, all brushes used by letterers and sign painters can be had from dealers in art materials. The catalogs of these dealers give classified lists of such brushes, and it is a simple matter to select what is desired. However, the main types of brushes that the sign man needs will now be listed.

8. Camel's-Hair Lettering Brushes.—Of those used exclusively for lettering, the most common variety is the ordinary camel's-hair brush. These are the least expensive,

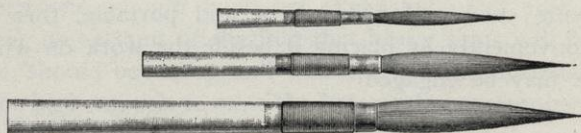


FIG. 1

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 $\frac{1}{4}$ -inch quill with hair $1\frac{1}{4}$ inches long. The largest size being seldom used, Nos. 3, 5, and 7 only are shown in Fig. 1.

9. Ox-Hair Brushes.—The ox-hair writers, or brushes, are similar to the camel's-hair brushes in size and numbering, but are harder to break in, or bring into per-

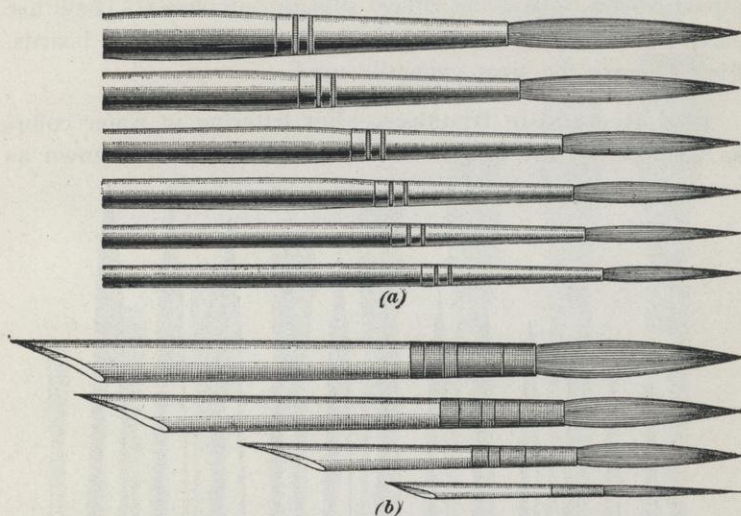


FIG. 2

fect working order, and are used to best advantage in neavy color, such as white lead.

There are two varieties of ox-hair writers—the extra fine, set in tin ferrules with polished-wood handles, shown in Fig. 2 (a), and the ordinary quill brushes, shown in Fig. 2 (b).

10. Brown-Sable Brushes.—The superfine brown-sable writers are of several sizes. The sizes generally used

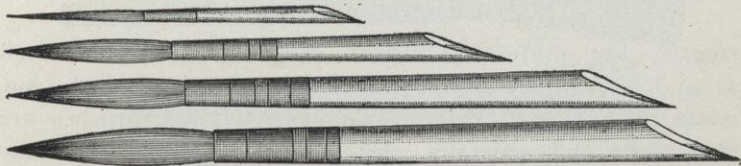


FIG. 3

are Nos. 1, 4, 6, and 8, and their lengths correspond to those of the camel's-hair brushes. These will be found excellent brushes, and when thoroughly broken in will give good ser-

vice, while the camel's-hair brushes 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 tin, glass, or other smooth surfaces. They are particularly useful in cutting in letters on large sign boards. Fig. 3 shows the sizes generally used.

11. Red-Sable Brushes.—For lettering in water colors as well as oil, the long-handled red-sable brushes known as

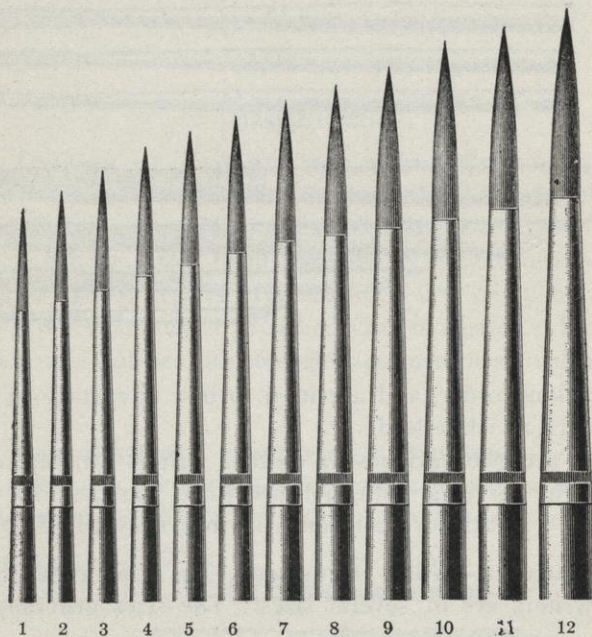


FIG. 4

riggers, 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 $\frac{11}{16}$ inch long. These brushes are well made and generally give satisfaction, being especially adapted to small lettering, outlining, etc. 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. A full set of these brushes is shown in Fig. 4.

12. Square Shaders.—Square shaders are made of selected stock, and are the best variety of camel's-hair brushes made. They range in sizes from Nos. 1 to 8, shown in Fig. 5, and are known also by the name of *B camel's hair*.

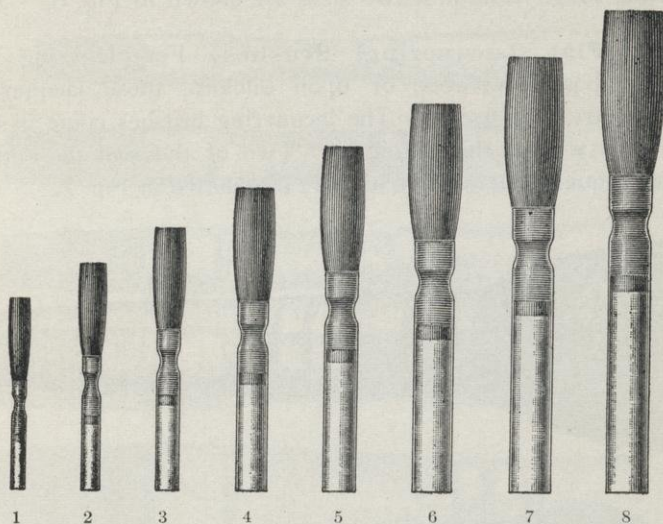


FIG. 5

These brushes are used for lettering as well as shading. The stroke of the letter and the shade being made with one sweep of this style of brush, they are a means of great economy in time for all work not requiring absolute accuracy.

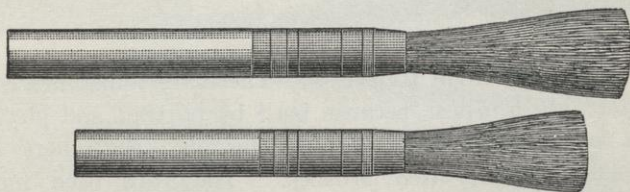


FIG. 6

13. Swan Quill.—The swan quill (camel's hair), already 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; to use them in any color made with white lead would ruin them at once. There are two sizes that are most suitable to the requirements of a sign painter: the 1-inch and the $1\frac{1}{4}$ -inch size; another size, made for carriage stripers, is 2 inches long. The first two sizes are shown in Fig. 6.

14. Flat Lacquering Brushes.—For lettering on smooth board surfaces, or upon oilcloth, these lacquering brushes are very useful. The lacquering brushes come in the round as well as the flat styles. Two of those in the round styles (square end and round end) are shown in Fig. 7.

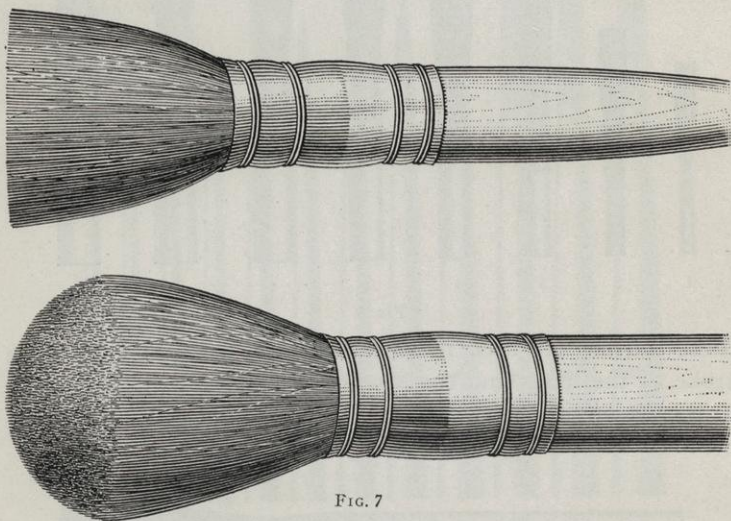


FIG. 7

15. Flat Bristle Brushes.—These are sometimes called “artist bristle brushes” because used by portrait and pictorial artists when doing easel painting in oils. By others they are called “bristle fitch brushes.” They are used mostly for bulletin and wall signs for the pictorial work, and the lettering done over backgrounds and picture, and for cutting in.

Some examples of these flat bristle brushes are shown in Fig. 8, but these by no means represent all such varieties

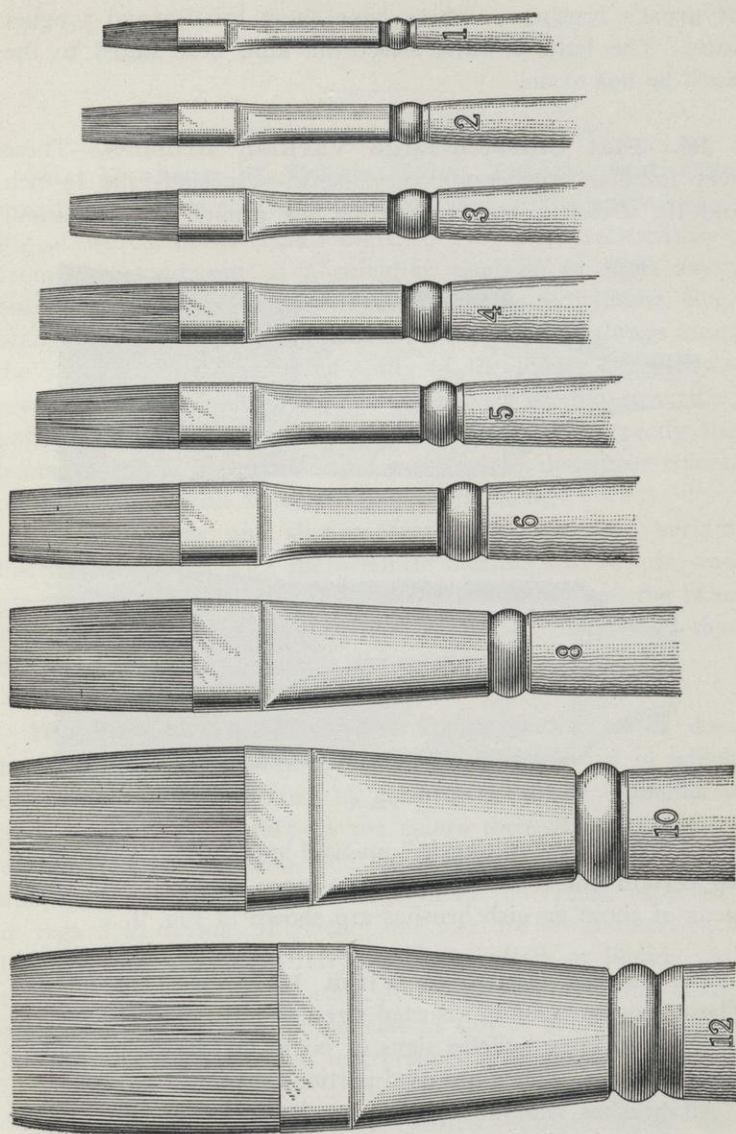


FIG. 8

of artist's brushes. Others have short bristles and tougher ones. The letterer must select the kind best suited to the work he has to do.

16. Flat Chiseled-Edge Varnish Brushes.—These very familiar brushes are very useful—especially the $1\frac{1}{2}$ -inch and the 2-inch sizes—for putting the ground coat on small

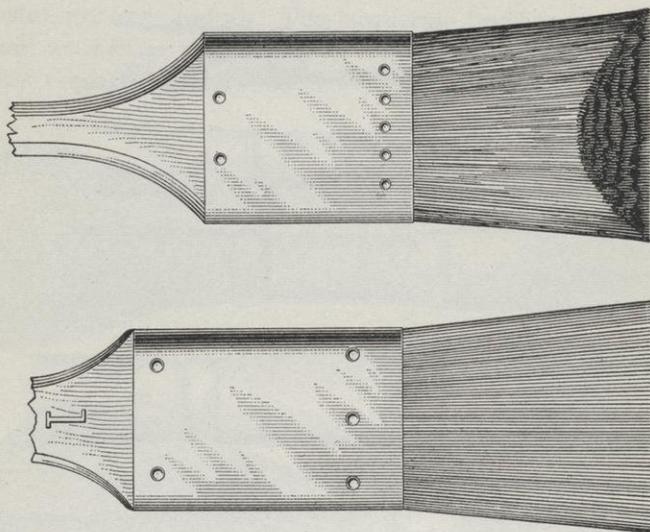


FIG. 9

board signs, for "cutting in" on wall-bulletin work, and even for certain one-stroke lettering on large signs. Some specimens of these varnish brushes are shown in Fig. 9.

17. Bears' Hair, or Fitch Hair, Flat Brushes. These brushes come in assorted sizes, and are used for surface lettering on large bulletin signs of board or canvas, or smooth brick surfaces. They are used particularly for large work.

All brushes should be properly cleaned after use. Some letterers clean them thoroughly in kerosene and then lay them away flat.

COLORS

NATURE OF PIGMENTS FOR PAINTING

18. Meaning of Terms Color, Colors, and Pigments.—Considered from the standpoint of the exact meaning of words, **color** means the theory of color relationships, from the standpoint of a scientific analysis of light rays; **colors** refers to the individual colors such as red, yellow, blue, orange, green, violet, citrine, olive, russet, etc., but always from the standpoint of a scientific study of the theory of color as seen in colored light rays, as the analysis of the spectrum; and **pigments** is the word used to designate correctly the actual paints, in material form (water colors, distemper colors, oil colors, etc.) with which the painting is done.

In the painters' and sign-painters' trade, however, certain liberties are taken with the accurate meanings of words, and pigments are usually called colors. Therefore, when the term *colors* is employed in these pages, it will be understood that the actual paints or pigments are referred to.

19. Color Relations.—The application of colors does not involve merely a knowledge of the many ways in which colors can be transferred to a surface, but it demands a knowledge of the nature of the colors themselves, the effect of the elements on each, and the relations they bear one to another. A colorist should understand the result, especially in regard to drying, of placing one mixture on another, each having as a base an entirely different medium or liquid. All these details must be considered by the painter, and many annoyances and serious complications can be avoided by bearing in mind the important instructions here given.

20. Drying Qualities of Colors.—Colors mixed with slow-drying liquids, such as oils or varnishes, can be covered, while they are still quite tacky, with a coat of the same or of another color. But to cover such a surface with a color

mixed with some quick-drying japan or varnish will result in a cracked, pebbled, or uneven surface when the underlying color dries. The same result will be produced should a slow-drying color be placed over a quick-drying one, if the latter is not perfectly dry before the second is applied. This can easily be understood, as the quick-drying color contracts or shrinks in drying, while the slow-drying color, mixed with oil or varnish, is of a flowing or expanding nature. As the under color continues to dry after being covered over, its contraction causes the result that has just been described. One surface should be perfectly dry, therefore, before another is applied.

21. Durability of Colors.—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 is next in value for the same purpose; but colors mixed with japan or turpentine possess 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 nature is directly opposite to the English vermilion, for after exposure to the elements it turns a very dark brown. These effects may be somewhat modified by mixing the two together, but at best the color is not one to be used freely for outside work.

22. Durability of Lampblack.—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 white-lead ground color have entirely disappeared, together with portions of the wood, giving the sign an embossed appearance. Blues are not lasting, as a rule, while all other colors may be considered about equally durable.

MIXING COLORS

23. Stock Colors.—A sign painter's color cupboard is a most essential part of his equipment. It is important, therefore, that its contents be considered, and that much study be given to the preparation of the colors to be used. Attention is first directed to those colors that may be most profitably purchased in original packages, ground in oil or japan, to suit every requirement. These may be designated as *stock colors*, for the reason that every paint dealer carries such colors in stock. The sign painter should be supplied with a complete stock of these colors, and with oils, varnishes, japans, etc. In the following articles the student will be made familiar with these colors, and instructed in compounding colors not carried in stock.

24. In stocking the color department of a sign shop, the student should provide himself with six one-gallon cans, such as those used for varnish. These can usually be procured at a paint store at a nominal cost. To avoid any danger of using the wrong can, they should be plainly marked before being filled, as follows: *Boiled Oil, Turpentine, Benzine, Kerosene, Coach Japan, and Asphaltum*. Two kinds of varnish, at least, should be kept on hand, namely: quick-rubbing and finishing. These may be purchased in original packages from one quart up, or in bulk. Next in importance are white lead and lamp-black. Do not use lead put up in kegs; the tin pails are useful when empty, and the tin preserves the lead in its original moist condition better than wood does. White lead in cans should be purchased in quantities of 25 pounds. Only the best refined dry lampblack should be used for lettering. A 1-pound package is a sufficient amount to get at one time.

25. Canned Colors.—The colors that should be purchased in 1-pound cans are as follows: Indian red, Prussian blue, chrome yellow, orange-chrome yellow, Marseilles green (medium), coach black (ground in japan), burnt umber, and burnt sienna.

26. Dry Colors.—Keep dry colors in a covered box, or in a drawer, in order that they may be free from dust. The following dry colors should be kept on hand: English vermilion (light), American vermilion (deep), ultramarine blue, cobalt blue, English flake white, and white lead. Common whiting, ground pumice, and lump pumice should also be kept on hand.

27. Tube Colors (Oil).—It is very necessary for a sign painter to carry a large assortment of tube oil colors. It is a most convenient way to carry them. The kit should be filled with a variety of these that he may need when working at a distance from the shop. A list of necessary tube colors follows:

Asphaltum	Mauve (No. 2)
Burnt sienna	Neutral tint
Burnt umber	Naples yellow (medium)
Carmine (No. 2)	New blue
Chrome green (medium)	Payne's gray
Chrome yellow (medium)	Prussian blue
Chrome orange	Raw sienna
Cobalt blue	Raw umber
Crimson lake	Roman ocher
English vermilion (pale)	Sugar of lead
Flake white	Terra verte
Indian red	Venetian red
Ivory black	Yellow ocher
Light red	Zinnober green (deep)

28. Water Colors (Pans).—Water colors also are put up in collapsible tubes, but these do not generally possess the same strength as the pan colors, and they are therefore more expensive to use. Water colors are put up in half-size and large, or double-size, pans, and such colors as are used in large quantities by draftsmen, designers, etc. may be obtained in large screw-cap jars. The water colors necessary for a sign painter's use are the following:

Blue black	Chrome yellow
Burnt sienna	Chrome orange
Burnt umber	Crimson lake
Charcoal gray	Hooker's green (No. 2)

Indian red
Light red
Mauve
Naples yellow
Neutral tint
New blue
Orange vermilion
Payne's gray

Prussian blue
Prussian green
Raw sienna
Raw umber
Roman ocher
Scarlet lake
Warm sepia

29. Mixing Colors.—There are some colors, and gradations of these colors, that cannot be purchased ready prepared to suit the requirements of a sign painter; he must, therefore, prepare these by mixing others together in proper proportions, using such vehicles as are suited to the work in hand. Colors soon become fatty by standing exposed to the air, and therefore do not work well in the lettering brush. For this reason they should be freshly mixed when they are to be used. Can colors may be prevented from drying up, or becoming fatty, by keeping water in the cans. Mixed colors may be preserved for a few days by covering the color with turpentine, although all mixtures may not be so treated.

30. Gold Color.—To prepare gold color, use white lead as a base, and add Roman or yellow ocher until the desired hue is secured. It may be produced also by using equal parts of chrome and orange-chrome yellow with a small amount of burnt umber.

31. Flesh Color.—Use white as a base, and add light red and Naples yellow until the proper hue of flesh color is obtained. While this produces a color that, in a general way, resembles the color of flesh, yet the delicate shadings and artistic coloring of flesh call for almost every color. Shadings on the face are represented by gray, blue, green, etc.

32. Chocolate Color.—To burnt umber, add white and orange-chrome yellow.

33. Cream Color.—To white, add a small quantity of chrome yellow.

34. Cherry Color (Wood Stain).—Use burnt sienna as a base, and add raw sienna until the desired shade is produced. Mix color with equal parts of boiled oil and japan.

35. Oak Color.—Use burnt umber as a base, and add equal parts of chrome yellow and orange chrome.

36. Golden Oak.—Burnt umber and orange chrome should be used.

37. Antique Oak.—For a base use asphaltum black, and add orange-chrome yellow.

38. Walnut.—Use burnt umber only.

39. Mahogany.—Use burnt sienna, and add a small quantity of carmine.

40. Baby Blue.—Cobalt blue, in white as a base.

41. From Black Slate to Gray.—By combining black and white, and toning the different gradations of mixtures with colors, such colors and shades as black slate, blue slate, lead color, steel, drab, and gray may be produced. In the slate colors, but a small amount of white should be added to black; blue slate contains black, white, and blue; red slate, black, white, and Indian red. Lead color consists of white as a base, darkened to the proper degree with black. Steel is lead color modified with Prussian blue; drab is lead color tempered with white and burnt umber; gray is lead color, tempered with white and green. With blue, sienna, and white added to gray, dove color is produced.

42. Purple.—To obtain a deep rich violet is the desire of every sign painter. Having succeeded in producing this, all gradations of purple are easily made. Mix crimson lake and cobalt blue neutrally, and lighten with white. For light purple and lilac, add more white.

43. Terra Cotta.—Use burnt sienna as a base, adding orange chrome and white.

44. Maroon.—Indian red and Prussian blue.

45. Peacock Blue.—Cobalt blue, to which Prussian green and white are added.

46. Robin's-Egg Blue.—White, with cobalt blue and Paris green.

47. Copper.—Indian red, tempered with orange chrome and black.

48. Salmon.—Orange chrome and white, tempered with Indian red.

49. Sage Green.—White, Marseilles green, and black.

50. Wine Color.—The best wine color put up in cans is Tuscan red. Deep vermilion glazed with carmine produces the best wine color for all practical purposes.

VEHICLES

DRYING QUALITIES OF VARIOUS VEHICLES

51. Purpose of the Vehicle.—It is necessary, in applying all kinds of pigments, to mix them with some liquid that will combine with the color in such a manner as to give it a uniform consistency and at the same time render it capable of being spread evenly over a surface. Such a liquid is called a *vehicle*.

52. Linseed Oil (Raw).—The medium used more than any other in painting is the oil pressed from flaxseed. In its original state, it is known as *raw oil*, and is used by house painters without further treatment. A sign painter, however, has little use for raw oil, for it does not possess the drying qualities necessary for sign work.

53. Boiled Linseed Oil.—The commodity known as *boiled oil* is prepared by adding to every gallon of raw oil 1 pound of litharge, 1 pound of umber, and 1 pound of red lead. The clear raw oil is first heated to about 200° F.; then the foregoing ingredients are added, and the oil brought to a tem-

perature of 400° F., and kept there for 2 or 3 hours. After it has cooled, the clear oil is drawn off from the albuminous deposit left at the bottom of the vessel.

54. Turpentine.—Next in importance is turpentine. This serves as a medium for reducing paint to a proper consistency, and causing it to flow freely. It is not a drier, but a thinner. Turpentine (*Oleum Terebinthinæ*) is the oil that exudes from the terebinth, or turpentine tree—the long-leaved pine tree that grows in the Southern States of North America. It is a resinous liquid, and when used in large quantities in paint it has the tendency to give the paint a dull or flat appearance. It should therefore be used sparingly when a glossy surface is desired.

DRIERS

55. Purpose of Driers.—Paint should dry thoroughly and quickly if it is to escape the danger of being marred, either through handling or through the accumulation of dust on a tacky or undried surface. There is danger, however, in the use of large quantities of driers, in that they contain a large proportion of oxygen, and therefore do not resist the action of the elements, the result being a rapid degeneration of the mixture. Driers are prepared to suit every requirement, and many products are brought into requisition for the purpose. The principal driers are: white lead, red lead, sugar of lead, litharge (lead monoxide, or massicot), and oxide of manganese.

The driers that may be obtained in ready-prepared form, and on which the sign painters mostly rely, are coach maker's japan and japan gold size. Patent driers also are furnished, put up in hermetically sealed cans. Coach maker's japan is used in large quantities by carriage painters. Japan gold size is an excellent light-colored japan, suitable for use with all light colors. There are many grades of these driers, and their use must always be governed by the character of the work in hand. Cheap driers should never be used on fine work.

VARNISHES

56. Mixing and Finishing Varnishes.—Varnish also is used as a drier. But it is more than a drier; it is a solution of various gums, made by boiling these gums in turpentine until a thick, transparent liquid is secured. Varnish is spread evenly over a surface, leaving a tough, enduring film that, when dry, withstands the action of the elements to a greater degree than any other coating, except vitreous mixtures or applications. The varnishes best adapted to the needs of the sign painter are the following:

Quick rubbing varnish: Used especially for under coats in finishing surfaces, and for general purposes—mixing colors and sizes, etc.

Heavy gear: A carriage painter's varnish, especially prepared to resist moisture and hard wear on wagon gears. It is used by the sign painter for exposed sign work, and gives the best results.

Medium-drying coach finishing varnish: A finishing varnish that dries in from 24 to 36 hours; it is a most convenient varnish for the sign shop.

Best English coach varnish: The best varnish obtainable. While its best quality, durability, and finish are unquestioned, it is seldom used in sign painting, because of its cost, and the length of time it takes to dry. It is necessary to allow it to stand from 3 to 4 days before the surface may be exposed to the elements.

White enamel varnish: A copal-varnish and flake-white preparation put up in small cans, and intended for a finishing coat on white, possessing no covering quality in itself. It should therefore be applied after a surface has been given two or three coats of white lead, so mixed as to dry flat. Clear copal varnish is also used as a finishing coat on white surfaces.

PAINTING

PREPARING THE SURFACE, OR GROUND

FLAT PAINTED GROUNDS

57. Foundation Work.—There are many kinds of surfaces to be dealt with in lettering, for the letterer may be called on to place letters on any solid material. 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 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, which should be mixed with one-fourth turpentine to three-fourths boiled oil. This coat also is sandpapered, and then the third, or finishing, coat is applied. The third coat, a mixture quite different from that used for the second coat, should consist of about two-thirds turpentine to one-third boiled oil; this will insure a flat- or dull-finished surface to work on.

58. Defects Avoided.—A glossy surface will cause trouble if allowed to stand some time before being lettered, as the placing of one oil color on another is liable to result in the second one creeping, that is, leaving 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 difficulty described, benzine or turpentine should be rubbed on the surface with cotton cloth or batting.

59. French-Enamel White Finish.—If a French-enamel white finish is desired, the sign should be painted evenly with three coats, as described above, followed with three coats of white *rough stuff*, applied as paint. Rough stuff is described later. A coat of lead color, known as the *guide coat*, should then be applied. This should be rubbed down, the day after its application, with white lump pumice and water, until the lead color has entirely disappeared. For finishing this surface, equal parts of Florence white and zinc white are mixed with special light rubbing varnish, prepared especially for white. One coat of this mixture is applied, and the day following it is again rubbed with the ground pumice. If not evenly covered, a second coat of zinc white and Florence white is necessary, and also another rubbing; after which one coat of best damar, or light English finishing, varnish, colored well with zinc white and Florence white, is flowed on, enough of the white being used to change the color of the varnish, but not enough to make it a solid color.

60. 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 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 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 also should be colored accordingly. This process can be followed 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.

61. Rough Stuff.—Rough stuff, so generally used for glossy finishes, is a mineral. It is ground into powder and in this form it may be purchased from paint dealers. On account of its stony nature, it grinds down, under pumice, to a smooth finish not equaled by any other substance that can be applied with a brush. In order that it may dry hard, and within 24 hours, it is mixed with rubbing varnish and coach japan—two-thirds rubbing varnish to one-third coach japan.

62. Pumice.—Pumice, such as is commonly used by carriage painters, is lava, the best being that obtained from volcanoes recently active. The porosity of this stone renders it so light that it will float in water. It may be cut and flattened, and so used to grind down surfaces of paint or rough stuff, the surface undergoing treatment being kept well covered with water. Pumice, when ground to a fine powder, is likewise used for polishing and for rubbing varnished surfaces.

63. Coach-Black Ground.—Demands are occasionally made on a sign painter to furnish signs in the shortest time possible. It is not a matter of the greatest durability in such cases, but of utility and expediency. Coach black, ground in japan and thinned with turpentine only, will dry in a few moments. This is often used, therefore, for a ground for lettering. Gold letters may be applied to this surface. A quick-drying varnish may be used for shading, and a high light placed on the letters by means of dry white lead and yellow mixed with japan gold size. If the work is to remain over night before lettering, it is advisable to flow a coat of quick-

drying varnish over the coach-black ground, thus closely imitating a japanned surface. Colors that are to dry quickly should be mixed from dry color, using japan gold size and turpentine for a medium.

64. Aluminum-Bronze Ground.—Another means of obtaining a background quickly is by the use of aluminum bronze. This gives the sign painter an opportunity to letter the surface immediately after the bronze is applied. Such bronze should never be used if the sign is to be exposed to the weather.

65. Shellac Grounding.—When a board is painted with three coats of white lead, it requires 3 days for the painting to dry before the sign is ready to letter. But a board may be coated with three coats of orange shellac and be ready to letter in 2 or 3 hours. A shellac grounding is not recommended for general use for two reasons: First, it does not withstand the effects of the weather as well as white lead, the paint being very liable to peel from a shellacked surface; second, shellac is much more expensive than white lead for coating large sign boards.

66. White Grounds.—There is no satisfactory method of obtaining a white painted ground with paint that will dry quickly and be durable. Therefore, some other means must be sought that will fulfil all the requirements of haste. This is found in white enameled oilcloth. A large sign board that has been previously lettered and smalted may be covered with this material, which must be tacked closely to the edge, near the band of the sign, the sign painter being careful to stretch it evenly without causing any wrinkles. A quarter-round molding may then be bradded on, covering all tacks and fitting snugly into the corner of the band; this will keep out moisture coming against the surface of the sign. To further insure this, thick white lead should be daubed in the corners before the molding is applied. The molding as well as the band should then be given two coats of orange shellac and, after the sign is lettered, a coat of varnish black. If this cloth-covered sign is cut in and smalted with blue, dark-green, or

black smalt, the white surface will be seen only in the letters, which will closely resemble white-varnished lettering. Such signs have been known to wear from 8 to 10 years without breaking away at the edges, the white surface remaining in a better state of preservation than if it had been coated with white lead.

SMALTED GROUNDS

67. Preparation of Ground Color.—Smalting consists of covering 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 lends a most finished appearance to his work, causing rough or uneven sign boards to seem smooth. The success of smalting depends largely on the color on which the smalt is to be placed. This color is called the *cutting-in color*, and should always be freshly mixed. It is 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 surface of the table. 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.

68. Method of Application.—After the letters are cut in on the sign, this color is spread evenly over the ground, care being taken not to allow any ridges of colors 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 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 laid on the floor with one edge over the paper or cloth. The smalt is then sifted evenly over the entire surface through a small-mesh wire sieve. After remaining a few moments, all the surplus smalt is removed by tipping up the sign and letting the loose smalt fall on the paper.

Black smalt is used more than colored, but is more likely to show defects. If smalt that has been kept in a damp place for some time is used without first being dried thoroughly, streaks of gray will appear in the finished sign, for which there is no remedy. Diamond smalt is used where signs are well lighted or illuminated, on account of the sparkling nature of the smalt. The colors generally used are black, blue, dark green, and maroon. They are put up in 25-pound bags. A sign painter never attempts the preparation of the smalt, for the reason that it is sold at so low a price that to undertake its manufacture would not be economical.

In smalting, care should always be taken 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. Usually, black is used for this purpose, especially on signs smalted with black or dark blue.

69. Flock.—On signs exposed to the weather, smalt is the only material that can be used to give the surface an even and uniform finish. 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 (maroon more frequently than black). Flock is applied to signs in the same manner as smalt, but the cutting-in color on which it is placed must be made to match the color of the flock as nearly as possible, while for blue, green, or maroon smalt black may be used without causing any perceptible change in the color of the smalt.

VARIEGATED GROUNDS

70. Colors Used.—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, then 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 variations of green, or, in fact, almost any color, can be used. A maroon ground, with a variegated blue letter, makes a most pleasing combination.

71. Application and Blending of Colors.—Two coats of white lead are given 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 value of the variegating color, and the intermediate shade is one between these; and then the colors at the two lines of meeting are blended, beginning with the lightest. When the sign is cut in and finished, each letter will appear as though it were shaded separately.

GLOSSY GROUNDS

72. How to Treat Them.—Oils and varnishes do not always dry sufficiently hard to permit the laying of gold leaf on the letters, without danger of its adhering to the surface of the background wherever it comes in contact with it. This causes a sign painter much annoyance, but were he to take precautions on all occasions he would experience no difficulty in the operation. There are many occasions on which he feels sure that the ground is perfectly dry and that there is no possibility of trouble from this source, and therefore he proceeds without taking any precautions. It often occurs that a rise in temperature before the work is ready to gild, or the heat of the hand, softens the varnish or oily surface, so that the gold leaf adheres to the surface beyond the edges of the

letters so firmly that often it cannot be disengaged. Sometimes Castile soap and water will remove the gold from the surface, and after rinsing well with clear water its original condition is restored. In many cases, however, it is found to be impossible to accomplish this.

73. Treatment of Oily Surfaces.—If a surface should be quite tacky, as a result of painting it with fatty oil color, it may be treated as follows: Take the white of an egg and place it in a cup or other small vessel; mix with it a small amount of water, and sponge over the entire surface with this mixture. When dry, the inscription may be lettered and gilded. If any gold adheres to the surface beyond the lettering, it is easily removed with clear water.

74. Treatment of Varnished Surfaces.—When a varnished surface is thoroughly dry, there is little danger of gold leaf adhering to it, and, if not too inconvenient, it is always advisable for a sign painter to wait until it is thoroughly dry before lettering it. The method usually employed to prevent the gold from adhering to tacky varnish is to dust whiting over the ground. This may be done by using a pounce bag made of unsized cotton cloth. If a varnished surface is rubbed with the pounce bag, it is liable to show scratches when the lettering is completed and the whiting removed. To remove the whiting, dust it off carefully with a soft hair brush or feather duster, and finally rinse the surface with clear water, and dry with a moistened chamois skin.

CHIPPED GLASS GROUNDS

75. Effect Produced.—The process known as *glass chipping* is accomplished by scaling up the surface of the glass by applying a strong adhesive and allowing this to dry. When complete, the result very closely resembles the effect produced were it possible to do the chipping with a chisel. The markings made in the glass by using the glue process, which will be described later, are similar to those seen on a

frost-covered window pane. These often take on the character of a design in leaves, vines, branches, etc.

76. Preparation of the Glass.—Plate glass should always be used for this process. The glass should first be thoroughly cleaned. There are two methods used for protecting the clear glass, or the parts not to be chipped. One is to use heavy tin-foil, and fasten this on the glass with tripolite. Then grind the parts exposed (the clear glass) with coarse emery powder (Nos. 36 to 46, or No. 54). This will destroy the surface of the glass, so that it will be readily acted on. The other method is to use asphaltum varnish (best quality) and letter on the inscription, border, ornaments, etc., with two coats of this. When thoroughly dry, the emery may be used, or hydrofluoric acid mixed with an equal quantity of water may be flowed over the glass and allowed to stand about 20 minutes, long enough to destroy most effectually the vitreous surface of the glass surrounding the letters. In using the acid, the edges should be banked with a beeswax dam. If the chipping extends to the edge, coat the back and the edges of the glass with asphaltum. It is always more satisfactory to use the acid than the emery, although the letterer is advised to try both methods. After this has been accomplished, the glass is ready for the finishing process.

77. Application of the Glue.—Use soap and water to clean the acid from the glass, and afterwards rinse well with clear water. Before applying the glue, the surface of the glass should be moistened with water, using a clean sponge for this purpose. Boil the glue until all lumps have disappeared. Give the glass an even coat, thick enough to insure covering well in all parts. If too thick, the chipping will not begin readily; if too little is applied, it merely spots the surface of the glass and entirely fails to do the work. In the former case, however, the action of the glue is often hastened by tapping on the face of the glass with a penknife. It is well to experiment on a small piece of plate glass in order that the proper quantity of glue may be known. After the

glue has finished its work the glass should again be cleaned, after which it is ready for gilding or silvering.

Silver backgrounds are preferable for this style of sign, having the tendency to bring out every detail of the work conspicuously. The silvering may be done with the mirror-silvering process, or with silver leaf and gilding water.

Beveled plate glass makes the richest sign; and when this is used the clear border should always be shown on the edge of the glass extending about $\frac{1}{8}$ inch inside of the bevel. The bright silver edge greatly enriches the effect of the sign.

FROSTED-GLASS GROUNDS

78. Advantage of Frosted-Panel Signs.—The frosted panel has a twofold advantage to commend its use as a practical sign: first, it occupies a space so small, and so far removed from the direct line of vision, that the view of the observer is not obstructed when drawn to the window display; second, it is easily read, and forms a transparent sign that can be read at night as well as in the daytime.

79. Plain Design.—The most inexpensive window panel is made by outlining a rectangle in black on the inside of the glass and lettering the inscription backwards in plain black. When the black is dry, the panel may be frosted with white lead and stippled. After the frosting is finished and before it has dried, the white lead that has overlapped the black line may be cleaned off with a soft cotton cloth.

80. Gilded Design.—Gold leaf is more often used than black on the border of the panel, but the lettering should invariably be black. The frosting may be tinted with red, green, blue, or yellow, and thus a pleasing harmony of colors may be obtained. In Fig. 10 is shown a design in which *a* shows the center or body of the design, which should be white. The background for the ornament in this design may be blue; *b* shows the gilded border. The outlining only being in gold leaf, the border and ornament may be frosted with cream,

yellow, or salmon; or it may be backed with a solid coat of one of these.

When the window panels are placed on a store front having a window on either side of the entrance, they should always

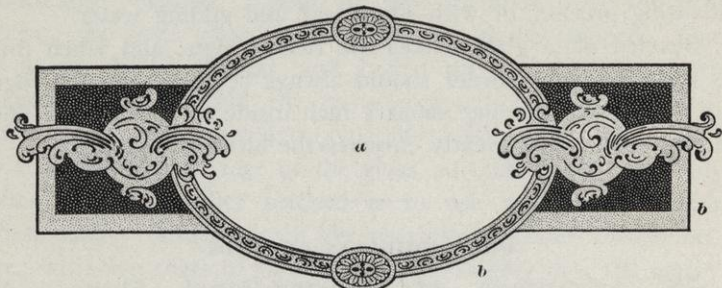


FIG. 10

be placed on the side of the glass nearest the entrance, about 5 feet from the window floor, and as close to the window frame as is consistent with the symmetrical appearance of the design. When a design that is irregular in outline is used, it should be reversed when placed on the opposite window. In this, as well as in other kinds of sign painting, there is an opportunity for great variety in designing. In Fig. 11 is

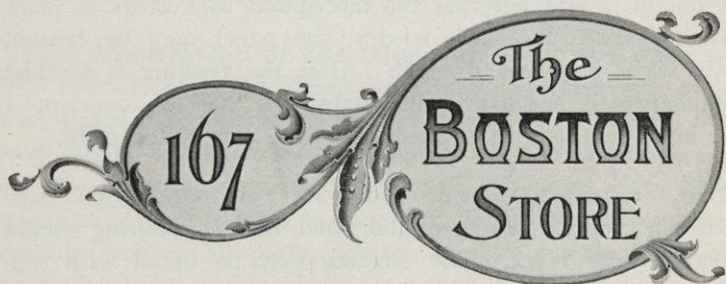


FIG. 11

shown one style of freehand design used for this class of work. Diamond-shaped panels, heraldic shields, and fancy rococo panels are among the styles generally chosen for frosted window panels; and these may be made most artistic.

LAYING OUT THE LETTERS

81. Methods of Getting Proper Placing and Spacing.—It is not the purpose here to explain again how a sign is designed; how the lines of lettering are arranged and how the individual letters and words in each line are spaced. This was fully taught in the Section devoted to sign designing. By this time it is expected that the student understands just how to design an attractively arranged panel or sign, properly colored. The term "laying-out," in this present connection, is meant to refer to the actual preliminary placing of the lettering on the board, brick, glass, or other surface, so that it can be painted accurately. A number of these methods will now be described.

82. Blocking in With Freehand Chalk Lines.
When only two or three words in a single line are to be lettered, as the firm name over a store door for example, it should be a simple matter for a student as well trained as this Course has trained him, to block in the positions of the letters freehand. There must be, of course, some definite understanding with the merchant or the patron as to the space to be occupied by the sign, and the height of the letters. This being understood, two parallel horizontal lines should be drawn (or snapped) with chalk to determine the tops and bottoms of the letters. The points for the ends of the chalked string to be held when *snapping* these horizontal lines may be located with a foot rule or yardstick.

83. If the work is being done on a brick building, the *courses*, or mortar lines, of the brick will determine the proper horizontal top and bottom lines; or, on a weather-board building, the horizontal edges of the boards will serve the same purpose.

Suppose the top and bottom lines have been established, and the words THE CROWN GROCERY are to be lettered in a space 10 to 12 feet long with letters 8 or 9 inches high. It will be a simple matter to sketch in these letters in outline freehand with the chalk to get them arranged properly. The

method of doing this was fully explained in the Section on sign designing. Some letterers first draw the *skeleton* lines of the letters, and then draw the parallel vertical lines for the wide *down* strokes of the letters. Other letterers sketch the complete outlines at once. Still others can letter direct with a wide brush, say a 2-inch or 3-inch brush, directly over the skeleton letters sketched in chalk. It must be remembered that the principles of spacing must be observed. While this subject is treated in detail in a former Section, it cannot be too often stated to the beginner that the spacing between letters is as important as the formation of the letters. The safest method to follow in spacing is to make all interspaces equal in area, which does *not* necessarily mean equal in width. This necessitates leaving a greater distance between letters having vertical strokes adjoining, than between letters not so formed, and drawing close together letters that have long projections.

84. Laying Out Letters from a Scaled Sketch.

If the sign is somewhat elaborate in its lines and styles of lettering and of ornament, or even when the sign is a simple one, it is sometimes well to make a small, scaled sketch, with cross lines on it, and then arrange the full-size letters on the large sign in the same relative proportions. Suppose the sign just described, THE CROWN GROCERY, to be 12 feet long and 9 inches high, were being laid out thus; the letterer would make a sketch, say 12 inches long and $\frac{9}{12}$, or $\frac{3}{4}$, of 1 inch high. The letters of the sign could easily be laid off in this space, and the 12-inch long space then divided into 1-inch lengths. If then the 12-foot length of the large sign is divided in 1-foot lengths, the full-size letters of the large sign can be sketched in the same relative positions, as compared with the vertical cross lines, as on the small sketch.

Chalk lines for marking out the letters should be used as before. If the sign is to be on a white board or building, colored chalk or charcoal can be used.

85. Laying Out by the Dividers or Compass Method.—Another method is the dividers or compass

method, which will give good results. There are several small attachments capable of holding the pencil, and that may be fastened securely on an ordinary compass. With the pencil compasses, the letterer may draw lines to limit the height of the letters, using the edge of a sign board for a guide. The compasses, in connection with the T square, may be used also to give a proper width to the stroke of a letter. It is assumed that the board, having been painted with three coats of paint, is ready for lettering. First, draw horizontal lines with the pencil compasses; this will give the required height of the letters. Then mark off with the compasses the spaces for the letters. The style of letters chosen for the name and the business description must be such as will best suit the size of the sign and give a harmonious effect to the whole. A Roman letter may be chosen for the firm name, and a bold Gothic letter for the description on the lower portion of the sign. With the points of the compasses set, approximately, at the width of the letters, run over the space, allowing an equal distance at each end of the board. Do not mark the surface during this first operation. After ascertaining, approximately, the size of the letters, proceed to chalk them lightly by simply pointing off on the board at the points of the compasses the spaces they are to occupy. It may be necessary to repeat this part of the operation two or three times before the letters are properly placed.

86. To Center an Inscription.—In marking out a design in which the lines of letters are placed on curves or angles, it is necessary first to find the center of the space, and then, with compasses or hemp twine, describe the curves, making the lines concentric; that is, describe them from the same point. If string is used (which is often the most convenient means at hand with a sign painter), hemp twine should always be preferred, since it will not stretch too easily. Hold the string on the focus point with the index finger of the left hand, allowing the string to slide underneath the finger until the point is reached where a line is to be drawn; then hold firmly. In Fig. 12 is shown a design wherein are a number

of curves that can only be drawn accurately from a center, or balanced on either side of a center.

87. Varnished Surfaces.—Lettering on a varnished surface is invariably done on the rubbing coat of varnish.

This coat is rubbed down with ground pumice and water; therefore, any slight scratches are not perceptible after a finishing coat has been flowed over the surface of the lettering.

In all glossy-surface lettering, especially on car bodies, the sign painter usually uses the points of the compasses, and lightly scratches the lines that limit the height of the letters. On varnished grounds, when a large surface is to be lettered, he uses coarse linen thread, and, after charging this with chalk, the lines are snapped onto the surface. All curves are made with chalk sharpened to a fine point.



FIG. 12

88. Rough Surfaces.—On all brick, stone, or rough-board surfaces, the sign painter relies entirely on the chalked

line for snapping on the lines. If the surface is white, string charged with charcoal will serve the same purpose as chalk; either material is readily dusted off when the lettering is completed and thoroughly dry.

89. Marking on Glass.—The lithographer's crayon, or wax crayon, is the best one for marking on glass and leaves an even, black mark. The mark made by this crayon is easily removed by moistening with water. When marking a design on the outside of glass that is to be gilded on the inside, it is necessary to mark it with a heavy black line in order to see the marking clearly through the gold leaf. If the design is to be marked on the inside of the glass, which is often the case in lettering windows, especially where it is impossible for the sign painter to stand on the outside to do the work, he must carefully proceed as follows: With the lithographer's pencil, sketch the design as lightly as possible. Then, instead of laying the gold leaf on first, as is usual when the marking is done on the outside, the sign painter should outline the letters with ink, and shade them. When the black is dry, the letters may be gilded or silvered. The latter is preferable when the lettering is at a considerable height.

90. Transferring to Silk and Satin.—To transfer a design to silk or satin, in banner work, after first drawing the design on Manila pattern paper, carefully place each line and letter where it properly belongs; then, with a tracing wheel, perforate all straight lines, and, laying the pattern paper on a woollen cloth, use a coarse needle set in a wooden handle for perforating the curved lines of the letters. The design is then transferred to the silk or satin by pouncing with a whiting pad, or, if the ground is white, with charcoal or ultramarine blue.

91. Japanned-Iron Signs and Brass Plates.—A sign man places letters on many surfaces that may not be marked on with chalk or lead pencil; he must, therefore, adopt, in such cases, some other means of marking, as it is always necessary that the letters and designs should be traced

in some way on all surfaces before the work of painting is begun.

A freshly japanned sign presents a highly polished surface, which is easily marred or scratched. The letters, for this reason, must first be designed and spaced on another surface. The same is true in regard to a brass plate. The surface is highly buffed before it is embossed, and any scratches made on the plate will remain, unless this is again buffed, which involves an unnecessary expense. The best means, therefore, of marking either of these surfaces is first to outline the design on Manila pattern paper (medium weight). On the back of the paper rub a thin even coat of common whiting, mixed with benzine; then lay the paper pattern on the japanned-iron or brass plate, and trace the design with a hardwood stylus.

PAINTING THE LETTERS

92. Selecting the Proper Brushes and Pigments.

The letters having been properly laid out, full-size, in chalk or otherwise, they are now ready to be painted. Before the painting is started due consideration must be given to the kinds and sizes of brushes to use, and the kind of pigment most suitable. These matters will be influenced largely by the sizes of the letters, and the kind of material or surface on which the sign is to be painted. Naturally, large letters must be painted with a wider and heavier brush than small letters; and the kind of color necessary for painting on muslin or canvas would not be suitable for painting on board, brick, or stone.

93. Lettering on Muslin or Canvas.—Ordinary cotton sheeting may be dampened before being lettered, and the lettering applied while the sheeting is quite damp. Or it may be lettered by the dry process.

Such signs are now usually made on a specially prepared sign-painters' muslin, but care must be taken to see that the proper side is used when doing the lettering. Color for the former method may be mixed with equal parts of boiled oil and japan, and thinned with turpentine. A 1-inch flat varnish

brush will be found convenient for spreading the color on the cloth with great rapidity, if the letters are large; 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. Flat camel's-hair lacquering brushes are very good for lettering on muslin or cloth signs.

94. In order to mount a muslin or cloth sign on a wooden frame so that there will be no wrinkles in it, when starting to tack the muslin, the start should be made at the middle of one end of the frame (three or four tacks being used), and the muslin stretched the full length of the frame and tacked in the middle of the other end, leaving the corners free. Then tack in the middle of the third side (say, the top) and stretch the muslin across and tack in the middle of the fourth side (the bottom), leaving the corners free. Now stretch toward the four corners, and tack at the corners and adjacent sides, leaving out all wrinkles.

Sometimes heavy canvas signs, when mounted on frames or stretchers, should be coated with a size, made by mixing a pound of glue in a pail of boiling water, and applying with a large brush. Then a coat of white lead, mixed with half turpentine and half oil, can be put on.

95. Lettering on Oilcloth or Coated Cardboard. Before starting to letter on oilcloth, it should first be rubbed with a ball of cotton which has been treated with whiting and benzine. A suitable color for such lettering is the regular oil color to which some turpentine and finishing varnish is added. On some oilcloth opaque water color or distemper color can be used for the lettering. This will also apply to such signs that are to be made on coated cardboard. This color can be mixed by filling a tumbler two-thirds full of English or French flake white, 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 until it is thin enough to flow and then kept in an air-tight jar. Either Florentine

white or Kremnitz white (unsized) will be found to be an excellent white to use in large quantities for opaque lettering. By adding dry colors to the white, a great variety of colors is produced, but these must be mixed with a little mucilage to set the color and prevent it from rubbing when dry. The usual flat brushes, of bear's hair or fitch, may be used for such work, but the sizes to use depend on the scale of the lettering.

96. Lettering on Board Signs or Wooden Buildings.—Perhaps the greatest number of permanent signs are board signs, made of the desired size and surrounded with a molding, or attached to the faces of wooden buildings.

The wood of the unfinished boards must be planed smooth and then given several priming coats. The paint used for the priming coats is, of course, thin, but it must contain enough white lead to cover the surface well. Any knots should be first shellacked and the priming coats made to cover well these shellacked places. The finished priming coats should saturate the surface of the board, and should not leave any streaks of heavy paint. Use plenty of turpentine or benzine. The priming coats, after being thoroughly dry, should be sandpapered to make a smooth surface for the coats of regular color painting that are to be given.

Paint for board signs, or signs on wooden buildings, is just the same kind of paint that house painters use. It can be bought at any paint store, ready mixed, and prepared for use in any color desired. The beginner in sign lettering sometimes has the mistaken idea that he must mix up a special kind of paint for sign work, and must know a lot of tricks and shop practices. Any paint dealer will advise the young sign letterer just what kind of paint to use for coating his board signs, and for painting the letters on them.

Many letterers on wood signs use wide flat varnish brushes, 1-inch, 1½-inch, 2-inch, 2½-inch, etc., for making the strokes of the letters. The work can thus be done very rapidly and accurately, if the preliminary sketching with the chalk has been carefully done. If the letters on the sign are very large,

their contours may be put in with a small, round-end, brush, and then the body of the letter filled in with a large brush.

97. Lettering on Brick or Stone.—For lettering on brick or stone, the white lead should be mixed merely with boiled oil. The black used is lampblack of an inferior grade, as for this purpose it will answer as well as the best quality. Mix the lampblack with boiled oil, and add a cupful of japan to a gallon of color. Flat bristle brushes of varying sizes will give the artist the best results in lettering on smooth brick and stone wall signs.

98. Lettering on Plastered Surfaces.—For lettering on plastered surfaces, a light-flowing color, such as show-card colors, may be used; it 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, as regards their drying qualities and the application of colors, is therefore a constant study with the sign painter, and requires much careful consideration.

99. Lettering on 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.

100. Lettering on Silk and Satin.—On silk or satin, 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 leave 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 very reliable. The shellac is used clear, but not too thin; but when too thick to flow easily from the brush, it may be diluted with alcohol. Lettering 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.

101. Lettering on Other Surfaces and Materials.

The sign letterer may at times be called on to paint lettered inscriptions on surfaces and materials that have not been mentioned. If so, he can adapt to this work the information he has already secured and supplement his knowledge by getting information from paint dealers, house painters, and other sign men in his community.

SHADING THE LETTERS

102. Combinations in Shading.—There is a great variety of methods by which shading may be added to a letter by the use of colors. A law of color exists that is very forcibly shown when combining colors in shading, and this law must be regarded, or the work will not produce satisfactory results. A color that, when being mixed, appears to be of a suitable hue or value will appear, if placed on a black ground, much lighter; and the reverse likewise is true. If the same color is placed on a white ground, it will appear much darker. Letter shading may include several values of one color; or several distinct colors may be used together, either blended or separated by their outlines.

103. Transparent shading 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, add-

ing a few drops of turpentine. This mixture forms a shade for all light colors, and, if properly applied, produces what is known as the *natural shades*, or the same strength and shade that would be cast from a projected object on the same ground.

104. Glaze Shading.—Transparent shading is used, in the form of a glaze shading, on such colors as vermilion, green, blue, yellow, etc., by adding to a medium varnish a color corresponding to that with which it is combined. For example, the glaze shading 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 shading is always placed on another shading when the latter is thoroughly dry, and covers the half nearest the letter, as shown at *c* and *e* in Fig. 13.

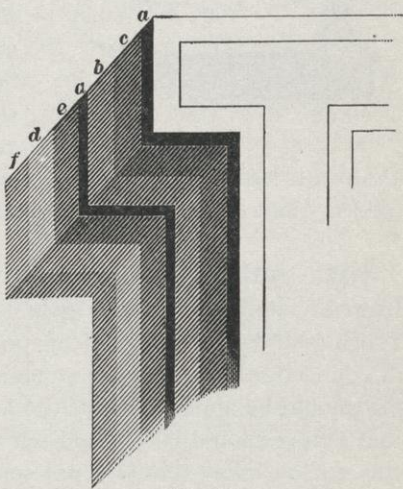


FIG. 13

105. Double shading is illustrated also in Fig. 13, in which *a* shows the black line to divide the shadings; *b* shows the block, usually some bright color, as vermilion, blue, etc., on which the glaze shading *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 shading on the ground color, made with the same kind of color as *e*, but giving an entirely different shading.

106. Spectrum shading is produced by blending the colors together, and its use is confined almost exclusively to the gilded or silvered letters on glass, although the same colors cannot be used in both cases. The natural color of the gold is warm, and harmonizes, therefore, with almost

every color; while the silver is cold in tone, and colors suitable to 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 variations of one color are used. In Fig. 14 is shown the proper position

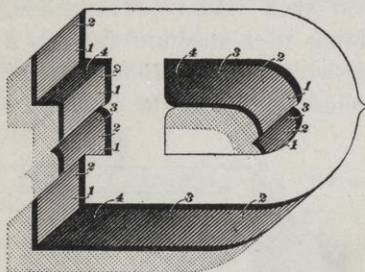


FIG. 14

the four shadings should occupy. It will be observed that the darkest shade value 4 comes against 1 the lightest, which is usually a lighter value of the color, while 2 and 3 are equally divided in strength between these extremes. The shadings always occupy the relative positions shown,

except on letters having a horizontal stroke, in which but two colors, 3 and 4, are used underneath these strokes.

107. Shading With Gold Leaf.—Gold blocking is a form of shading in which gold leaf is used instead of paint. When gold leaf is used for this purpose, it is invariably applied in connection with a black or maroon letter. The block shading should be applied before the lettering is done; this requires that letters should be marked out with absolute accuracy. For this reason many letterers use some quick-drying mixture and letter the sign before the gilding is done, lettering it finely with a varnish black. This trims up the work by covering all irregular edges left in the gilding. Asphaltum is used for shading on the gold. This may be reduced with varnish until it becomes transparent. Several shades, which may be blended, are used on rounded letters, while but one strong shade is used on Gothic letters. The asphaltum shade is placed underneath all horizontal strokes, leaving the side shade, representing the block, of gold leaf. Quick size is used for gold blocking, and this should be thoroughly dry before the asphaltum coating is applied.

STENCELED LETTERS

108. Letter Stencils.—The letterer is sometimes forced into competition with the printer, especially when handling a large order for advertising signs; hand work, therefore, must be laid aside for something that will have the effect of hand work, and still be accomplished with more rapidity, possessing, at the same time, cleanliness and finish when the work is completed. The stencil pattern most effectually answers the purpose; it can be used 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 filling 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, the parts of the surface untouched by the background color constituting the letters, and also the border. 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.

109. 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 tints 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. If the ground be stenciled in black, such tints as yellow, blue, green, or pink may be used. It is necessary to give the portion of the letter that is to remain white a coat of fresh white in order that the tints may be blended into the white without showing brush marks.

110. Paper.—The toughest medium-weight Manila paper should be used for stencils, oiled thoroughly with boiled linseed oil, and allowed to stand at least 24 hours before being thinly coated on both sides 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 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 trouble in its use than it is worth. It is best, therefore, never to use a patched or repaired stencil.

111. Tin-foil stencils for glass-sign painting are designed and cut in the same way as the paper. A roller only is used in operating this stencil, while either a brush or roller may 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.

112. Cutting Stencils.—Fig. 15 (a) and (b) shows one method of cutting stencils. View (a) 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 *a* called the *register*, or *guide*, is cut in each corner, by which the stencil can always be placed in its proper position. This stencil is placed on the material prepared for the No. 2 stencil, as shown in Fig. 15 (b). 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. 15 (b). The

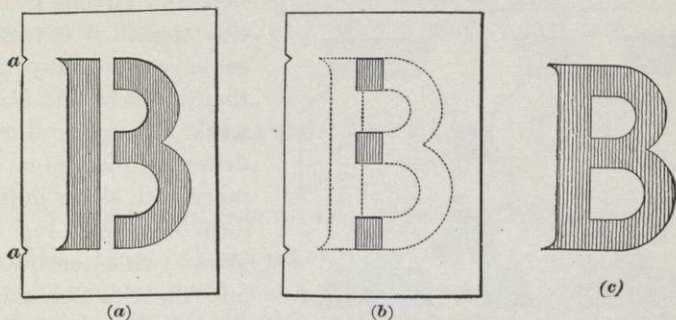


FIG. 15

finished letter is shown in Fig. 15 (c). Register, or guide, marks are cut in the second stencil also, though these marks are never used except where a border color is to be placed afterwards; they serve only to accurately place a second stencil in position. The edge or corner of a sign, or the corner of the letter 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.

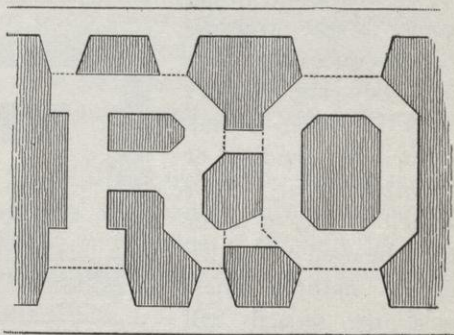


FIG. 16

113. Background Stencils.—To make stencils for backgrounds, 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, it must be treated the same as a letter. The ties must be cut wider on border edge, as thereby they give more strength where

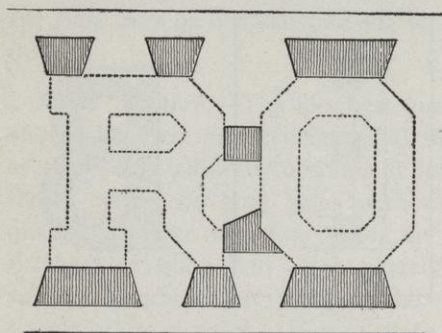


FIG. 17

needed. In making this stencil, it is better to have too many ties than to leave one place weak. The general tendency is to leave one or more such places in this form of stencil. Fig. 16 shows two letters R, O, and the ties necessary for strength and protection. Fig. 17 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. Fig. 18 shows the complete letters and the background, when stenciling has been done with both stencils.

114. 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

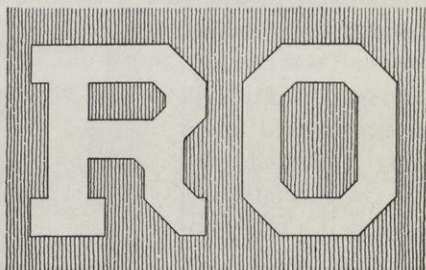


FIG. 18

and more liable to become broken. There is also danger of using color too thin, the result being that it flows underneath the edge of the stencil, thereby destroying the cleanliness of the work.

115. Cleaning Stencils.—The stencils 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 it well on the back with a cloth rolled into a ball.

RAISED LETTERS

PORCELAIN, GOLD, AND ALUMINUM LETTERS

116. How Attached.—When this style of letter was first introduced there was a great demand for it in all kinds and sizes. It was highly profitable, therefore, to keep on hand a large supply of these letters. At present, the demand has fallen off to such an extent that only occasionally is there any call for porcelain or glass letters. These letters, as well as gold and aluminum letters, are furnished in sizes from 2 inches up. Special designs including signatures, trade-marks, etc., may be prepared to order.

To attach the letters, first mark out the design on the glass, using chalk sharpened to a point. Space the letters accurately with the points of the compasses. If a curved line is desired, take a piece of hemp twine, which will not stretch, find the center of the glass, and draw a vertical line at this point; then describe a curved line from a point that will give an arc best suited to the letters as well as to the balance of the inscription.

Use dry white lead. Sift this through a fine-mesh sieve to free it from lumps, and mix with coach varnish (medium drying) to the consistency of putty, when it is ready for use. The adhesiveness of cement is greatly increased if it is allowed to stand a few hours before using.

Place the cement on the edge of the letter only, using an ordinary putty knife for this purpose. Press the letter firmly, keeping it in the exact place it is to occupy. The cement will extend beyond the edge of the letter, but leave it so until the letters are all applied. Then, beginning at the first

letter, cut around the edges with a penknife and remove the surplus cement. Clean the letters and the glass with a soft cotton rag. Benzine or turpentine will quickly remove all traces of the cement.

117. Removing Old Letters.—Use a palette knife; guide the end of the blade with the left hand, and with the right hand work the blade underneath the letter. Loosen the letter cautiously on all edges, but do not attempt to pry it away from the glass, or the result will invariably be a cracked letter.

CARVED-WOOD LETTERS

118. Uses of the Carved Sign.—Many leading sign painters give much attention to the subject of carving. A sign so treated is, perhaps, the most attractive of any used. To make it rich and effective, the carving should always be gilded or silvered. The carving most suitable to the requirements of a sign painter is of three kinds: relief ornament, beveled letter, and the grooved or veined outline surrounding the letter.

119. Ornamental carving is often confined to the top or ends of a sign, and the character of the ornament used must conform to the space devoted to it and harmonize with the idea and contents of the whole sign. In treating the subject, the styles of relief ornament used for carving, as well as the proper location of such ornamentation, will be shown.

120. Method of Procedure.—For carving in relief the style of ornament must be pronounced in outline and formation. When a relief ornament is painted on a surface with a brush, it may be somewhat indistinct in character in some of its detail, but this cannot exist in the carved ornament. A carefully prepared design should be made and shaded, in order that the carver may follow the motive throughout the work. If the sign painter desires to execute the carving himself, he should select clear, straight-grained pine, of suf-



FIG. 19

ficient thickness to include the extreme projections of the ornament. If the projections are greater in some places than in others, an additional thickness may be glued on to such parts; this will save time, and avoid cutting away material uselessly. The pattern may be made on Manila pattern paper, outlined with black, and shaded with water-color black or charcoal gray. To begin on the carving, cut away the wood until the design has been roughly projected. This may be done with a large chisel, using great care not to cut the wood with the grain, to do which would entail serious consequences.

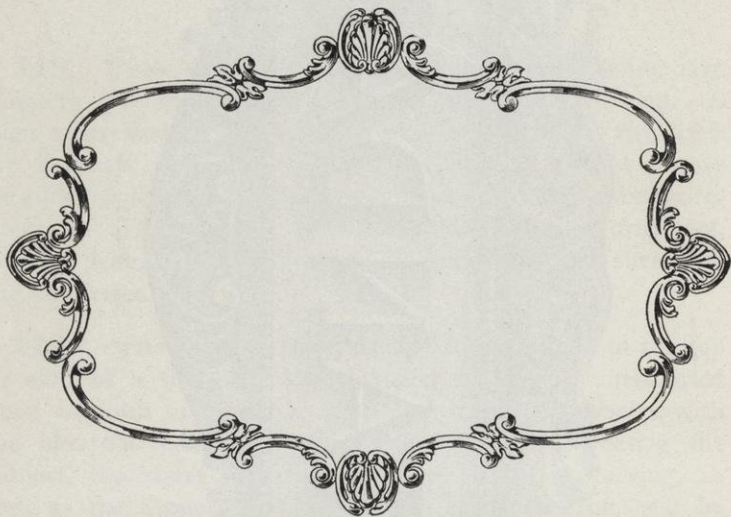


FIG. 20

The details of the ornament may now be worked out with smaller chisels and gravers. The irregular edge of the ornament may be cut with a band saw, either before or after the carving is done. In Fig. 19 is shown a sign entirely surrounded with a relief ornament. For all practical purposes, when an inexpensive sign is required, a plainer ornament can be used, and one requiring but little time to carve. Such a design is shown in Fig. 20.

There are many varieties of twisted-wood, embossed, and turned moldings that may be obtained at a small cost, and

that are made by machinery, though they closely resemble hand work. These moldings may be used by the sign painter with great economy, and they present, when painted and gilded, an appearance equal to the finest hand work. This style of molding is used to the best advantage on long sign boards, and is bradded or glued on from 4 to 8 inches from the band. This is shown in the beaded molding within the design on Fig. 19.

121. Letter Carving.—The object of letter carving is to embellish the sign and make it more attractive. All carved letters should be gilded. The style of carving that will show the luster of the burnished gilding to the best advantage is, therefore, the most serviceable to the sign painter. This is found in the beveled carving. The sides of the letter are cut down into the surface of the board until they meet in the center of the letter, as shown in Fig. 21. The letters may be cut to different depths; but, on one sign, all letters must be of a uniform depth, or the appearance of the sign will be greatly marred. To carve the letters, first mark them out carefully on the board, before any paint has been applied; then, by the use of a flat chisel, of a size suited to the size of the letter, the work may be executed. Care should be exercised, in using the chisel, that the bevel on the side opposite the one on which the carver is working is not defaced by slips of the chisel. Such slips are very liable to occur, especially with a novice at the work.

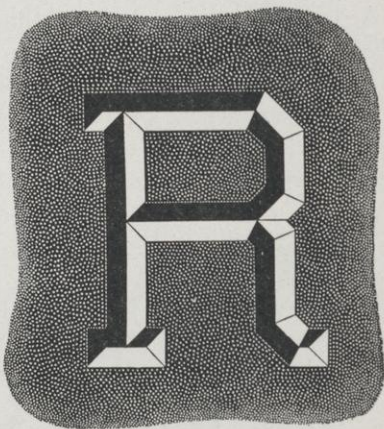


FIG. 21

122. Veining.—There is no form of letter carving that may be done so quickly and that will add so much to the artistic appearance of a sign as *veining*. This is confined

exclusively to the outline of the letter, and is accomplished with a small carving tool that resembles a gouge. To outline the letters, they should first be accurately marked out on the pine surface, before paint has been applied. The

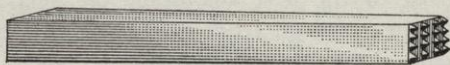


FIG. 22

handle of the tool is held in the right hand, and the blade is guided with the left. With a little practice, one who has had no experience in carving will be able to carry a straight line at a uniform depth and turn all curves symmetrically.

A letter that has been outlined with the veiner should always be gilded or silvered, in order that the work will be enriched by the burnish of the gold or silver leaf.

Carver's punches, shown in Fig. 22, are often used in connection with this form of carving, to produce a matted surface, either within the letter or on the background. When the

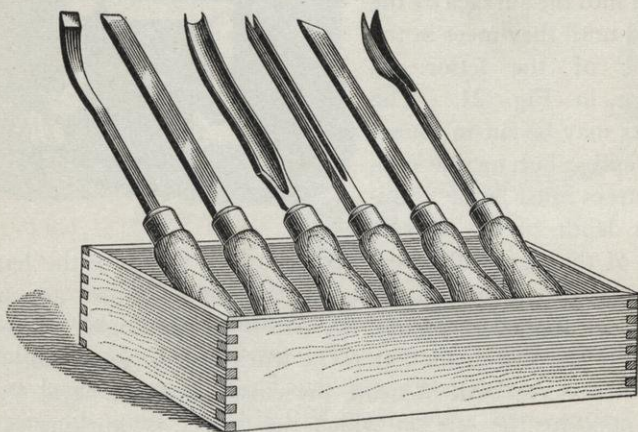


FIG. 23

letter is matted, it and the veining are gilded. The interior of the letter; in this case, is filled with glossy black.

123. Carving Tools.—There are a number of styles of carving tools; straight and skew chisels, straight and curved

gouges and veiners, adapted to every requirement in carving. A set of carving tools which is useful and recommended by the best carvers, is shown in Fig. 23. A set of twelve ordinary flat chisels, ranging in width from $\frac{1}{4}$ inch to 2 inches, is also a necessary adjunct to every carving outfit.

GILDING

GOLD-LEAF WORK ON WOOD AND METAL

124. General Principles of Gilding.—When a sign is desired that is of a class somewhat higher than the ordinary painted sign in black and white or colors, and one that is more durable, the sign is made in gold-leaf letters on a black or colored ground, or on glass. The process of doing this gold-leaf lettering (and ornament) is called *gilding*.

There are two general classes of gilding; namely, gilding on wood, metal, or other opaque substances, and gilding on glass. The general principle is the same in the case of each class; namely, first an application of a size (or sticky substance that eventually dries) on which the gold leaf is placed so that it will adhere; then the placing of the sheets of gold leaf and the cleaning up of the edges; and (if on glass) the final backing-up of the letters. However, each class requires the use of a different *size*, and a different kind of gold leaf, and each class has its own peculiar process. Therefore, gilding on wood, metal, etc., will first be considered, and later gilding on glass.

125. Sizes for Gilding on Wood, Metal, Etc.—For gilding on wood, metal, or other opaque substances, the proper size to use is an oil size, of which there are two kinds: 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; 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 1 to 5 hours.

126. Slow Size.—Slow size is made from boiled linseed oil. The oil is allowed to stand in a warm place until it is about the consistency of molasses, when it is called *fat oil*. Equal quantities of fresh boiled oil and coach maker's japan are then mixed together; this mixture and the fat oil are 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 15 to 24 hours. The drying qualities of the slow size are influenced by the temperature in which it is allowed to stand.

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 of the coat is thicker than another, it will not dry on the surface of the sign, and will afterwards 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.

127. Quick Size.—Quick size is made in several ways, according to the length of time to be given it for drying. This, of course, is governed largely by the amount of work ahead of the letterer. About thirty drops of boiled oil added to $\frac{1}{2}$ ounce of japan gold size will constitute a size that will dry in about 2 hours. This can be made a quicker-drying size by reducing the quantity of oil. But to add oil in excess of the quantity prescribed above will produce an unreliable mixture; therefore, another preparation is necessary where a slower size is required. The above size should be colored with a little orange or lemon chrome yellow, well mixed together on a glass surface with a palette knife.

128. A Moderately Slow Size.—A size that will stand longer than the above is prepared by stirring, in $\frac{1}{2}$ ounce of coach finishing varnish, about thirty drops of coach maker's japan. This will stand for 4 or 5 hours. In all work of importance, it is advisable to test the size on 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 24 hours, while on another material it would be ready to gild in 3 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 a quick size freshly prepared, as it not only flows from the brush more freely, but is 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.

129. Proper Material Necessary.—It will be observed, by one familiar with the action of the elements on certain colors, that signs on the exterior of buildings will show the effect of the elements very soon after their exposure to the weather, if the size used on them was improperly prepared. A common mistake is the use of yellow size for aluminum leaf or bronze, which is likely to show through these metals. 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 each of japan gold size and turpentine. The leaf or bronze should be applied while the size holds a strong tacky surface, but just so dry 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 that cannot be overcome or remedied.

130. Size for Bronzes.—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.

131. Prepared Sizes.—Dealers in sign letterer's materials now sell, in a prepared form, various kinds of prepared gold size to suit every requirement. Therefore, the letterer who has only an occasional job of gilding to do is advised to procure these ready-mixed sizes, rather than to go to the trouble of preparing his own size.

132. Implements Necessary.—To lay gold leaf on wood, metal, etc., several implements are necessary in addition to the oil size and the sheets of gold leaf; (1) a long-haired, wide brush (called the gilder's tip), which is shaped somewhat like a small white-wash brush, but just large enough to hold a full-size sheet of gold leaf; (2) a gilding or sizing brush, shown reduced in size in Fig. 24, made of soft camel's hair, for glass gilding, or stiffer for wood gilding, and about $1\frac{1}{2}$ inches wide, with which the size is applied, and (3) some soft, well-carded cotton batting for padding, or rubbing, the applied gold leaf when dry.

133. Gilding With Slow Size.—With the wood, metal, or other opaque surface properly prepared, and thoroughly dried and cleaned, the lettering of the sign may be laid out thereon, as previously described, with soft lead pencil or chalk, as directed earlier in this Section. Then the areas of the letters to be gilded are covered with the oil size, being careful not to run the size beyond the contours of the letters, the size being *painted* on with the brush in the same manner, and with the same kind of a brush, as used in painting any kind of letters on wood; or the gilding, or sizing, brush as described above may be used. The soft camel's hair gilding, or sizing, brush is particularly adapted for gilding on glass, as will be explained later. Then, the next important thing is to be sure that the size has reached exactly the right tacky state before the gold leaf is applied. If the size is not sufficiently dry it will be wet and sticky, and gold leaf applied over it will be lumpy and wrinkled and cannot be made smooth and burnished. If the size is allowed to dry too long, the gold leaf will not adhere properly. To determine just the right degree of tackiness, and just when the gold leaf should

be applied, touch the finger tip lightly to the applied size, and, if a slight *tick* is heard, and a slight adhesion felt, when the finger tip is lifted away, that will be the proper time to apply the gold leaf. The slow size will enable the letterer to cover all the letters and ornament of the sign with the size before starting to apply the gold leaf.

134. Gold leaf, which comes in books of sheets, is fragile and must not be handled with the bare hands. For glass gilding, as will be explained later, the gilder's tip, first rubbed on the hair of the head to get it slightly oily, is used to *lift* the sheets of gold leaf out from the book, and apply them to the tacky surface of the letters. When gilding on the slow-drying oil size for wood, metal, etc., it will simply be necessary to gild direct from the book of gold-leaf sheets, as follows: Turn the leaf back, and place the book face downwards onto the sized letter, 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, which, if 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.

135. Gilding With Quick Size.—When doing gold-leaf lettering on wood, metal, etc., with quick-drying size, the letterer may apply the gold leaf quickly for the first two letters, patting and rubbing down the first letter only. Then he may gild the third letter, rubbing down the second one; and so on until all the letters of the sign are gilded. This progressive procedure is necessary; because if too many letters were gilded at one time, and thus the gold leaf allowed to remain too long on the first few letters on the quick size before rubbing or burnishing, the gold leaf would become humped and wrinkled at places, because drawn by the quick-drying size.

136. Finishing the Gold-Lettered Sign.—When a sign is lettered in gold leaf, the background is usually a well painted, and rubbed or polished, board, or a piece of metal or other opaque substance with a finished background surface before the lettering is started. It remains, therefore, simply to clean up the edges of the gold-leaf letters, or perhaps to outline and shade them.

Of course, if the sign has a smalted ground, the process of smalting must be done in the manner already described.

137. 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 into sheets large enough to leave a margin of $\frac{1}{2}$ inch beyond the edge of the gold leaf, which adheres to the wax paper when the latter is pressed over it evenly. The waxed paper with the gold leaf is then placed in an empty book, ready for use. The size being more tacky than the surface of the wax paper, the leaf of gold will leave the paper and adhere to the size when pressed 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.

GOLD-LEAF WORK ON GLASS

138. Size for Gilding on Glass.—The proper size for gilding on opaque surfaces and objects is oil size. When gilding on glass, however, water size must be used, because oil size, if used on glass, would soak through the gold leaf and cause it to become spotted and spoiled.

In the preparation of size for gilding on glass, the greatest care must be observed to exclude even the smallest particle of oil from the vessel in which it is prepared. 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 gilding on glass 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 or coal fire and brought rapidly to the boiling point. After boiling about 30 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 24 hours; and it should, if possible, be made with distilled water or fresh rainwater, the former being preferred.

Gelatine, the kind used for domestic purposes, is often used in the preparation of gilding-water size. The amount of gelatine must be determined by the letterer by actual experiment. A sign man usually takes between the thumb and forefinger all that is required. By preparing the size several times, the gilder soon learns the exact amount necessary. Russian isinglass (not mica) is a fish-glue preparation, and while this is quite expensive, it is the best material to use; only a small amount is required at one time. Russian isinglass is usually obtained at a drug store. German isinglass is often sold for Russian. The latter is more porous. One accustomed to using the two materials can easily distinguish one from the other. There is also a domestic isinglass on the market, which is similar to the German. The student is advised to procure the best quality, in order that the best results may be secured. Some alcohol is often added to gilding water after it has been boiled—about one tablespoonful to a pint of gilding water. This gives the gilding added brilliancy and assists the evaporation of the size from the glass. In Art. 131, it is explained that those who have only an occasional job of gilding to do should purchase the gold size ready mixed from the dealer, and not attempt to prepare it themselves. Dealers' catalogs will list the various gold sizes.

139. Gold Leaf for Gilding on Glass.—The gold leaf used for gilding on glass 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 breaks easily in the process of laying on glass, causing considerable annoyance and involving extra expense. It is therefore desirable that the leaf made especially for this purpose should be obtained direct from the manufacturer.

140. Implements Necessary.—For gold-leaf lettering on glass, aside from a thicker gold leaf and a water size instead of an oil size, practically the same implements are required as were listed for gold-leaf lettering on wood, metal, etc. There are needed: (1) the long-haired gilder's tip (to lift and apply the gold leaf); (2) the gilding or sizing

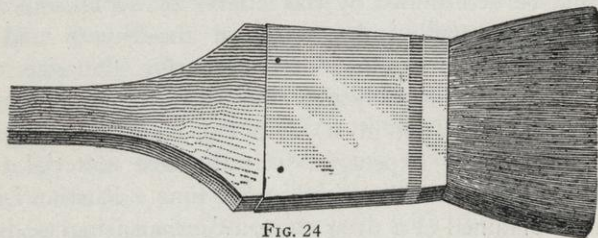


FIG. 24

brush for applying the size as shown (on reduced size) in Fig. 24; and (3) a wad of soft cotton batting for rubbing and polishing the gold leaf after it has dried.

141. Laying Out the Lettering and the Design. Gilding on wood, metal, or any opaque surface, and gilding on a sheet of transparent glass, as a store window, for example, are two separate and distinct processes. When gilding on wood, metal, etc., the letterer places the gold leaf on the surface of the board, tin, etc., just as he would place ordinary painted letters; when gilding on glass the gold leaf is placed on the inside, or store side, of the sheet of glass, or window. Other differences, also, exist in the method of procedure.

First of all, the lettering of the sign, with its ornament, is carefully sketched out and then drawn in detail, on the outside, or street side, of the pane of glass, in just the position

or sequence in which the passer-by would read it. This may be done with white chalk, which has been sharpened to a point, or with lithographer's crayon, or even wax crayon; or the design may be transferred to the glass by means of a perforated pattern through the holes of which whiting is *pounded*, thus making the outlines of the letters.

142. Applying Water Size on Inside of Window.

The next step is the application of the gold leaf, which is done on the inside, or store side, of the glass. First of all, however, this surface must be thoroughly cleaned by removing every trace of dust, dirt, oil, or finger marks. A rubbing with whiting and water, applied with a soft cloth or sponge, will clean the glass; but, if the glass is unusually dirty it may be washed with alcohol and polished with tissue paper.

The next process is the application of the water size, which must be done with great care. When gilding on wood and metal, the oil size (like oil paint) is applied to the individual letters. When gilding on glass, however, where water size is used, the process of applying this size is quite different. Using the camel's-hair sizing brush, the whole area covered by the lettering and the design is *washed* with the size, which is flowed on with broad horizontal brush strokes, just as a water-color wash is placed on a water-color picture, every part of which must be kept constantly wet (except, of course, the portions that have already been gilded). Usually, the application of the gold leaf is begun at the upper left-hand corner, working on the inside, or store side, of the glass so as to avoid having the water size run down over portions already gilded.

143. Applying the Gold Leaf to the Letter Areas.

The letterer is now standing on the inside, or store side, of the window, looking out toward the street. He sees before him the chalked or crayon outlines of the letters. The letters are reversed, because they are placed on the outside of the pane of glass. His next step is to cover these letter areas with sheets of gold leaf from the book.

The book of gold-leaf sheets 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 brush or tip (which is held in the hand during the cutting process) and laid on the glass lightly, the part to receive the gold having first been covered with a copious coat of the size, the preparation of which has already been described. The brush used in the size is usually a $1\frac{1}{2}$ -inch flat, camel's-hair brush. 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 dry, the surface of each letter should be well rubbed with cotton batting, which will remove all portions of the leaves that have overlapped one another, and will expose to view any spaces or parts that have not been properly covered. Another washing of size is then coated all over the work. It should be flowed on quickly and not applied a second time when once the water has penetrated the gold leaf, or the gold will be removed. After the washing, gold is laid on all spaces that have not been previously covered. When this is dry, a second rubbing over each letter with the cotton will remove the loose gold. The portions of gold leaf that extend beyond the contours of the letters should not be removed until the backing-up color (see Arts. **145** and **146**) has been applied.

144. The gold that has been applied becomes bright as the size beneath it dries; where the gold is dull it is evidence that the size has not yet dried. In very cold weather the size will dry slowly, but in warm weather it will dry very quickly. Do not gild on glass that is below the freezing point in temperature.

145. Backing-Up the Gold-Leaf Letters.—If the gold leaf were now allowed to remain as applied, the edges or contours of the letters could not be properly secured, and the gold leaf would very soon come off from the inside surface of the glass. The gold leaf forming the letter areas must, therefore, be painted over with a hard-drying paint, this

painting of course being done on the gold leaf on the inside of the glass.

When the letterer is standing on the inside of the window ready to apply the gold leaf, it is quite likely that the daylight will be so brilliant as it falls onto the glass of the window, that he can see the chalked or crayon lines that contour the letters through the sheets of gold leaf, and can thus paint the (to him, reversed) forms of the letters with the backing-up color.

The paint used for the backing up of the gold-leaf letters must be absolutely free from oil which would soak into and spoil the gold leaf. A good japan color, which will dry hard and firm, should be used. Lampblack, ground in japan color, and mixed with one-half japan, is a good mixture. Asphaltum, mixed with drop-black and japan will also give good results. Both of these will work where the gold-leaf lettering and painting is not exposed to frost.

Backing-up color for windows exposed to the elements—frost, etc.—may be mixed thus: Mix lampblack and medium drying varnish to the consistency of thick paste. Grind on a slab, and add an equal quantity of japan size or coach japan. A little turpentine may be used for thinning. Such paint will dry hard in several hours.

This backing-up color is applied carefully, just as when painting ordinary lettering work, over the areas of the reversed letters only, and then allowed to dry firm and hard. Now, the superfluous sections of the gold-leaf sheets extending beyond the edges of the letters may be removed by rubbing with cotton batting, used with water and whiting. Every particle of gold around the letters must be cleaned off the inside of the glass.

146. Second, or Finishing, Backing-Up Coat.

This finishing backing-up coat for the letters may be a thick coat of white lead, linseed oil, and japan size, applied carefully so that the edges are not overlapped. When this finishing coat is dry it should be varnished with the best coach varnish, the varnish being allowed to extend over the edges of the letters

for about $\frac{1}{8}$ inch, thus preventing dampness from penetrating to the gold leaf.

If any outlining or shading of the gold-leaf letters is to be done on the inside of the glass, it should, of course, be done before the varnishing coat is applied.

147. 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 should be of the best quality mother of pearl in perfectly flat and thin pieces, and must be applied after the outside edge or border of the letters is gilded, backed up, 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 edges 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 the drying quality of the varnish is positively known. The tin-foil filling gives the appearance of a sold pearl letter.

148. Etruscan Gilding.—The Etruscan gilding produces a chased-gold or silver effect, and is accomplished by a simpler method than that just described. There have been many kinds of size suggested for this purpose; either glucose water that has been allowed to stand some time, or ordinary gilding water to which a few drops of turpentine have been added, may be used although not with as satisfactory results as with the glucose water. The gilding size is applied in the same manner as regular gilding water, 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 given a second application of the size after the first has thoroughly dried; any open spaces are then gilded over. When dry, without rubbing the gold, this should be painted over with a varnish color, of about the same hue as the gold.

149. This form of treatment gives an extremely rich effect when combined with burnished gold. There are many ways of ornamenting the inside, or the face, of letters, and giving them a very attractive appearance. Leaves, vines, disks, rosettes, cross-lining, and striping are usually employed, cover-

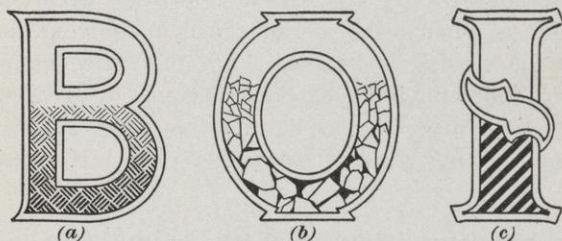


FIG. 25

ing the lower half of the letter and leaving the upper part plain, save, perhaps, for a fine line carried parallel with the heavy outline of the letter.

In Fig. 25 are given some of the most common forms of letter-face treatment used in combination with Etruscan gilding. The design in such cases is made of bright or burnished gold, and the field of the letter backed with the dull gold. Fig. 25 (a) shows a letter in which a basket pattern is employed for the lower portion of the letter; Fig. 25 (b) shows a form of mural treatment; and Fig. 25 (c) shows a letter broken with an ornamental center, the lower half of which is ornamented with oblique stripes. Any or all of these treatments would be very effective.

150. Etching on Gold Leaf.—Elaborate designs may be worked out in gold leaf on glass signs or windows after the gold leaf has been applied to the glass. This is done by first

pouncing the design on to the gold leaf with whiting through a perforated pattern. Then proceed to outline the design with a hardwood stylus, maple or hickory being the best for this. After outlining the design it may be shaded by scratching the gold where shade should show. The instrument used for this purpose is usually made by the sign painter himself. It is constructed by clipping the heads from several pins or setting coarse needles in a handle. It is well to have two or three of these tools, with from two to six needles set in a straight line and fastened in handles, so as to bring the points an equal distance apart and allow them to touch the surface of the gold at the same time. With these points the gold may be scratched away and the shade blended evenly into the plain gold, as when using a lead pencil in drawing on paper.

When the etching is finished, back the entire design with asphaltum, following immediately with a coat of varnish and oil black; that is, after the asphaltum has dried sufficiently to permit of clearing away the surplus gold leaf outside the design.

151. Shading Designs With Asphaltum.—Another method of shading designs in gold leaf is to outline the design in black on the surface of the glass and, when dry, use asphaltum thinned with varnish until transparent; after this, lay in the shades, beginning with the lightest. Cover the entire space to be shaded with this coat, following it, as soon as dry, with each successive shade. Each coat of asphaltum should be strengthened until the deepest shadows are reached, which may sometimes require several shades, or coats of asphaltum. When the shading is dry, rub the design gently with powdered rottenstone and thoroughly clean the glass by rinsing with clear water. Gild the design and back the gold leaf as usual, covering the entire design to the black outline.

152. Economic Disposition of Scrap Gold.—In every operation in which gold leaf is used, there is an unavoidable waste of material. Gold leaf, when reduced from its original smooth, unbroken condition, cannot be used again with economy or with satisfactory results. In gilding

large signs, the gold that overlaps the edge of the letter is reduced to small particles by rubbing down and burnishing the gilding. Therefore, the remnant, or scrap leaf, should be carefully collected on the sign surface with a wide, soft-hair brush and placed in a small covered box. Likewise, in gilding on glass there is a considerable amount of gold outside of the letters, after the letters and design have been backed with color. This may be saved in the cotton batting used to clean off the surplus gold leaf.

From this small saving, many sign painters realize a large amount at the end of a year. It has also been found profitable to save even the sweepings or dust from the floor of a sign maker's gilding room. Gold, cotton, and scrap gold leaf may be smelted by a local manufacturing jeweler, but sweepings require furnaces and crucibles that are possessed only by large smelters. Gold-leaf manufacturers usually are the most reliable class to intrust with smelting, their charges being reasonable and the returns satisfactory to the sign painter. The most convenient and the cheapest means of transporting sweepings is to collect them in a sugar barrel, which may be headed up strongly and handled easily. The freight also is less on a barrel than on any other form of package.

153. Advice to Student on Attempting Gilding.

The processes of gilding on wood, metal, etc., and of gilding on glass, have been described here in considerable detail, so that those students who have also been practical letterers may make use of the suggestions given. These suggestions will also be serviceable to any other student after he has been working for several years practically in the sign-lettering trade.

The beginner, however, should not attempt to do gold-leaf work unless he is fully experienced in painting signs on cloth, boards, etc.

ERECTION AND SALE OF SIGNS

CONSTRUCTING THE SIGN

INTRODUCTION

1. Information on Trade Practices.—This Section is a manual of information on the various forms of signs, the manner of constructing them, and the methods used in their erection; it also includes suggestions as to how the beginner may sell his services. Obviously, no tests can be conducted on this manual, and therefore no lettering plates are to be submitted. It should not be expected that the information given here is all that a person needs to become an expert in this line of business. An ambitious beginner, who has laid the proper foundation by becoming an artistic letterer, will see the advantage of becoming connected with some good sign-painting establishment where he will have an opportunity to learn the technicalities of sign construction and erection and the methods of conducting such a business. It will be wise, also, to make a study of paints, in order to become acquainted with their grades and qualities and the purpose to which each is best adapted. Any qualified paint dealer will be glad to give advice along this line.

2. A student who has successfully passed in the required work of his course is qualified from an artistic standpoint to do good lettering for any purpose, and when this knowledge is coupled with a knowledge of painting and methods of sign construction, he may feel reasonably confident of being competent to do creditable commercial sign work.

CLOTH SIGNS

3. The Simplest Form of Display Sign.—Display signs are of such diverse kinds that it is somewhat difficult to distinguish between the constructing of the sign and setting it in place. Then, too, some signs must really be constructed before they are lettered or painted; and, in the case of other signs (as wall signs on brick, plaster, etc.,) the painting, construction, and setting in place are really all one operation.

It has seemed best, however, for the sake of uniformity of treatment, to consider the processes of the painting, the construction, and the erection of the sign as being accomplished in the order mentioned, although some classes, such as brick-wall signs, etc., are exceptions.

Perhaps the simplest kind of signs from the standpoint of construction (with the exception of wall signs, which have no construction) are cloth signs. Such signs may be of muslin, of canvas, of oil cloth, etc., and are usually employed for purposes of temporary announcements or bulletins.

4. Making the Cloth Sign.—Muslin signs are usually made of specially prepared muslin having a *right* and a *wrong* side. This muslin should be purchased from some reputable dealer in sign letterers' supplies. The *right* side is the one to be lettered.

Canvas signs are also made of prepared canvas of various weights. The surface to be lettered should first be sized with glue size, (one pound of glue to a pail of boiling water.)

Oil-cloth signs may be constructed of the regular smooth table oil cloth, or of the heavier pebble-surface oil cloth such as is used on carriages. The smooth table oil cloth needs to be rubbed well with benzine and whiting applied with cotton batting, but the pebbled oil cloth needs no such treatment before lettering.

5. Before stretching or mounting the cloth, the wooden frame must be made. For this purpose strips of pine of such a size as will best suit the size of sign should be used. For

example, a sign 3 ft. $\times$ 18 ft. will require strips $2\frac{1}{2}$ inches wide and $\frac{7}{8}$ inch thick, with three braces $4\frac{1}{2}$ feet apart, as shown in Fig. 1.

6. It is always better to use the patented miter-box with saw attached in order to insure perfect miters, although an ordinary miter-box is easily and quickly constructed, and can be made accurate. After mitering the side- and end-pieces, nail them together with wire nails, using the kind known as brad heads, 3 inches long, or standard steel wire nails, 12D.

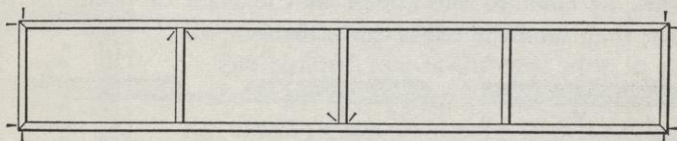


FIG. 1

When the frame has been nailed together at the corners, saw three cross-pieces of equal length, measuring close to one end of the frame. These may be set in place with nails driven in at an angle, or *toe nailed*, to use the carpenter's expression. In doing this, the sign maker must be careful not to allow the ends of the nails to come to the surface of the frame.

7. **Stretching the Cloth.**—In placing the cloth on the frame, the edges may be entirely covered by allowing enough cloth at the sides and ends to reach around and be fastened at the back of the frame with tacks; or it may be tacked on the edge. The former is preferable, especially for signs of a substantial character.

Cut the cloth the required size and lay it on the surface of the frame; then secure one end of the cloth in place by tacking it, with two tacks in the center, on the edge; next, go to the other end and draw the cloth tightly, but not too hard, and place two tacks in this end likewise. Now, in the center of one side, on the edge, place a tack, being careful not to pull the cloth too far from a center line. From the opposite side draw the cloth tightly and secure with another tack. Proceed by placing tacks close to those that have so far been driven, and draw the cloth at the same time toward the

corner of the frame. Do not put in more than two or three tacks in one place at one time, or the cloth will be drawn to one side, and wrinkles will appear that cannot be drawn out; several tacks need, occasionally, to be redrawn and the cloth readjusted. If the four corners are reached successively in the operation, the work will be satisfactory—the cloth even and tight, without showing the slightest wrinkle.

Cut the corners of the surplus cloth by pinching it together with the thumb and forefinger and cutting, with a pair of shears, as close to the corner of the back of frame as possible; then tack the edges down firmly.

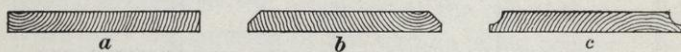


FIG. 2

8. Extremely large cloth signs should be built in $6' \times 16'$ sections, so that they may be most conveniently prepared, painted, handled, and erected. For a very large muslin sign it is well to make a preliminary sketch to scale, 1 inch = 1 foot, laying off on the sketch the $6' \times 16'$ sections, which would be 6 inches $\times$ 16 inches on the sketch. This sketch is very necessary to serve as a guide or chart in order to lay out successfully the full-size cloth sign.

BOARD SIGNS

9. **Plain Board Signs.**—The simplest kind of sign board is the ordinary planed pine board. The first step toward

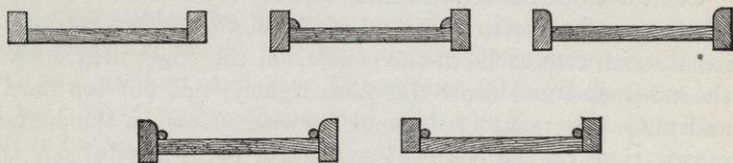


FIG. 3

embellishment occurs in the treatment of the edge. This may be treated, as shown in Fig. 2. A cross-section view of the board is given in the figures, which will better illustrate the



FIG. 4

subject. In Fig. 2, *a* shows the plain board; *b*, the beveled board; and *c*, the chamfered edge.

The best material to use for sign boards is kiln-dried white pine, in order that the sign may not check or warp when finished. White wood is also used extensively, and if coated evenly on both sides it will not warp or crack. Oak and cherry are used for the best quality of work, but these likewise should be kiln-dried.

The banded sign is the next step in the elaboration of the sign board. This banding usually projects from $\frac{1}{2}$ inch to 1 inch above the surface of the board. Inside of the band, against the face of the sign, a round or quarter-round molding is often placed. In Fig. 3 are shown the several forms employed.

The surface of the sign should be considered, as this also is subject to treatment at the hands of the sign carpenter. A half-round molding, from $\frac{3}{8}$ inch to 1 inch, according to the size of the sign, may be placed on the face of the board at the required distance from the edge. This may be a plain molding, or the rope-pattern molding. If the inscription is of a broken character, so as to permit of its being divided into groups, the molding may be arranged as in Fig. 4, which adds greatly to the artistic value of the sign. Turned rosettes and other relief ornamentation may likewise be attached to the surface of a sign board.

10. Sign Tops.—A plain board is the simplest form of top that may be attached to a sign board. This may be fas-

tened by nailing it firmly in position by means of battens, or strips, connecting both boards at the back, or by using bracket irons at the ends, as shown in Fig. 5. A scroll-sawed ornament is often used for the same purpose. There is no part of

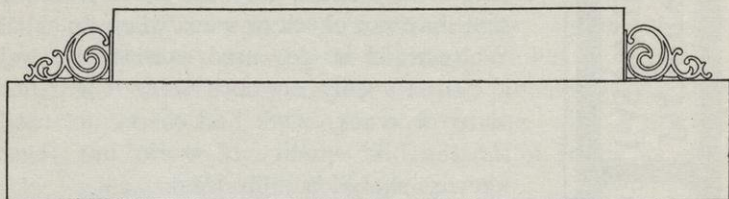


FIG. 5

the sign that is subject to such variety of treatment as the top. The subject will be treated from its most practical standpoint, and the progressive student will be left to apply the principles taught to his special needs.

In Fig. 6 (a) and (b) are shown designs that are generally used. The dotted lines on the latter indicate the proper locations of the battens, or strips, joining the two parts of the sign at the back. The ogee ribbon may also be curved sufficiently to admit an ellipse on which the store number may be placed, as shown in the figure.

11. Scroll-Sawed Tops.—Without the scroll saw, it would be impossible to produce much of the artistic work that is now used in connection with sign tops. By sawing

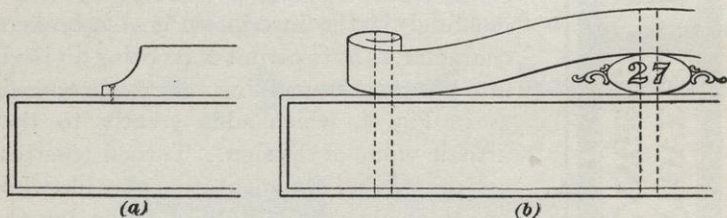


FIG. 6

out the design, and bringing out the details in relief with paint and brush, using strong shades and high lights, the ornamental sign top may be made an attractive feature of

the sign. To prepare a design for the carpenter, it is necessary only to outline it, showing the parts to be sawed out. This design is usually destroyed in the operation, and there-



FIG. 7

fore it should be a duplicate of the original. There is a purpose in the sign top aside from the ornamental one. The firm name, store number, or descriptive matter, or an emblem or illustration, is usually placed on a shield, ellipse, or other central design. On each side of this central design and



FIG. 8

apparently supporting it, ornamental work of a well-balanced and appropriate nature is attached to the top of the sign as well as to the central design.

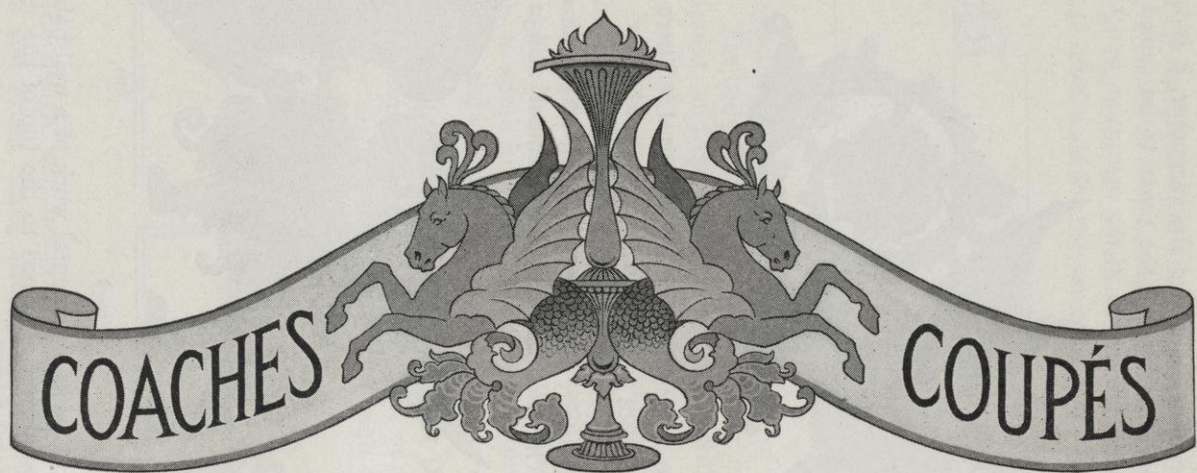


FIG. 9

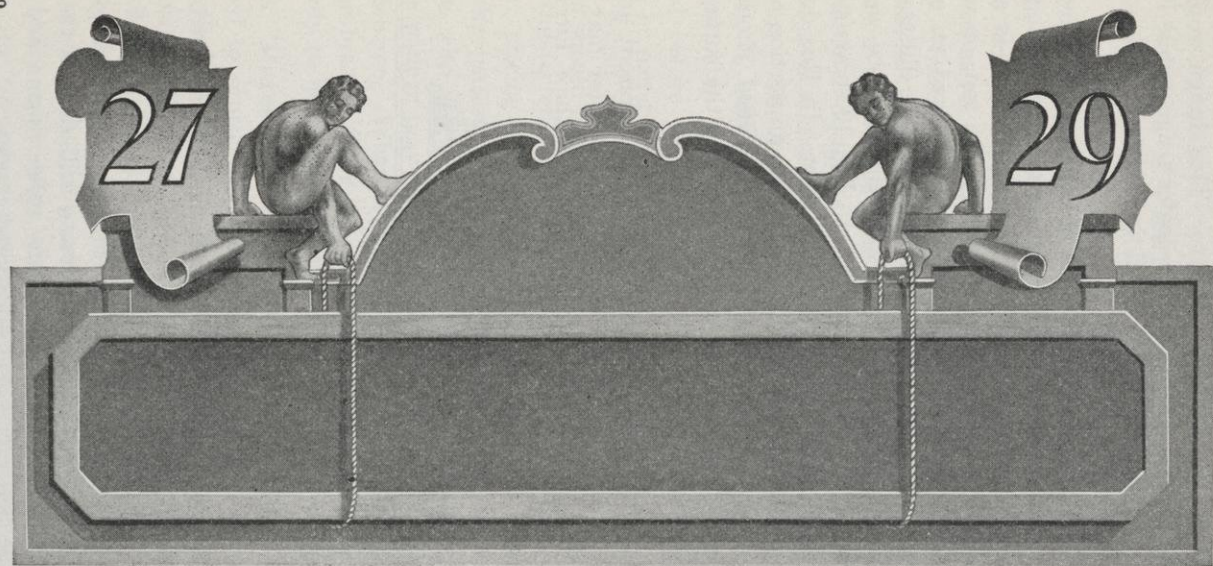


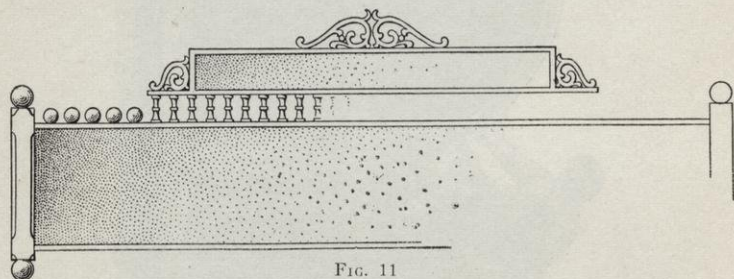
FIG. 10

Fig. 7 shows the chimera and lyre. This design would be appropriate for the top of a music dealer's sign; while Fig. 8 shows the winged lion and a heraldic shield—a design suitable for any class of business.

Another application of this style of ornament is shown in Fig. 9, in which the sawed design forms the centerpiece of the top. The design used, a Pegasus design, is applicable to a fashionable livery. An ogee-curve top, on which the ornament may be secured, could be lettered on either side with such an inscription as that shown in the illustration.

There are many novelties in designs that may be worked out that will make the sign attractive. Fig. 10 shows such a novelty in the form of a sawed end-piece. In this design, the figures are apparently holding up the main portion of the sign with a rope. Actual rope, painted or gilded, should be used, while the sign should be projected from the surface by means of blocks.

12. Spindle-Work Design.—With the present advantage of machine-turned spindles, the sign painter may construct fancy signs with greater economy than formerly,



when turning by hand was the only method practiced. The utility of the spindles is shown in Fig. 11, which illustrates only one of many uses of these, as well as the turned balls used in the composition of a sign. Turned work, when gilded, or silvered with aluminum leaf, gives a brilliancy to the sign that cannot be accomplished by any other means, and thus enriches the sign with slight additional expense.

METAL SIGNS

ETCHED BRASS SIGNS

13. General Process.—Etching is a process requiring special equipment and skillful workmanship. The materials are expensive, the chemicals dangerous, and mistakes are costly. One can learn from a textbook the outline of the process, but actual work under the supervision of experienced workmen is necessary before he can attempt safely and profitably to do it alone.

The process includes preparation of the plate, etching, and finishing. The best grade of engraving brass is required and U. S. standard gauge No. 16 is the thickness in most frequent use. This is $\frac{1}{16}$ inch thick. The plate must be well buffed before lettering. The buffing is usually done by a brass or metal finisher, and brings the metal to an extremely high polish with felt buffers and polishing powders. The design should be made on medium-thick Manila pattern paper, and transferred to the brass plate by means of carbon transfer paper, placing the carbon paper between the sign surface and the pattern and tracing the outline of the letters and design with a stylus. If the design is a large one, the back of the pattern may be rubbed over with a mixture of whiting and benzine. When tracing is done, a white line will appear on the brass. After the design is transferred to the plate, it is ready to be cut in, preparatory to the etching process.

14. Material Used for Resisting Acid.—Asphaltum is used to protect the plate while in the acid bath; it 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 coach maker's japan and coach finishing varnish. The letters and other designs are cut in with this color, leaving the lettering and stripes clear. The entire sign, exclusive of letters, is then covered evenly to the edge with asphaltum, and allowed to dry

24 hours, at least. The marks made by the tracing should then be removed with water. A new cotton cloth is 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 48 hours, after which the sign is ready for the etching bath.

A coating of beeswax also can be used as a resistant, 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 work on which the letters are very small.

15. Etching.—Etching is always done in a room exclusively set apart for this purpose, as the fumes and

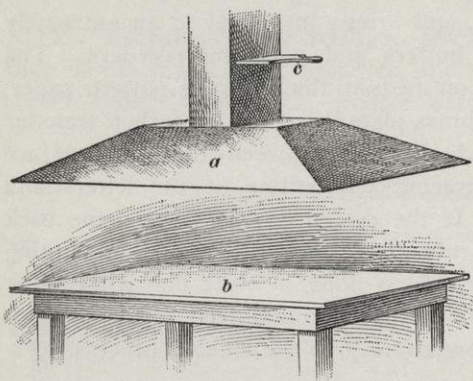


FIG. 12

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 perfectly level, and over which 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. 12, where *b* is the etching table under the hood *a*. At *c* is shown the shutter, which, when open, permits the noxious vapors to escape up the flue.

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16. Beeswax Dam.—The sign is now prepared by banking up the four edges with beeswax, so as to give the

sign the form of a shallow tray. If the part to be etched is in the center of the plate, the dam may surround this, instead of being placed at the extreme edge of the plate; this would effect a saving of acid. 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.

17. Application of Nitric Acid.—Within the rim of wax, a mixture of one part of nitric acid to two parts of 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 should be permitted to continue until the letters are eaten into the plate from $\frac{1}{32}$ to $\frac{1}{16}$ 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. A pair of rubber gloves should be worn to obviate the discoloring or burning of the fingers by the acid.

Should the action of the liquid, 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; 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; it should take 3 or 4 hours for the acid to eat the brass to a proper depth.

18. Cleaning the Plate.—After the etching is complete, the plate is removed from the table, the acid poured off by breaking a small piece of the wax dam from 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.

19. Filling.—The etched letters are usually filled with black japan, which is afterwards baked until it has a vitreous appearance. The etched letters are sometimes filled by the letterer with gutta percha or a black made with patent dryer, though the results are not so good as with the other material. Gutta-percha filling is made and applied as follows: Take equal parts of gutta percha and asphaltum, and melt together in an iron pot, with about one-quarter their bulk of finely powdered gum shellac; the mixture is penciled into the letters while it is still hot. Should a red or blue filling be required, the asphaltum can be replaced with vermilion or cobalt blue, as desired.

Should the sign man desire to enamel and bake the lettering, he may do so by providing himself with an enameling oven, or he may turn the work over to a japanner. There are a number of firms that not only sell ovens for enameling, but also manufacture enamels in black and colors. Enamels should be heated to from 200° F. to 300° F.; colors should not be heated beyond 250° F.; black may be heated to 300° F.

20. A patent drier may also be used for a filling. This material is sold in original packages, from $\frac{1}{4}$ pound up, and is mixed with lampblack until it is of the consistency of thick putty. The letters are filled with this paste by shaping a piece of pine wood into the form of a putty knife and running the paste into the letters, the operator being careful to work the wooden knife in one direction only. The grain of the metal shows in the buffing, and it is well to follow the

grain. This is very important, for otherwise small scratches are likely to show prominently. After the filling has been completed, the paste remaining on the surface should be removed with a woolen rag and alcohol. Dry lampblack should then be thoroughly rubbed into the faces of the letters, after which the signs may be allowed to dry.

21. Polishing Metal Plates.—Brass or metal plates are polished with Pultz paste, or with a liquid preparation mixed as follows: To 1 pint of water add 1 paper of tripoli (rottenstone) and 1 ounce of oxalic acid. Metal plates should be cleaned every day, in order to keep them in good condition. By so doing, the work of cleaning brass plates is rendered comparatively easy; while if they are neglected for several days, they become so tarnished that it requires considerable effort to restore them to a good condition.

ETCHED ALUMINUM SIGNS

22. Acid Used.—Nitric acid, although most powerful and effectual in attacking white metal, brass, iron, etc., is powerless to affect aluminum. The acid that must be used on aluminum is muriatic acid. This may be used clear, or one part of water to two parts of acid. Caustic potash also is used, but for all lettering purposes the acid is preferred. Asphaltum is used as a resistant, and, as in brass etching, two coats of it should be given, so that the acid will not eat through where the asphaltum is thinly applied, and also to prevent the edges from becoming broken and uneven. Acid may be used clear if the asphaltum coating has stood long enough to become dry and hard, so that the acid cannot affect the edge of the lettering by getting under the asphaltum.

TRIMMINGS FOR METAL SIGNS

23. Moldings, Castings, Etc.—Brass or white-metal signs are placed in position by using large fancy-head screws, screw buttons, rosettes, etc. Raised-metal borders also are

extensively used. Special relief designs are often attached to metal plates, and give, in connection with embossed letters, a finished artistic appearance. Whatever is added to the face of a metal plate must be added with a view to the constant cleaning of the plate when placed in position. The entire surface must be exposed, so that it may be readily cleaned. Therefore the raised borders are beveled toward the face of the plate, and should never exceed $\frac{1}{2}$ inch in projection. The width of borders ranges from 1 inch to $2\frac{1}{2}$ inches. When wide borders are used, they may be chased, if the body of the plate is highly burnished. Sometimes the border is burnished, while the plate is given a dull or chased effect. This is done by flowing nitric acid over the plate after the letters have been etched, allowing it to remain on the surface only long enough to remove the burnish from the plate.

24. Bas-Relief Designs.—By molding the design in wax or plastiline and taking a plaster cast of it, the design may be cast in brass; or it may first be carved in wood. After the casting is made, it should be finished by filing and burnishing until all roughness is removed; then it may be gold plated. It is gold plated to prevent it from tarnishing, as designs with an irregular surface cannot be cleaned without dirt being collected in the parts that are depressed. When plated, the design requires but little cleaning; this is usually done with some cleaning powder before the body of the sign is cleaned. These designs are fastened to the plate by means of holes drilled through the plate and into the design, as described later. If such a design is to be attached to the surface of a convex or concave sign, it must be cast on the same arc as the finished sign. All trimmings, such as brass tubing and pressed-brass ornaments, that cannot be fastened on from the back may be brazed on the surface; in many cases they are screwed on with small, round-headed brass screws.

25. Plain Metal Signs.—The plainest brass or white-metal plate that can be made is produced from No. 16 sheet metal (U. S. standard gauge), and is $\frac{1}{16}$ inch thick. The

inscription is etched to a depth of about $\frac{1}{32}$ inch. The letters are then filled, and the plate is ready to be attached to the building or space for which it was designed, holes being drilled through the plate and ordinary brass or silver-plated screws being used. A step toward the ornamental would be to mount this plain sign on a board $\frac{7}{8}$ inch thick, the edge of which has been given a wide bevel and the bevel coated with an ebony or varnish-black finish. In place of the ordinary screws, heavy plain or ornamental screws may be substituted, one in each corner of the sign. The heads of some of these screws are in the form of rosettes and are quite elaborate.

26. In Fig. 13 is shown a brass plate bent slightly to fit on a pilaster at either side of an entrance to a commercial



FIG. 13

building. The sign is mounted on a solid board back by means of ears soldered or brazed on the back of the plate. Brass rods with ball tops are used on both sides to give finish to the sign. These rods are attached with brass screws.

27. **Beveled Metal Signs.**—The next step in the order of progression toward the ornamental is the beveling of metal plates to give them the appearance of great thick-

ness. The corners of the plate are first cut and on the back of the plate a triangular groove is scored with a graver along dotted lines marked on the metal. The metal is then easily bent until the corners are closed; these are then brazed

together, giving a finished sign as shown in Fig. 14.

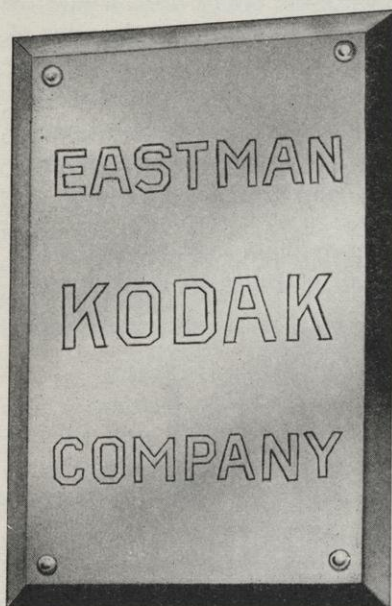


FIG. 14

ture from regular treatment in outlining the letters instead of making them solid black.

28. To place this sign in position, there should be a beveled board made to fit the inside of the sign. This should be securely fastened to the building, after which the metal plate is attached by means of ornamental screws, one in each corner. The illustration chosen, being a highly burnished brass plate, unavoidably shows strong halation in the photograph, giving it the appearance of an oxidized sign. The attention of the student is also called to the departure

CAST BRONZE AND CAST BRASS SIGNS

29. **Material, Construction, Etc.**—Cast-metal signs are the most expensive signs produced by a sign man. They are also the most substantial and artistic signs that may be used for certain purposes, such as architectural and memorial tablets, monumental plates, and mercantile signs. Designs are often suggested in high relief on the background of such signs, or they may be brought out in bas-relief in connection with the lettering. The cycas-palm branch, on account of its symbolical significance, is often used, in con-

nection with memorial tablets, as an emblem of victory, joy, or merit. These signs are cast in statuary bronze, which is a fine quality of bronze. The face of the letters, as well as the border, of a sign should be highly polished, which not only shows the quality of the metal, but adds greatly to the richness of the whole sign. Care should be taken that the work of casting the metal sign is entrusted to a reliable brass foundry, as few brass founders are capable of producing satisfactory work in statuary bronze—work that is entirely free from sand holes or specks.

30. Substantial Character of Bronze Signs.—As the cast bronze sign is the most substantial that can be produced by the sign maker, too much time cannot be given to the preparation of the design. Many examples of this enduring form of tabature exist to show the advancement made in the art from the most ancient times down to the present. It will be largely through its work in marble, bronze, and stone that the present generation will leave a record of its achievements that can be read by future generations.

The bronze tablet (if the best work is required) should be cast of statuary bronze. Using this metal, the surface of the letters may be highly polished; this gives the letters greater sharpness and also gives richness and finish to the sign in the strong contrast between the surface of the lettering and the dead-bronze ground. The design must first be made in wood, and any carved designs that are used should be cut so as not to leave undercuttings that will cause the sand to break the edge of the design when the mold is prepared.

31. In a design in which are used a large number of letters of one style and size, strips of pine are cut to the size of the vertical and horizontal strokes. For example, in Fig. 15 (a) is shown a sectional view of the vertical stroke of the letter, in which can be seen the side bevel necessary to insure success in the casting. The height to which the letter should be projected above the surface depends on the size of the letter. For letters from 1 to 2 inches long, $\frac{1}{4}$ inch is sufficient, but letters from 3 to 6 inches long should be projected from $\frac{3}{8}$ to $\frac{1}{2}$

inch. In Fig. 15 (b) are shown the strips set in place to form the letters, as far as possible. After gluing them on the board, the spurs and all letters with curved strokes are modeled by

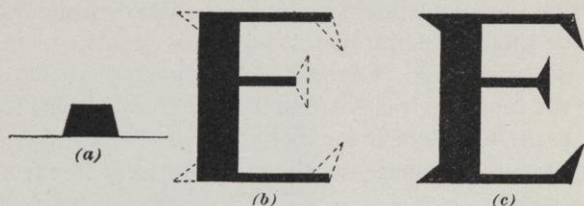


FIG. 15

hand, plastiline or some similar material being used. The finished letter is shown in Fig. 15 (c).

32. An original style of bronze tablet is shown in Fig. 16. The background was first made from an impression of an undressed-stone surface; to this the letters were attached,



FIG. 16

and a cast was made from the whole. In such signs, it is advisable to cast the rosettes also. The sign may then be fastened by drilling holes through the center of these and using long brass screws or brass-headed bolts.

The bronze design is made to fit all manner of columns and pilasters. In every case in which a sign is designed especially for one particular place, the sign maker should take into account the general architecture of the building and make his sign harmonize with its surroundings.

33. Beveled Border Metal Plates.—The heavy beveled border is a great addition to the appearance of the metal sign. Strips of heavy metal are brazed together to form a frame for the plate on which the letters are placed. In Fig. 17 is shown



FIG. 17

a brass plate with a heavy border, the inner edge of the border being beveled at an angle of 45° . These signs may be mounted on a board, or they may be placed directly on the building, on either brick, stone, or iron, by drilling holes and plugging them with wood; after which they may be firmly attached with screws.

34. Metal Relief Letters.—In both Figs. 17 and 18 are shown metal relief letters. These letters are cast from wooden letters and dressed and burnished. Before they are fastened to the plate, they are exactly arranged in the positions they are to occupy and whiting or rouge is dusted on the surface around them. They are then removed and two small holes,

not more than $\frac{1}{8}$ inch in diameter, are drilled through each letter. The letter being held in position, a drop of solder is dropped into each hole and the letter is firmly attached. The letters are also attached by means of screws. Many sign men make the mistake of placing large, inartistic

letters on metal signs. Fig. 18 presents such an example. Not only are the letters too large, but their arrangement is not good; it would be in better taste were they placed on horizontal lines.

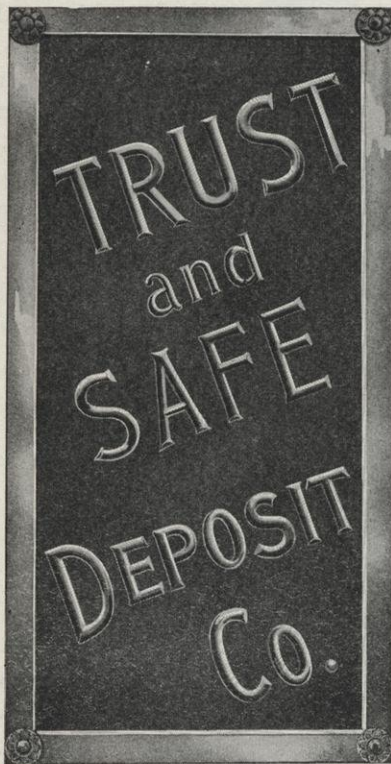


FIG. 18

be bent to the same arc as the field of the sign.

In preparing the wooden letters for casting, the curve of the plate should be given to the patterns. The letters used on curved surfaces are usually made narrower than letters that are to be placed on a flat surface. Unless such signs are perfectly rigid when bent, it is well to mount them on a frame made to fit the inside of the sign.

35. Metal Drum Signs.—The bending and shaping of metal signs calls for heavy machines with wide cylinders. As the sign shop is not usually equipped with such machines, the metal worker is sought out and the metal plate is bent to the required curve before it is buffed. As shown in Fig. 19, the drum sign also is finished with a heavy metal border. The top and bottom sections of this border must likewise

36. Novel Metal Signs.—The drum sign shown in Fig. 20 is something of a novelty. This sign was of sheet zinc, copper plated. The letters also were copper plated, as well as the chain and rosettes. There are unlimited opportunities for the sign man and metal worker to prepare metal signs along original and novel lines. A few such novelties are being considered here, and being of a typical character, they will be found most helpful as material from which to build and elaborate when artistic designs are required.



FIG. 19



FIG. 20

37. Ornamental Borders.—Ornamental borders and centerpieces are cast from wooden patterns or from other metal designs. Trade-marks, coats of arms, or bas-relief designs of any description may be placed in the center or at the top of the sign, and the lettering made to harmonize in general character with such ornamental feature. In Fig. 21

is shown a brass plate with a relief-scroll border and raised letters. In signs with an ornamental border, the edge may be left perfectly plain, the result being, instead of detrimental,

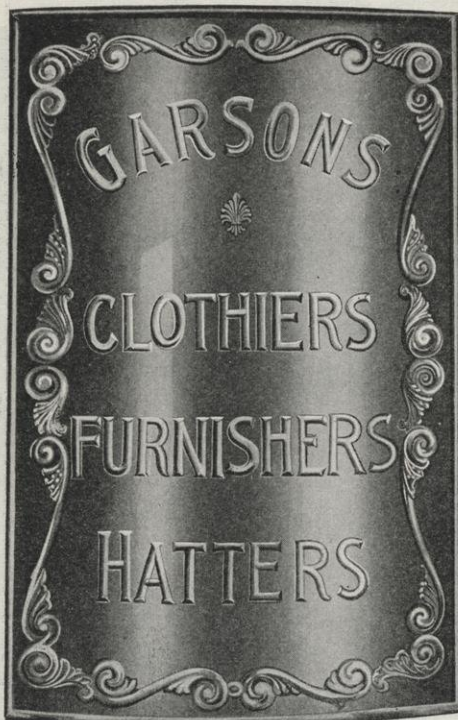


FIG. 21

an improvement in the appearance of the sign. In the illustration, however, the sign painter has finished the edge with a half-round brass molding. If the ornament, such as that used on the sign shown in Fig. 21, is placed on a rounded surface, it must be bent to the surface of the sign.

WIRE SIGNS

38. Advantages of Wire Signs.
Wire signs are much lighter than board signs; they offer but little resistance to a

violent wind; and they present a much neater appearance on the front of a building than a heavy board sign. These three reasons alone should commend them as a superior sign for many uses. Again, the expense is a consideration in favor of the wire sign. If wire signs are thoroughly painted, they will compare favorably with a board sign in point of durability. Wire signs are used on roofs, or they are made to project from the fronts of buildings, in order that the sign may be read from two directions. In the latter case they are hung on peg irons, to swing out from the building in the

same manner as a gate, and securely fastened in position with galvanized-iron or copper wire. They may also be projected by means of a hickory or oak pole, from which the

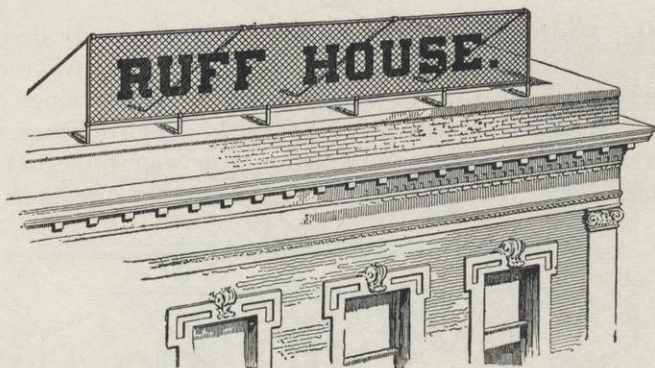


FIG. 22

wire sign swings with the wind. They are likewise used on the edges of wooden awnings, balustrades, and balconies.

39. Designs for Wire Signs for Roofs.—Roof signs are the farthest removed from the observer of any form of sign, and therefore they should be plain, unornamented, and of large mesh. The letters for roof signs are usually made of sheet metal or wood. Wooden letters are attached with small staples, and metal letters are attached with copper wire, the holes necessary being punched close to the edges of the letters and near crossing wires. Fig. 22 shows a roof sign with letters attached; also the number of braces and stays necessary for a sign of such proportions. Zinc, sheet tin, or galvanized sheet iron, is the best kind of sheet metal to use for letters. If the letters are larger than the regular size of the sheet, their parts may be soldered or riveted together. Wooden letters are made of boards (kiln-dried pine) the width of the stroke of the letters and 1 inch thick,

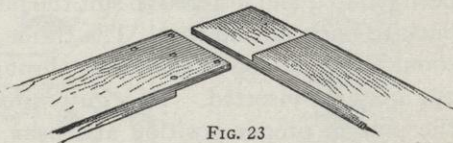


FIG. 23

fastened together by cutting the ends and fitting them together, so as to leave a smooth, even-faced letter, as shown in Fig. 23.

40. Projecting Wire Signs.—There are many designs suitable to this style of sign. A single illustration will serve, however, to give the student an idea of the fastenings and general arrangement with regard to panels, design of frame, etc.

In Fig. 24 is shown a swinging wire sign projected on a pole. This sign may be read from opposite directions by

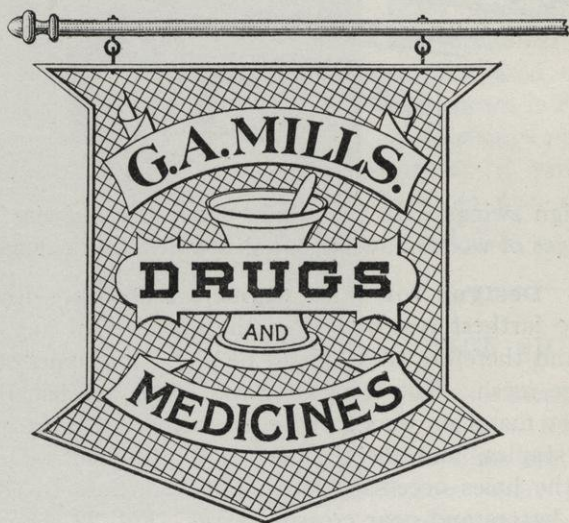


FIG. 24

cutting zinc strips into ribbons and panels; and, after they have been painted and lettered to suit the purpose, they are fastened back to back on the wire. The frame maker, or wire worker, should leave a loop in the frame through which an open screw eye may be inserted. Two guy wires are sufficient to hold the pole in proper position and bear the weight of the sign.

Fig. 25 shows an ornamented-frame, projecting wire sign. This style of sign is intended to be placed close to the building, from which it is projected by means of peg hooks and eyes, shown in the illustration. The back iron of the frame



FIG. 25

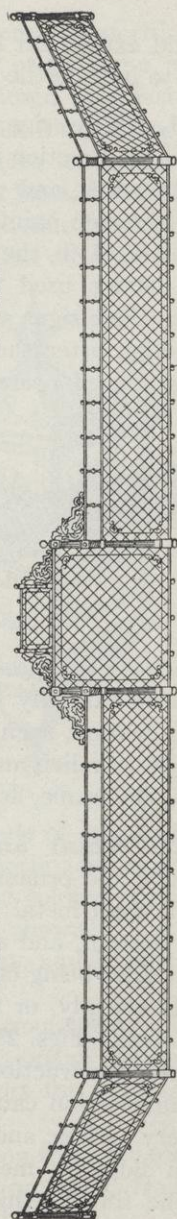


FIG. 26

should extend far enough above and below the body of the sign to include the ornamental ironwork.

41. Wire signs for awnings are intended to be read from one direction only; the letters may therefore be attached to the wires, and panels and ribbons discarded. In view of this, the sign painter has a great opportunity for the display of his skill in the carving of signatures, trade-marks, etc. The letters used for these signs are rounded and gilded. When these signs are placed on a corner, they may be treated in design after the manner shown in Fig. 27. These signs being placed nearer to the eye of the pedestrian than any

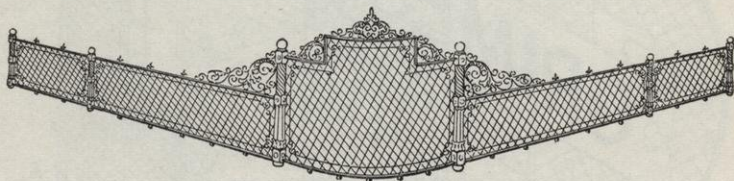


FIG. 27

other form of wire sign, the ornamental feature of the design is more carefully considered, and every form of embellishment is used, such as ornamental turned posts, carved-wood designs in relief, and cast-iron ornaments that may be attached to the frame, as shown in Fig. 26.

42. **Metal and Glass Transparent Signs.**—Inexpensive and ornamental lamp signs are prepared by employing a sheet-metal worker to make a frame with a solid top and bottom, and a back fitted with a metal door, the three open sides being closed with glass. These lamp signs may be made cheaply, or they may be quite elaborate in their construction. Figs. 28 and 29 show two lamps, one, Fig. 28, of simple construction, and the other, Fig. 29, so made that ornamentation can be attached in many ways, thus making it very artistic and expensive. The glass is firmly set in the open sides by means of metal ears soldered on the inside of the frame, which, when the glass is placed in position, may be bent so as to clamp it on the edges and hold it securely

in place. The last glass set can be fastened in position by reaching through the opening at the back of the lamp, which is supplied with a door that may be closed and fastened. The most inexpensive treatment of the glass for a transparent lamp is first to frost the inside with white lead, and then letter the outside of the glass with plain black. Permanent frosted glass may be used. Gold lettering with a black outline or shade is used on this surface also. The most artistic as

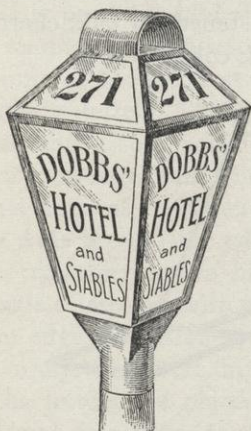


FIG. 28



FIG. 29

well as expensive form of lamp sign is made of stained glass, in which letters are etched with hydrofluoric acid or by the sand-blast process. By either process, the colored surface of the glass is removed and a white letter shown. This style of transparent lamp reads well in daylight, and is especially attractive at night.

There are many ways of painting and ornamenting a lamp; dark colors may be used for different portions of the body of the frame, and gold leaf and bright colors for striping and ornamentation.

Transparent lamps are set on posts, hung from ornamental cranes, or set in frame sockets that are projected from the building, and firmly stayed and supported.

Fig. 30 shows a square frame in which a square lamp may be set, *a, a*, show wires, or rods, that are fastened to the corner of the frame and carried at an angle of 45° back to the building and secured. If heavy galvanized wire is used for this purpose, it should be painted black after it is placed in position.

43. Wire Window-Screen Signs.—Wire screens on which signs are lettered are often made to cover the lower parts of windows in places of business where the window is not used for displaying goods. These screens are made of a fine-mesh wire that is usually fastened on oak, cherry, or pine frames, painted with some dark color.

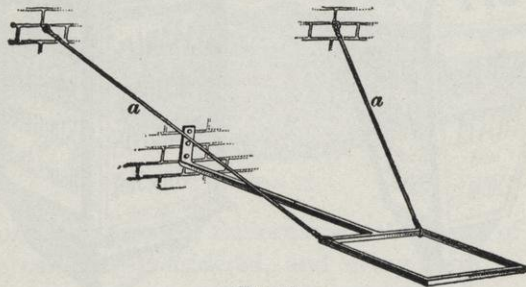


FIG. 30

44. Lettering Wire Screens.—Letters are painted or gilded on the wire, or cut out of sheet tin and fastened on the wire screen. If done in the former way, paint mixed of white lead and varnish is used, and the meshes of the screen filled with one or two coats where the letters occur. When dry, the letters may be sized and gilded. Shading is usually done on the open meshwork, and the color applied so as not to fill the meshes. When letters are made of sheet tin, first ascertain the exact width and height they should have; then mark and cut them out as follows: Use a sharp-pointed instrument in marking them out, then proceed to cut all portions of letters that may be easily cut with tin snips. The inside of such letters, as in O, R, etc., should be cut on an end-grained maple block, using steel chisels for the purpose. To meet all requirements, a variety of these chisels is necessary.

The next operation is to solder tie-wires to the back of each letter, by which they are firmly attached to the screen. This should be done before the letters have been painted. In soldering the tie-wires to the letter, the wire is first bent to the shape of a staple, and then held in position with pliers, a little soldering flux or soldering salts or muriatic acid and zinc being put on the parts to be joined. A small piece of solder is placed on the metal at the point where the wire is to be joined to it, and a blowpipe flame applied until the solder flows and the pieces are thoroughly united. If a soldering bit is used for soldering, the pieces are prepared in the same manner and the solder is applied with a hot bit, letting the point of the bit rest on the metal until the pieces are thoroughly united. The face of the letter is then cleaned with benzine and a soft cloth. The letters are sized with a thin coat of slow size, and gilded or silvered the following day. A usual form of treatment is to run a stripe of black about $\frac{1}{8}$ inch wide around the edge of the letter; another and more artistic treatment is to high light the edge at the top and right side of strokes with cream color, and stripe the left and bottom edge with a color made by adding burnt sienna and burnt umber to the cream color used for high lighting. When dry, the letters are placed in their proper positions on the screen and firmly fastened by twisting the ends of the tie-wires together.

ELECTRIC SIGNS

45. Utility of the Electric Sign.—With the advent of electricity as an illuminant came the desire to apply it in connection with the sign. The skill of the electrician, metal worker, and sign painter has produced a number of novel applications along this line, many of which are destined to be permanently used.

The flash sign, although still regarded as a novelty, is very generally used; but the expense involved in its operation confines its use mainly to large cities. Such signs will flash a large number of words successively, a few at a time.

46. Detached-Letter Electric Signs.—One of the most serviceable forms of electric signs is the detached-letter electric sign. Nearly half the letters of the alphabet present the same outlines when read from the back as they do when read from the front. These letters are A, H, I, M, O, T, U, V, W, X, and Y. The other letters, when used to show from two opposite directions, must be duplicated and placed back to back. For illumination, these letters are cut out of wood 2 or 3 inches thick, or they may be made of sheet metal by cutting out each letter in duplicate and separat-

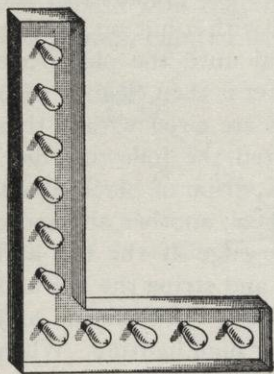


FIG. 31

ing these by a strip of the same metal soldered at the edges. Or they may be of a single sheet, leaving the face open, thus giving a letter as shown in Fig. 31. On the face of the letter electric lamps are placed, so as to give a clearly defined letter when lighted. The letters are placed in position by firmly fastening them to two iron rods—at the top and bottom of the letters, if the sign is placed horizontally, and at the sides of the letters if they are to read from the top downwards.

Such letters as cannot be used to show from opposite directions are duplicated and placed back to back. These are made one-half the thickness of the others, so as to make all of equal thickness when placed together. The confusion of outline is overcome by painting the face of the letters white, or covering them with aluminum, and painting their backs black, or of some dark color. In Fig. 31 is shown also the number of lamps necessary to properly illuminate a letter. A special incandescent lamp is used for sign letters, known as the *sign lamp*, which is much shorter than the one used in interior illuminating.

RELIEF-LETTER SIGNS

47. Wooden Letters.—Relief letters are those that are raised above the surface of the sign; usually they are 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 wood and then sawed out; only the best kiln-dried pine planking 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, after which they should be finished by using very coarse sandpaper, followed by fine sandpaper.

48. Large Roof Letters.—The large wooden letters used on the roofs of buildings or on other elevated places are made and put up so as to stand out in relief against the sky, and consequently they must be much larger than they 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 $1\frac{1}{4}$ -inch 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 in the letter in Fig. 32. At least two angle irons should be used at the bottom of each letter, of sufficient length to raise the letter from the roof; and there should be two round braces behind; the size of the latter would vary with the size of the letter. A $\frac{1}{4}$ -inch rod, extending along the tops of all the letters,

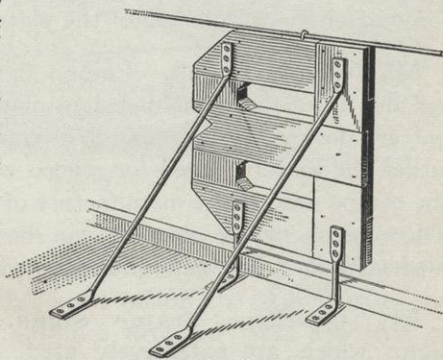


FIG. 32

is fastened on by means of staples; it protects all single-stroke letters, such as I, J, L, 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.

49. 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 the plate.

50. Compo Signs.—Compo signs, the letters of which are also in relief, are molded signs made by pressing a wooden-pattern design into a 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, can be made very attractive, especially for advertising purposes.

51. Gas-Pipe Frame Signs.—The gas-pipe frame signs, which are extensively used, 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 roof surface to which the braces or wires 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. 33. 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.

52. Advertising Signs on Walls.—Wall signs sometimes reach man proportions. It is not unusual to see the sign man begin his design at any part of the work, as the panel may be a hundred feet or more in length or height. Such work is executed, therefore, from a miniature design



FIG. 33

or scale, which in this case could be either $\frac{1}{8}$ inch or $\frac{1}{4}$ inch to the foot; and to insure against mistakes it is divided into blocks 10 feet 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.

These designs are often prepared so as to project beyond the top of the building, in which case the projecting parts of the design are cut out of wood and securely fastened by

braces. This kind of relief sign, standing out against the sky, can be made very attractive.

53. Transparent and Illuminated Signs.—Electric lighting has done much to develop this branch of sign painting, and signs that otherwise would 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. Letters cut out of wood or metal are used for electric relief signs.

54. Unilluminated Glass Signs.—It is not an uncommon thing in Europe to see the name of some periodical, or of a business firm, stretched obliquely 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 separate pieces of opal glass are carefully fitted, so as not to leave too wide openings 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.

ERECTING THE SIGN

EQUIPMENT NECESSARY

55. Points to be Observed.—The value of a sign depends on its finished appearance when placed in position outside or inside a building, and the sign man should not allow his artistic taste or ability to cease with the production of a piece of work that may prove his skill; he should study the relation of his sign to its surroundings, and arrange its final fastenings accordingly. These should, first of all, be as secure as possible, and be capable of resisting the severest wind storms; but they may be attached without impairing the legibility of the sign or marring its neatness. Therefore, in hanging signs, do not allow the work or fastenings used to show more than is absolutely necessary, unless they are of an ornamental nature. Architectural ironwork is used for swinging signs, either in the form of an ornamental crane or of scrollwork conforming to some characteristic design, such as a heraldic shield or panel.

56. Tools Necessary for Sign Hanging.—Among a sign hanger's requirements are two or three ropes about $\frac{3}{4}$ inch thick and 60 feet long, and two small hemp clothes lines. The large ropes are used to hoist the sign into position, and the small ones are sometimes used for guys, to keep the sign away from frail trimmings on the building or from other projecting signs. Large screw eyes are used for attaching ropes to a sign when rope cannot be passed around it. These are screwed into the top edge of the sign. A brace and bit is used to bore holes through the band into the sign board, and the large screw eyes are then adjusted. These screw eyes are made of $\frac{1}{2}$ -inch iron with a large thread that will hold a heavy sign without danger of pulling out. To

drill holes for hooks, a sledge hammer and long-handled tongs are used, the latter being made so as to hold the hook firmly in place.

General tools, such as are found in a well-equipped sign shop, are also used under various circumstances in sign hanging. A list of these useful tools is given.

Saw and miter-box	Iron square
Saws for miscellaneous work	Screwdrivers
Claw hammer	Brace and bits
Tack hammer	Bench vise
Chisels ($\frac{1}{4}$ -inch to $1\frac{1}{2}$ -inches)	Punch and eyelet set
Cold chisels (for cutting into brick walls)	Jack-plane
Tin snips	Iron block plane
Pliers	Spirit level
Awls, files, and wood rasps	Oilstone
Iron clamps (No. 12)	Oil can
Monkeywrench	Rules
Pipe wrench	Tape line

57. Forged Irons and Stock Hardware.—The iron-work necessary in sign hanging consists of forged irons and stock hardware. Of the former, braces and supports of all kinds are constructed to fill immediate requirements. Ornamental iron work that requires much forging is necessarily quite expensive, and its use is therefore restricted to the most elaborate styles of signs. To lessen the expense of forging, machine-made rosettes are used, and these greatly add to the appearance of a wrought-iron design.

Braces and supports are made by any blacksmith. They are made of round-iron rods, from $\frac{3}{16}$ inch to $\frac{3}{4}$ inch in diameter. The latter is heavy enough to hold the weight of the heaviest signs. Square rods are used for cranes and supports, especially where other irons are joined with these. Sign hooks are always kept on hand by a sign painter. They are also made by any blacksmith, and are of two lengths, 7 inches and 9 inches, of $\frac{5}{8}$ -inch and $\frac{3}{4}$ -inch iron, respectively.

The shape of a sign hook is shown in Fig. 34. The end is flattened to a chisel shape, which enables the sign hanger to drive a hook into a hole that has been plugged with wood

and keep the end of the hook vertical. The hook end is usually about $1\frac{1}{4}$ inches long. Awning hooks are used when a smaller size than the 7-inch hook is required. These, although of wrought iron, are obtained at any hardware store. They come in two or three sizes, and are used especially for signs having no band.

Ordinary strap-iron hinges are used for sidewalk signs or for V-shaped signs that project from the fronts of buildings; these may be had ready made.

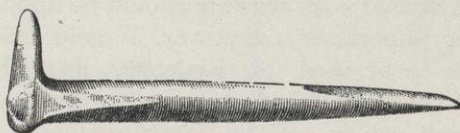


FIG. 34

Clothes-line hooks are often convenient for hanging signs. These come in but one size.

Coach screws or machine bolts are also used in sign hanging. These are of all sizes and, having a square head, may be put in place with a monkeywrench.

Screw eyes (of polished iron) are of all sizes from $1\frac{1}{2}$ inches down to $\frac{1}{4}$ inch. A sign painter always keeps an assortment of these on hand. Wrought-iron screw eyes of large size may also be purchased of a hardware dealer.

58. Wall Signs.—Advertising signs are prepared with the view of attracting the attention of a large number of people. If the attempt to do this is made in a store where the manufacturer's product is on sale, a glass sign, card sign, or enameled-cloth wall sign is used. Transparent window signs also are used in store advertising. If the object is to catch the eye of pedestrians, fences and walls that face toward public thoroughfares are used for advertising purposes. So profitable is this latter medium to the merchant that persistent advertisers pay almost fabulous amounts for dead walls left exposed during short intervals of building operations, especially when these walls are located along prominent thoroughfares in the larger cities.

Large wall signs are usually painted from a carefully prepared sketch on a scale of from $\frac{1}{2}$ inch to $1\frac{1}{2}$ inches to the foot. This makes it an easy matter for a sign painter to

paint a sign of any size with accuracy. White lead mixed with boiled oil is used, and the lettering is done first. Having given it one coat of white, the letters should be cut in with black or the color to be used for a background, and the entire space filled in. After the background is finished, a second coat of white should be applied to the letters. This is unnecessary, however, if gold color, red, or light blue is to be used for the letters, as such colors may be made to cover well with one coat. Maroon, dark blue, dark green, and yellow are the colors commonly used for backgrounds. Panels and ribbons are painted on at the same time that the background is painted, adding nothing to the expense except in the time consumed in outlining these. Under another head is given the prices charged for this kind of advertising work.

When a wall space or panel is to be relettered, the sign painter employs what is known as the *spotting-in* process. This process renders it unnecessary to repaint the panel before lettering. A design according to scale should be prepared, and instead of painting on each letter, the entire space to be occupied by a line of letters is painted with white or gold color, and the letters cut in when the paint is dry. A varnish or japan color is used for this first coat of white, and when cut in the letters may be given a second coat of white mixed with boiled oil and turpentine.

59. Fence or Barn Advertising.—This kind of work is done in precisely the same way as the dead-wall advertising, allowing for the fact that boards, particularly old and weather-worn ones, are difficult to paint, requiring the expenditure of much time and material in the operation. It is necessary, therefore, that something should be applied to the surface to be painted, or added to the paint, that will cause the paint to cover readily and will prevent the boards from absorbing a great quantity of material. Strong glue size may be prepared, and the board surface coated with it. When dry, it is ready to letter. Ordinary sal soda dissolved and added to the paint, and also melted common brown soap,

will greatly improve its covering quality. There are many other ingredients used, such as quicklime slaked and stirred into white paint. The wearing quality of this, however, does not warrant its use for outside purposes, unless the work is of a temporary nature.

60. Tackles and Ladder.—To place signs on high places that may not easily be reached from the ground, a letterer must use a ladder, scaffolding, trestle, horses, or a swinging stage. The latter consists of a ladder of a uniform width of about 2 feet and from 18 to 20 feet in length. A board 18 inches wide is fastened on the ladder, leaving a space of about 12 to 18 inches on each end. Tackle blocks and ropes, with four strands of rope, are used to swing the stage; $\frac{3}{4}$ -inch rope is heavy enough for a sign painter's use. Two hundred feet of rope will give a tackle 50 feet long, which is sufficient for general use. This may be lengthened temporarily to about 62 feet by tying on a 50-foot rope. To secure firmly the upper block, a large hook may be used without detriment to a building, as shown in Fig. 35. This hook is usually made of round iron from $1\frac{1}{4}$ inches to $1\frac{1}{2}$ inches thick. A rope with strongly spliced loops at the ends is passed through the ring



FIG. 35

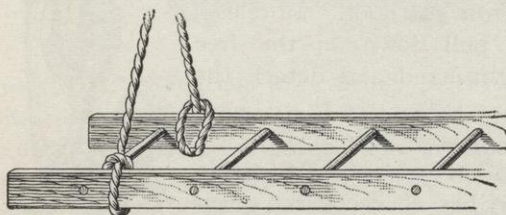


FIG. 36

end of the hook, and both loops are caught in the hook of the tackle block. A plank is often used on flat roofs, where an iron hook might not be considered safe. In such cases heavy weights (flat stones, for example) are placed on the end of the plank, the opposite end being projected several inches beyond the edge of the roof; the spliced rope is carried double around the end of the plank.

The double tackle block is always fastened at the top; the lower single block is connected to the ladder by means of two slings, one at each end of the ladder. These are fastened to the ladder inside the end rungs, as shown in Fig. 36. Fig. 37 shows how the ends should be fastened to the hook of the tackle block. Rope 1 should be hooked on first and carried to the top of the hook, allowing rope 2 to be hooked on and dropped underneath it. This does away with all possibility of one of these ropes slipping off the hook, 1 holding 2 firmly in place. Before hooking the ropes on to the tackle, however, see that the four strands of rope are entirely free and hang parallel. The swinging stage is now ready to be hoisted into position. Two are needed to operate a swinging stage.



FIG. 37

It is necessary that both should understand the method of fastening the loose rope before beginning to ascend, or else a serious accident may result. In Fig. 38 is shown the proper method of securing this rope. After passing it underneath the slings it is brought up and twisted so that the weight only tends to bind on the twisted portion of the rope when attached to the hook, thereby making it entirely impossible for the staging to slip or for the rope to slip from the hook. In releasing this fastening, pull down on the free strand with the right hand and detach the loop with the left.



FIG. 38

61. Ornamental Ironwork.—A certain high standard of art has characterized ornamental ironwork in all ages, perhaps from Tubal-cain, the first artificer in iron, down to the present age. Iron has been used in connection with hanging signs for many centuries, but never has the art reached so high a degree of excellence as at the present

time. The ornamental crane, for instance, from which a sign is suspended, presents an excellent opportunity for the skill of the ironworker.

62. Sheet-Iron Transparencies.—In Fig. 39 is shown a design for an ornamental sheet-iron transparency that will serve to illustrate the general construction and utility of this style of sign. The ornamental crane is usually made of bar iron 1 inch square placed perpendicular to a piece of flat iron, in which holes are drilled and strong coach screws

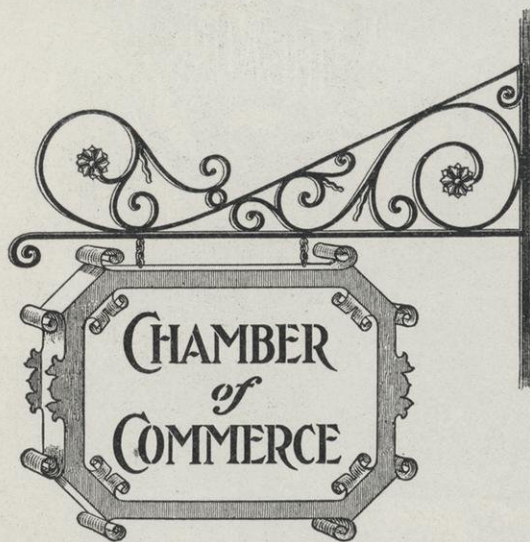


FIG. 39

inserted to fasten the work firmly to the building. At least three screws should be used below and four above the ornamental portion of the crane. The ornamental work consists of graceful curves with centerpieces of machine- or hand-made rosettes. The sign is constructed as follows: The sides on which the lettering shows are of thin galvanized iron. The letters are cut out with cold chisels. When the box-shaped sign is fastened together, a framework of wood is closely fitted within it, and in the sides of this opal glass is set. This gives the letters a solid appearance in daylight, while at night



FIG. 40

electric lights within the sign render the body translucent. A sliding door in the bottom or back of the sign gives access to the lights. The frame, as well as the crane, is painted a jet black, in imitation of a Venetian lamp, drying without gloss.

This style of sign is often supported on an ornamental post, as shown in Fig. 40, or it may be projected from the building with ornamental ironwork, as shown in Fig. 41. In the latter case, it is necessary to drill holes in the brickwork and to solder the ornamental work substantially to the building.

COMMERCIAL BANNERS

63. Materials Used.—There are many kinds of cloth banners, made to serve all purposes, from the mammoth side-show pictorial banner to the auctioneer's flag. When the banner is used as a permanent sign, it is necessary to make it of some strong material that will withstand wind and moisture. There is nothing better for this purpose than cotton duck. That known as 8-ounce cotton duck is the kind generally used by sign painters. Heavy cotton drilling comes next to duck in durability. Temporary cloth banners are made of unbleached and white cotton sheeting; the unbleached is the more durable, but the white has a much better surface on which to letter. Colored cloth is used for banners, and may be had in duck, cotton, or woolen bunting. Other and cheaper materials such as glazed cambric, are also used.

64. Making the Banner.—In order that a cloth banner may not tear or fray at the edges, these should be hemmed by lapping them over about 1 inch. It is not necessary to do



FIG. 41

this with selvage edges, unless the banner is unusually large. To suspend the banner, large eyelets, called *grommets*, are firmly set in the edge of the cloth, through which a rope or wire is passed. Light-weight cloth banners are more liable to tear, as these have to resist the same wind pressure as banners made of stronger material. It is necessary, therefore, to pass a rope through the hemmed edges, looping and knotting this at the corners. A rope of the size generally used for clothes line is large enough for this purpose.

65. Painting Cloth Banners.—A cloth painted with lead and oil, or with colors mixed with oil or varnish, will be stiff and unserviceable when the paint has dried. It is necessary, therefore, to use some ingredient in the paint that will render the cloth flexible. Several things will give this result; namely, common soap, beeswax, and glycerine. But nothing, perhaps, is cheaper and more satisfactory than ordinary brown soap. This should be melted and added to the paint in the proportion of 1 pint of melted soap to 2 gallons of paint.

To size the cloth, which should be done before any paint has been applied, use common glue dissolved in hot water, putting about $\frac{1}{2}$ pound in one pailful of water, and adding 3 ounces of glycerine. Stir well, and then thoroughly brush over the surface of the cloth with this size. If beeswax is used instead of soap, melt and mix one part of it with three parts of paint. After the cloth is painted, the lettering may be done with paint mixed in the regular manner. Great care should be used in melting these materials.

66. Lettering on Cloth.—White cotton duck and white cotton sheeting may be lettered while the cloth is dry, or they may be first dampened with water. In the latter case, almost any of the colors that naturally accumulate in a sign letterer's shop may be used, and which it is a matter of economy for the sign man to use up. But in lettering dry cloth, only one mixture may be used. This is made as follows: Mix the best lampblack thoroughly with a cheap grade of furniture varnish; thin with naphtha until the black

is reduced almost to the consistency of water; then apply with a flat camel's-hair brush about 1 inch wide. This is the most convenient brush to use, as many of the letters may be made with a single stroke of this brush. Also, with this brush partly filled with black or color, ornaments may be made with great rapidity that appear to be the result of close study. For cotton duck, a soft bristle brush is used, of a size most suitable to the size of letter required. Beginners, however, sometimes make the mistake of choosing a brush too large for the work in hand; better and cleaner work may be accomplished with a brush too small than with one too large.

67. Street Banners.—Every few years, the attention of the sign painter is called to political banner-making. In many states, the demand is rendered more frequent by an enthusiastic interest in gubernatorial elections. Some political banners bring very high prices, and for this reason there is usually great competition among local sign men to secure as many orders for banners as possible, the rivalry being rendered somewhat keener by the shortness of the season during which they are in demand. The nets may be purchased ready made, in all sizes up to 30 ft. × 40 ft. There are firms, also, that furnish oil-color portraits of candidates on sheeting and duck, and in all sizes. Very few sign painters, however, are satisfied to prepare a banner with stock portraits, preferring, rather, to do the entire work, purchasing only the net.

The work is accomplished as follows: First, make a scale design, which is more effectual than photographs in securing orders. Then, in a room having sufficient wall space, stretch the cloth on which the work is to be done. Cotton drilling will be found to be heavy enough for all purposes. In many instances unbleached cotton sheeting is used. The design is duplicated, as all banners show from opposite directions. It is necessary, therefore, to cut out the different parts of the design and make them fit accurately when placed back to back. In Fig. 42 is shown a banner with a ribbon and panel, on which the lettering is placed; the cen-

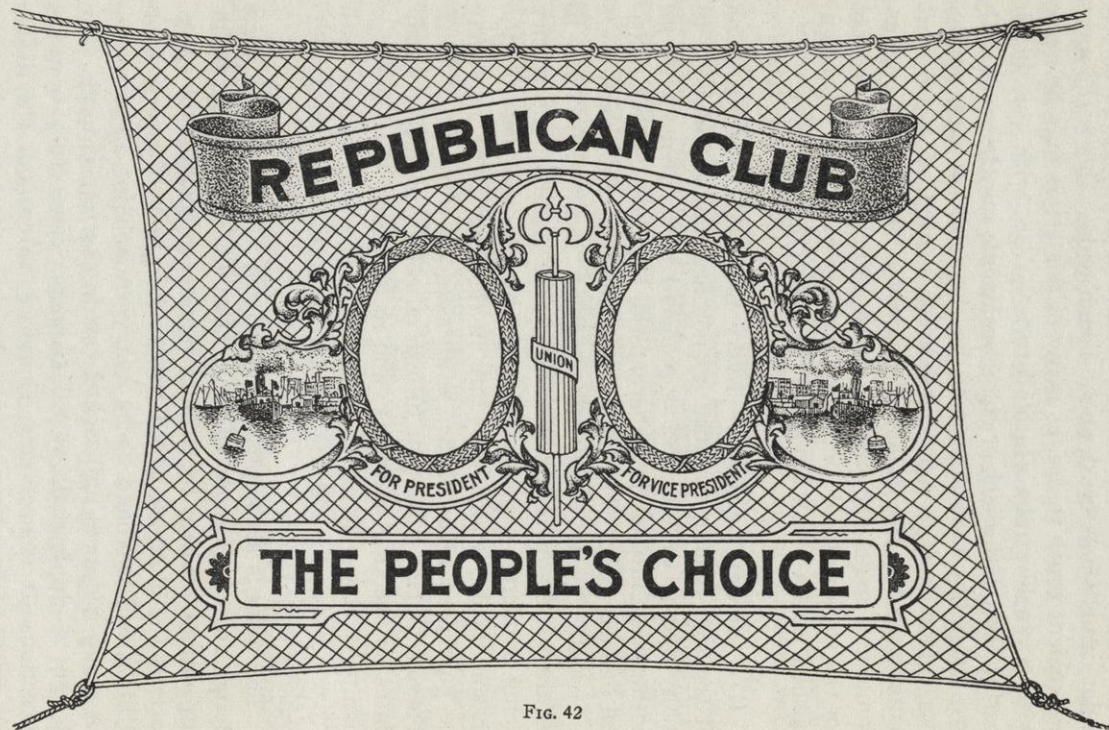


FIG. 42

ter piece containing the vignettes is also shown. In painting and lettering a banner, the sign painter should avoid the use of too much white lead, as this makes the banner heavy and causes it to sag in the center. To attach the designs to the net, one set is laid face downwards, and the net placed over it. The next set is then placed on top, face upwards, bringing both sets back to back, with the net between. The edges are then sewed together, securing them to the strands of the nets.

68. Hanging the Banner.—A $\frac{3}{4}$ -inch Manila or hemp rope should be extended between opposite points on the street and securely fastened. Before fastening one end permanently, the banner should be slid on to this rope, iron rings having been fastened to the top of the banner. To the outside rings at the top corners small ropes should be firmly attached, and carried through a pulley at each end. These ropes should be about $\frac{3}{8}$ inch, or about clothes-line size. The object of operating the banner with pulleys is that it may readily be brought in against the building and fastened during a violent wind storm. A guy rope should be fastened at each of the lower corners, and these should be fastened at the angle shown in Fig. 42. This will hold the banner firmly and prevent the wind from whipping out the corners.

69. Club Transparencies.—For club rooms, wigwams, and headquarters for various political organizations, the sign man prepares all kinds of cloth transparencies. Many of these contain the portraits of candidates, painted so as to be distinguished at night as well as in the daytime. These signs are built by making three frames of 3-inch strips $\frac{7}{8}$ inch thick, covering them with bleached cotton sheeting. They are then fastened together, and a solid top and bottom fitted, leaving the end next to the building open. Fig. 43 shows one form of transparency used. In this design the heads of the candidates are large, and the lettering is confined to the middle section. In some cases, the portraits are placed together on the middle section, and the lettering duplicated

on the sides. Transparencies are usually lettered in red, blue, and black. English vermilion is used for the red, Prussian blue tempered with white for the blue, and best refined lamp-black for the black lettering.

70. Transparent portraits are painted with opaque color, but this is stippled onto the surface of the cloth in such small quantities that, with a strong light at the back of the cloth, every tint and deep shadow is plainly seen. The color

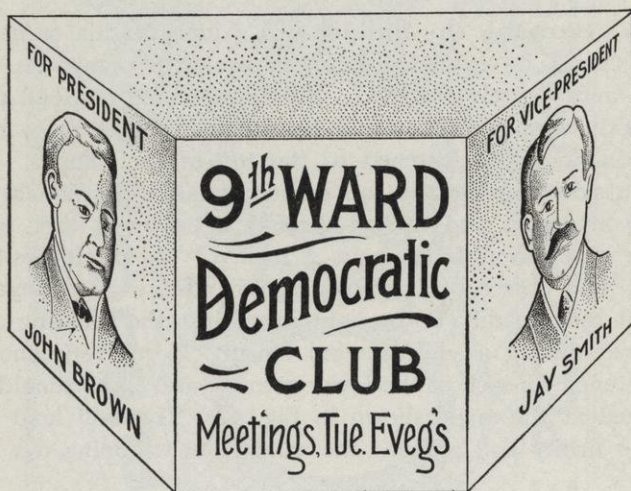


FIG. 43

used for this purpose is prepared by mixing burnt sienna and ivory black, combining these in such proportions as to produce a rich reddish brown. This color is in close imitation of that produced in printing a photograph.

71. Painting the Portrait.—After carefully sketching the outlines by enlarging the photograph, as previously explained, begin by rubbing in, or stippling, the lightest tints of the face with a large stiff sash-tool brush. The brush should be almost free from color. A little of the color should be taken up on the end of the brush and thoroughly rubbed on a clean space on the palette until no appreciable amount of color

remains on the brush. The brush may then be applied with safety to the cloth. There is a tendency, among novices in rendering, to tone a head several shades darker than it should be. Always avoid this by keeping the first portrait too light rather than too dark. Even the deepest shadows should be made by adding color cautiously. Do not attempt to secure the necessary strength with the first application of color, but work over it several times, always rubbing in the color, never laying it on. The details of the face should be made with small bristle brushes, flat preferred. After the head and drapery are finished, rub in a clouded background lightly above the shoulders, and especially on the light side of the portrait.

Hatching is sometimes used for backgrounds, that is, the brush marks are crossed, making them distinct but not dark in color, in contradistinction to blending.

72. Purpose and Composition.—A society banner is prepared chiefly as an ensign to be carried by an organization on parade or drill. While the work is usually seen at a distance, yet there is no work within the province of the sign painter that calls for so accurate, careful, and artistic workmanship as the design on a society banner. Many societies are willing to pay large prices for such ensigns, and they must therefore show a richness commensurate with such a valuation, both in material and in the handiwork of the sign artist. The more elaborate banners are often enclosed in glass cases and kept on exhibition at headquarters. The most expensive banners are made of extra-heavy twilled or grosgrain silk, woven with a smooth surface; this material is known as *banner silk*. There are also heavy satins that are just as desirable as silk, being both durable and rich in appearance.

73. Banner Designs.—The simplest design used for a banner is the large, square or rectangular shape, with a single-color field, shown in Fig. 44. These banners are sometimes 8 feet in length and 5 in height, requiring four men with ribbon guys, besides the standard bearer, to steady

them. A large banner is not the most desirable ensign to carry, and often, in a strong wind, the attempt to do so is abandoned, much to the comfort of the standard bearer. Often, the banner is made greater in width than in height in order to permit of an emblem that is more suited to this form than to the vertical panel form. The general and most popular form is one whose dimensions are from 3 feet to 3 feet 6 inches

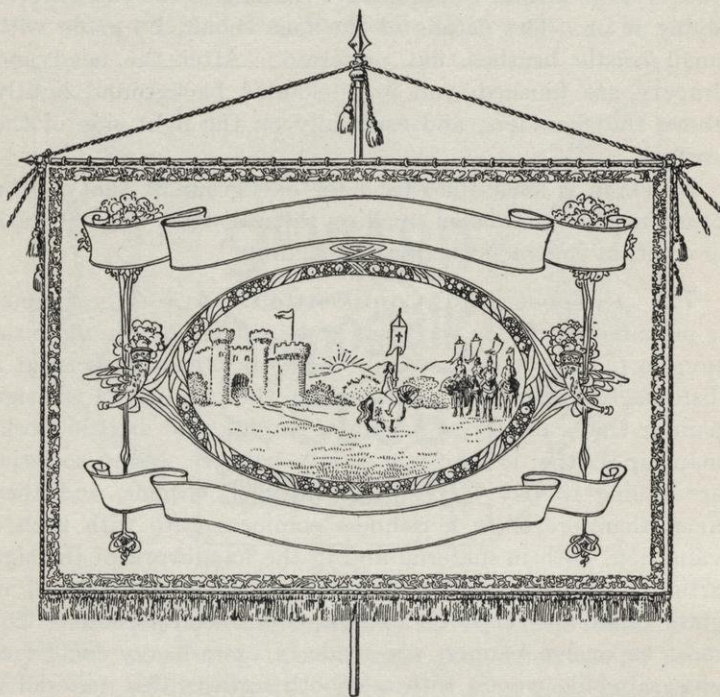


FIG. 44

in width, and from 4 feet to 6 feet in height. The regular width of banner silk is 21 inches, although extreme widths may be had from large silk dealers. In order that the silk may be used with economy, the sign letterer usually designs a banner that will utilize the silk to the best advantage and effect the greatest economy in stock. To do this he often makes the center of the banner the full width of the silk, allowing

for the seam, and widens it to the required size by adding side-pieces of another color. If these were 10 inches wide there would be no waste of material. In Fig. 45 is shown a plain style of banner without the side-pieces attached, but having a hood, which greatly adds to the artistic appearance of a banner. There are no arbitrary rules that govern the selection of colors for banners. A few hints along this line, perhaps, will be of great assistance to one that has never undertaken the preparation of a banner. In selecting the colors and the design for a banner, the entire inscription must first be considered, and if this contains an important word in the form of a name, or a motto, the hood may be used to advantage. If the reading matter is such that equal amounts of the less important wording may be placed on the side-pieces, these may be used to advantage. When the inscription is confined entirely to the center panel and hood, a floral piece or an ornament may be placed on the side-pieces, and in that way the appearance of the banner will be greatly enriched.

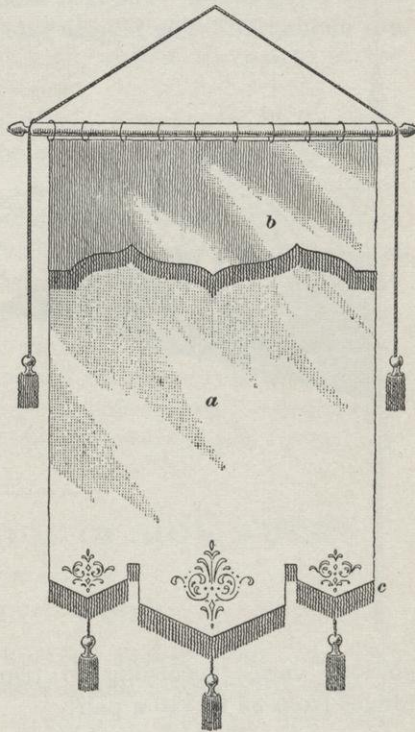


FIG. 45

A white center with pale yellow sides harmonizes well with a deep blue hood. A maroon hood may be used with cream yellow, light blue, and pink. Purple may be used for a hood, in which case it is advisable to combine this with white and cream yellow. The back of a banner may correspond with

the face, if this is to be elaborately lettered, or it may be made of some cheaper material than that used for the face. The hood should never be placed on the back of a banner.

74. Guidons.—Guidons are intended to float with the breeze, and for this reason they are made of one thickness of light-weight silk. The face usually bears one or two letters or a monogram. The reverse side must therefore be lettered

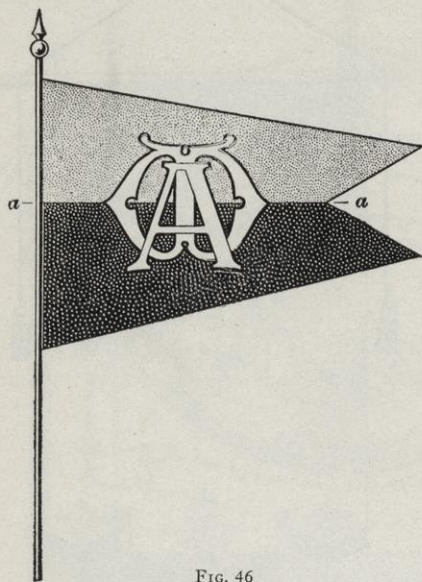


FIG. 46

backwards and finished to correspond with the face, for the reason that the lettering invariably shows plainly on the other side if this is not done. Fig. 46 shows the general design used for a guidon. The regulation size of the guidon is 21 inches in length and 15 inches wide next the pole. The distance between the points is 6 inches. Two colors are often used, in which case they run horizontally, the seam being at *a a*. The price of

guidons varies according to trimmings and lettering, and ranges from \$5 to \$10 a pair.

75. Trimming and Making a Banner.—The sign man usually provides all trimmings for the banner, with the exception of thread, etc. The best banner makers are those who are expert in fancy needlework or art embroidery. It often occurs that their skill in this line is also required on the inscription of a banner. Embroidered letter are often preferred by a customer to gilded or silvered letters, and it is essential, therefore, that skilled and trustworthy needle

workers be employed. The sewing work on a banner usually costs \$5, which includes the material used for lining. The cost of embroidery varies, according to the inscription and size of letters, from \$5 to \$75. The trimmings and attachments of a banner consist of bullion fringe that entirely surrounds the banner, bullion tape that is placed on the edges, and bullion cord that reaches from the top of the pole to the ends of the cross-pole and hangs at either side of the banner. To the ends of this cord, and at the points of the banner, bullion tassels are fastened.

The pole is usually a jointed pole, ornamented at the head with a gold-plated eagle. The cross-pole is of the same wood as the vertical pole (cherry, walnut, or ash), and terminates at each end with a suitable ball or spear head. A strong screw hook is fastened in the vertical pole, and a screw eye in the cross-pole that carries the weight of the banner, though the weight apparently falls on the bullion cord. The banner is fastened to the cross-pole by means of silk tape or burnished brass rings that are firmly sewed to the top of the banner. The tape or rings are slid over the pole before the ornaments have been screwed in the ends of the cross-pole, thus completing the banner.

THE BUSINESS SIDE OF SIGN WORK

SECURING WORK

76. Methods of Marketing Work.—One who has been trained to do artistic lettering and to apply this training to the actual painting and erecting of the sign, must next consider the problem of how to market his work and his services. There are three general ways in which the well-trained sign letterer may put himself in touch with those who are on the market for signs, namely: (a) working on a free-lance basis; (b) working as a salaried employe in a sign shop or studio; or (c) working as the owner of a sign business.

77. Working on a Free-Lance Basis.—If the well-trained sign letterer desires to start by working on a free-

lance basis, he can call in person to see the proprietors of large sign establishments in his city or town, taking with him specimens of work he has done in lettering and sign designing so as to give a clear idea of his ability and qualifications. Then he should ask to be given some work in lettering and sign designing, making arrangements to have payments of his services made on a lump-sum basis or on commission. Such jobs which the ordinary letterer in the shop might not have the time or ability to handle, could be turned over to the student-letterer to do. Such free-lance work ought to be a very good stepping stone to regular employment with a sign company.

78. Working as a Salaried Employee.—Some persons prefer regular employment, at a stated wage, to the uncertainties of the free-lance method of working.

The securing of employment as a letterer in a sign shop, of course, presupposes a number of things. There must be, first of all, the sign shop, and there must be the demand for letterers. Therefore, the letterer who wants to work as a regular salaried man must go where the demand exists; say in a large town or city. Then he must demonstrate to the proprietor of the sign shop—by specimens of his lettering and his sign designing that he takes with him—that he can be of service to, and earn money for, the man who is running the shop.

When once he has been employed, it remains for him to do what he is told to do, and to turn out the best work of which he is capable. In a modern sign shop he will have every opportunity to do all kinds of lettering and designing and to apply practically what he has learned.

79. Working Up a Sign Business.—Many young letterers are eager to start a sign business of their own before passing through the stages of free-lance work and salaried-employee work. To make the attempt at the very beginning to equip and run a sign shop is a very uncertain undertaking; and the beginner in the field of sign lettering is advised against it. Only by working in the more modest capacities can the

beginner become familiar with the various classes of signs that are in demand in his locality, and learn the thousand and one things about shop practices, tricks of the trade, color, and brush handling, sign making, business practices, etc., that he should know.

80. If, however, the young letterer lives in a small town or village where there are no sign shops and where there is a need and demand for signs, there is no reason why he cannot establish himself as a sign letterer. To do so, he should first of all investigate the demand for signs, by canvassing all the merchants in his own town or village and those in neighboring ones. Then, when he is satisfied that there is a demand for signs, he should among other things pursue some or all of the plans outlined below in the form of items of advice.

1. Review all the Sections and Plates of the Course and note with care all references made therein to materials, shop equipment, etc.

2. Subscribe to a good trade paper or magazine devoted to the interests of sign letterers, card letterers, etc. Such a magazine will be recommended, if desired.

3. Have your name placed on the mailing lists of the large concerns dealing in supplies for letterers, sign men, etc. The names and addresses of such firms can be secured from the advertising pages of magazines such as have already been referred to.

4. Get up a business card and a brief typewritten or printed letter, and send them out to the merchants that your preliminary canvass showed you would make good prospective clients or customers for lettering and sign work.

5. Follow up your mailing of cards and letters by personal calls on the various merchants, asking them to give you a chance to demonstrate by small sketches what kind of sign work you can make for them—and later, by actual signs prepared for them.

6. Make the acquaintance of all the men in your town who handle paint in any form: house painters, carriage and automobile painters, and even other sign men, but par-

ticularly those men who deal in paints and painters' supplies. Ask questions freely of these men regarding brushes, paints, the proper paints for certain materials and surfaces, etc. A great deal of helpful information can be picked up in this way.

7. Seize every opportunity that presents itself to go to neighboring towns and cities for the purpose of making a careful and critical study of the signs (particularly the new work) that are displayed. *This is absolutely necessary.*

8. Set aside a room in your house, or in a barn or shed, or rent a small place somewhere to use as a permanent shop and equip it as directed in the preceding Section on Painting and Gilding, observing also the instructions in paragraphs 2, 3, and 6 above.

Many other necessary points of procedure will suggest themselves to the individual student, these being suited to the student's local circumstances and surroundings. After that, it simply remains to make the sign, deliver and erect it, and get his payment for it. The matter of prices that should be charged will now be discussed.

PRICES TO CHARGE

81. Estimating Cost of Work.—Prices for sign lettering vary in different localities, therefore an arbitrary schedule of prices cannot be given that will be strictly in harmony with those asked by sign men generally. For all small signs and for lettering the sign man endeavors to establish a certain price that may be readily named to a customer; but for all large signs and various sign contracts, he is given the privilege of deliberately considering the work in question; after carefully estimating the cost and allowing for a fair profit on the work, he submits his proposal in writing, either sealed or open (the former preferred), and awaits the pleasure of his prospective customer. A sketch of the work usually accompanies the estimate; and when this is carefully and artistically prepared, the bidder's chances of securing the work are greatly increased, all other

points, such as his reliability and the relation of his estimate to those of others, being taken into consideration.

There are many classes of work on which, to a considerable extent, fixed prices are set, which vary but slightly throughout the country. The following is an endeavor to specify, as far as possible, all classes of work on which charges are comparatively uniform. It is based on charges made by many of the leading sign letterers.

No list of estimated prices can be considered fixed or standard. When estimating his charges on work to be done, the letterer must take into consideration the peculiar local conditions and circumstances of the city, town, or region in which he lives.

82. Black Lettering on Office Doors, Etc.—This simple form of lettering used to be figured per line, but is now figured per letter. The charge is, for letters up to 3 inches in height, 10 cents per letter; over 3 inches in height, 15 cents per letter.

83. Black- or Red-Lettered Muslin Signs.—Sign writers' muslin is used for signs; and, for a sign 3 feet $\times$ 18 feet, black or red letters, ordinary copy being used; such a sign not on frame, should cost \$7.50. Including frame and hanging, it should cost \$15.00.

84. Dead-Wall Lettering.—White letters on a black ground of dead wall should be charged for at the following rates: One coat, and lettered, up to 500 square feet, 12 cents per square foot; up to 1,000 square feet, 10 cents per square foot; over 1,000 square feet, 9 cents per square foot. Two coats, and lettered, up to 500 square feet, 15 cents per square foot; up to 1,000 square feet, 14 cents per square foot; over 1,000 square feet, 12 cents per square foot.

85. Stair-Riser Signs.—Zinc, or thin wood strips, lettered and fastened to risers on stairways are riser signs, and, being of ordinary size, should be charged for as follows: If in color, \$3 each; if in gold lettering, \$4.50 each.

86. Sidewalk Signs.—For a standard sign, of simple shape, say 2 feet by 5 feet, both sides painted, the charge would be \$1.25 per square foot for the board and the painting. The lettering would be extra, to be charged for at the rates for lettering (black, colors, or gold) as given elsewhere.

87. Japanned-Iron Plates.—For two or three lines of lettering, on japanned-iron plates, 10 inches $\times$ 14 inches, lettered in gold or in colors, the charge should be \$2.50 each.

88. Wire Roof Signs.—For a wire sign on a roof, sign 6 feet $\times$ 15 feet, the charge, including frame and wire and painting should be \$1 per square foot. This does not include the metal letters, which would be extra, the cost depending upon size, etc.

89. Painted Window Lettering.—For painted work on windows, two coats of white, charge 60 cents per square foot for painting. For two coats of white on the letters, the charge would be one half that of gold lettering—as given further along in this list.

90. Plain Board Sign, Painted Letters.—For a plain board sign, 2 feet by 15 feet, painted letters cut in on black smolted ground, charge as follows: Board, primed and coated, ready for lettering, \$30. Charge 25 cents each for letters up to 4 inches in height; 35 cents per letter for letters from 4 inches to 8 inches in height; and 4 cents per upright inch for letters taller than 8 inches.

91. Plain Board Sign, Gold Letters.—For the gold lettering, charge 12 cents per upright inch for each letter.

92. Gold House Numbers.—For house numbers, in gold, not exceeding four figures in the group, figures not over 6 inches in height; charge \$6 for the sign.

93. Gold-Leaf Lettering on Glass, Black Shade. For ordinary gold-leaf lettering on glass, black shade to letters, charge as follows: Plain gold letters: $12\frac{1}{2}$ cents per upright inch, each letter. Two shades of gold: 17 cents per upright inch, each letter.

94. Gold-Leaf Lettering on Glass, Colored Shade.

Same charges as above, if only one shading. For each additional shade, charge 10 cents per letter extra.

95. Silver-Leaf Lettering on Glass, Black or Colored Shade.—Same charge as for gold-leaf lettering, because of difficulty in laying silver leaf.

