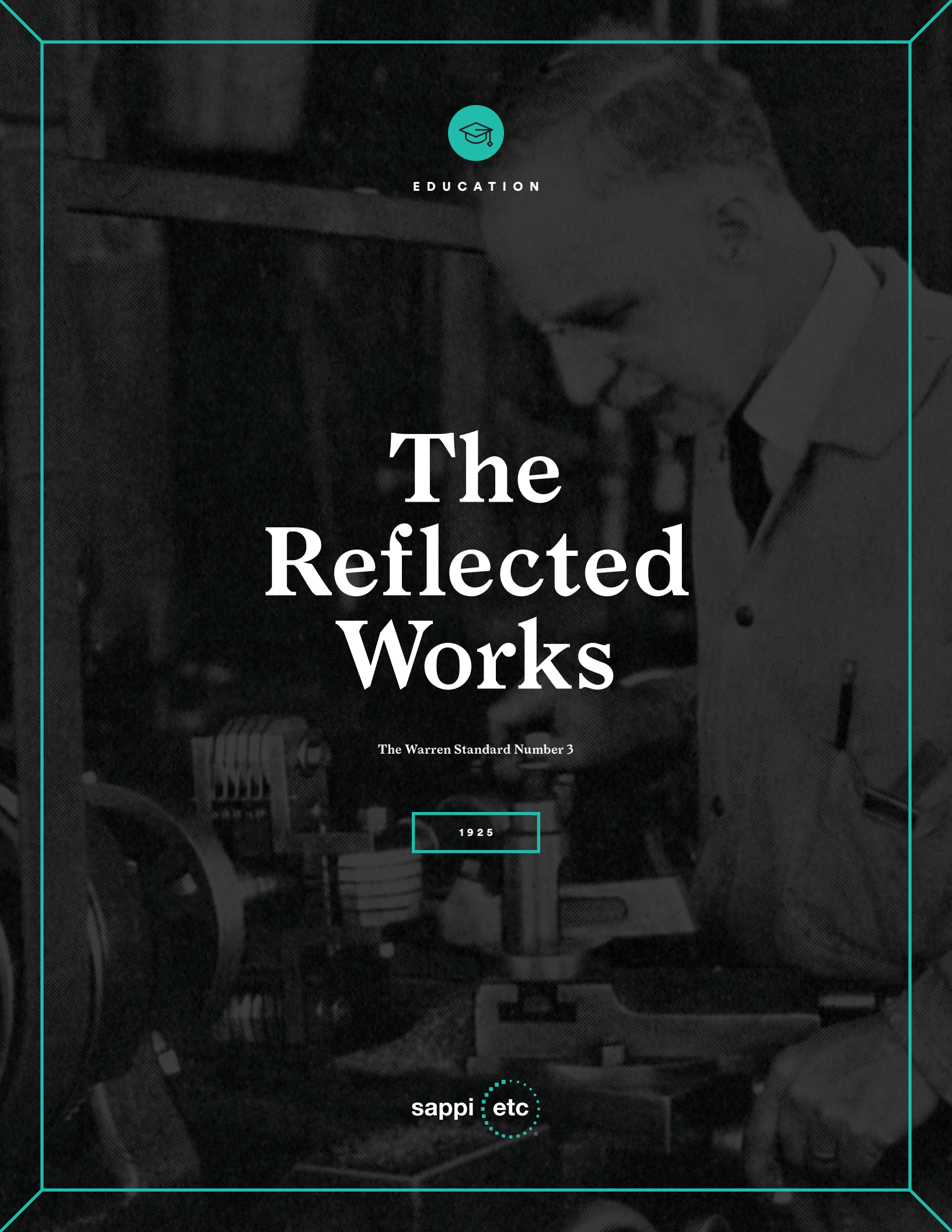

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THE WARREN STANDARD

Making Pictures as Well as Type Easy to Read

Obtaining Same Detail Effects with Halftones of Different Screens

Effect of Size on Halftone Detail

Number Three
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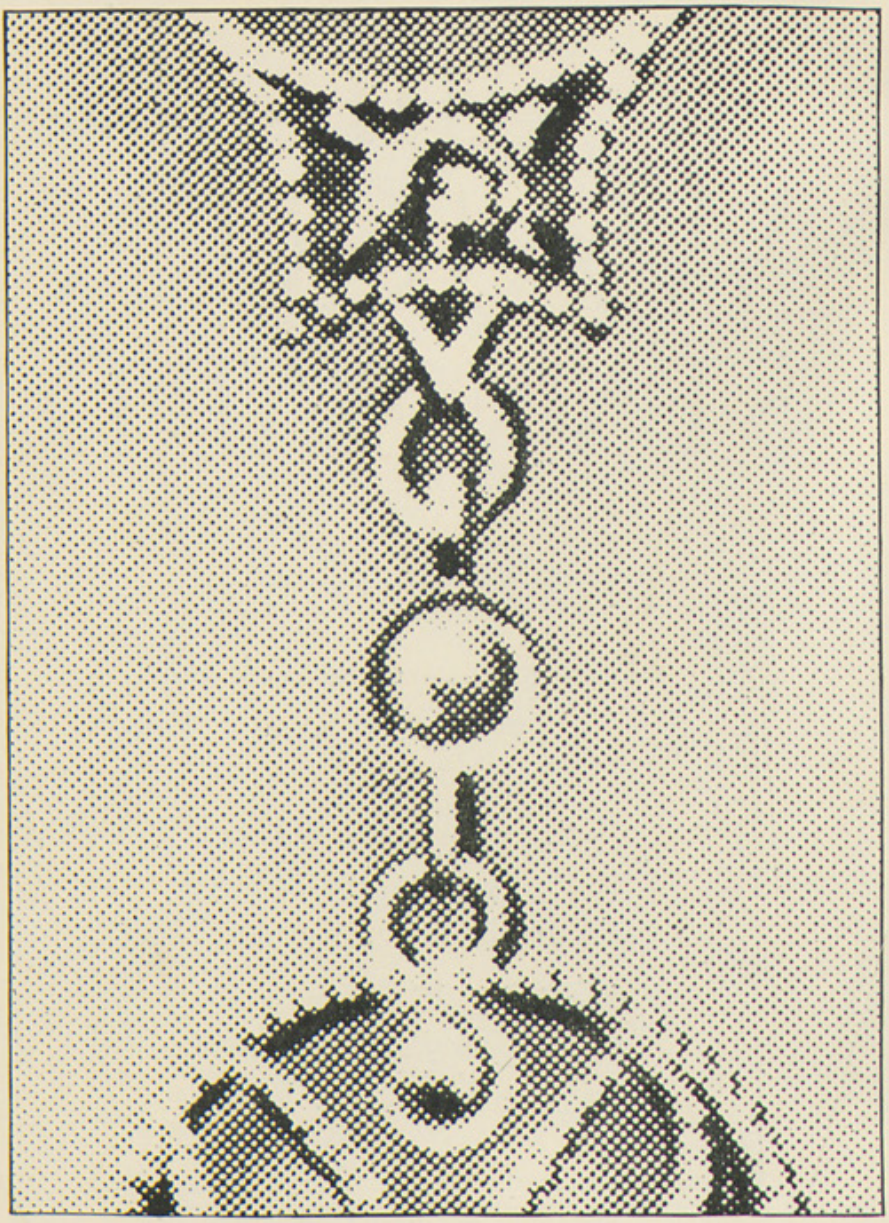
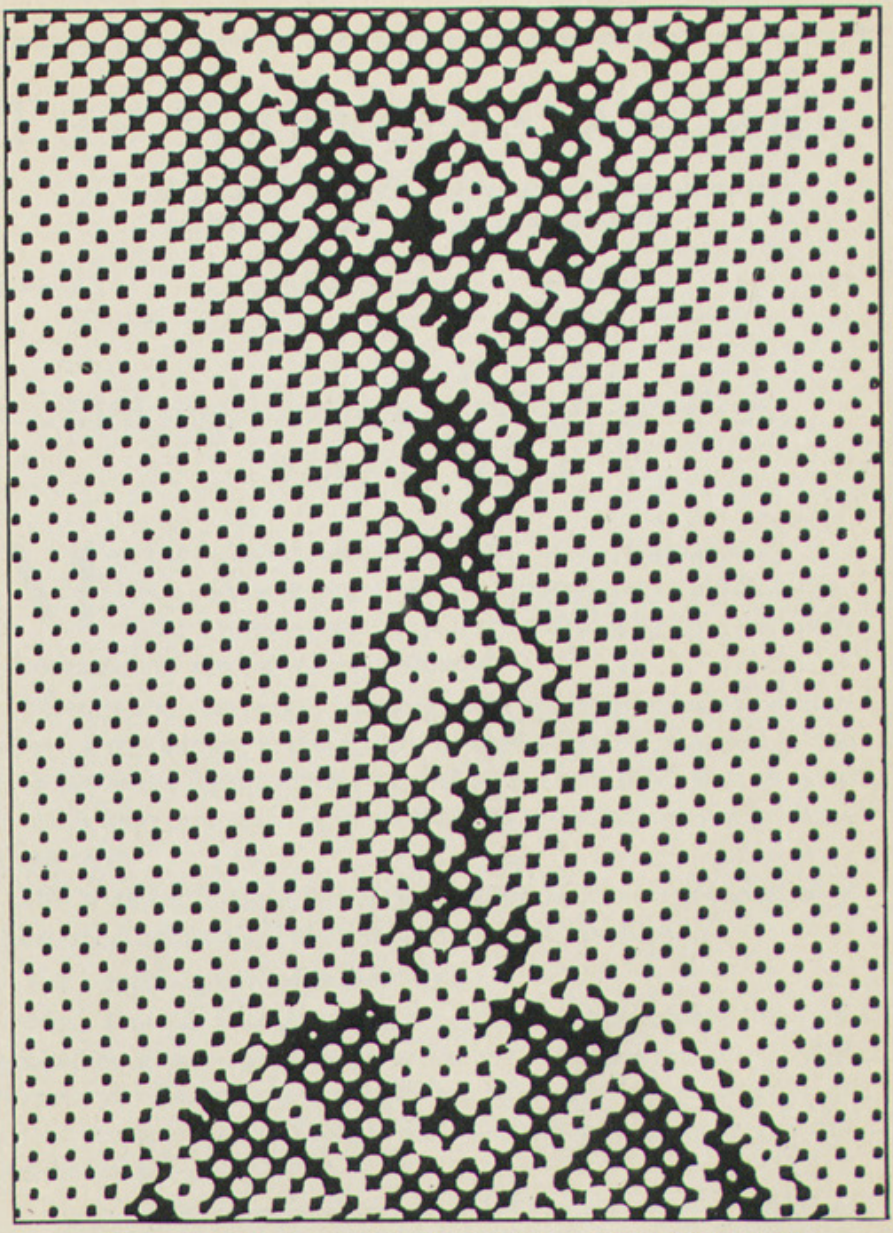


EIGHT-TIME ENLARGEMENT OF SECTION OF 175-SCREEN HALFTONE

THESE enlargements show the loss of detail in a coarse screen halftone of a section of a diamond pendant, as compared with the detail carried in a fine screen halftone of the same subject in the same size.

This book shows how this loss-of-detail difficulty may be overcome when it seems desirable to print halftones in coarse screen on plain papers, and at the same time to maintain a definite amount of detail.



EIGHT-TIME ENLARGEMENT OF SECTION OF A 65-SCREEN HALFTONE

Since it is the number of halftone dots in the area of any picture that defines the detail in that picture, it is possible to carry in a 65-line screen any amount of detail desired—the same detail as in the 175-screen picture shown here or any other amount—simply by enlarging the size or area of the coarse screen picture until its area is such that it includes the number of dots necessary to hold the desired detail.

See succeeding pages for demonstration.

THE WARREN STANDARD

In which will be published from time to time articles on various paper and printing problems

Number 3 S. D. WARREN COMPANY, BOSTON 1925

Making Pictures as Well as Type Easy to Read

"MAKE type as readable as possible," say typographers. "It is of first importance that type matter be read *easily*. "The printed page must invite the reader—make him predisposed to read a message through."

Printers and planners of printing generally appreciate the importance of this advice, and legibility of type *is* regarded as one of the first requisites for successful as well as beautiful printing. A good deal has been said about it. A good deal of emphasis has always been given to it.

Not so much thought has been given to the matter of legibility of illustration where type and pictures must be combined.

Yet a special problem is presented.

Most types appear gray and are difficult to read when they are printed on glossy coated papers. These same types stand out, with marked increase in tone and legibility, when they are printed on the softer surface papers, though the size and arrangement remains identically the same.

This increase in legibility does not hold in the case of halftones of equal size that must be transferred from glossy coated papers to plain papers, in the interests of legibility of the type they accompany, because a coarser screen must be used to print on plain papers. This coarse screen partly destroys the detail of pictures as shown in succeeding pages.

Pictures are often as important as type matter in putting across a story. They tell in some single detail, perhaps, as much as paragraphs of type could tell.

Many times illustrations are *more* important than the type that is used with them. They may be accompanied by only a few explanatory lines. If the type, in such a case, should be legible, what about the pictures?

Again, illustrations may be only incidental to the type story.

But if it is worthwhile to use pictures at all, whether prominently displayed or only supplementary to text, it is worthwhile making them serve the purpose in the very best way possible.

How should halftones be handled on uncoated paper?

Just as of type, we might well say, "Make the illustrations as readable as possible.

"It is important that illustrations be read *easily*.

"Illustrations must invite the eye. They must give their message in as complete detail as possible."

In the case of halftones, if the most is not made of significant detail or of the whole picture, much of the value is lost.

Yet how often we say of halftones we see, "The detail is not good there. If detail could have been reproduced more clearly, the pictures would have been more interesting."

Maybe, in an effort to hold detail, a screen that is too fine to print well on the paper surface in question has been used with unsatisfactory results. Maybe the picture, though it is clearly printed, seems too small for the number of objects in it. The whole picture has been crowded into too small a space for individual units to be well defined. Printers and engravers realize what these troubles are, and are familiar with the methods that can be employed to get good "readable" halftone illustrations. Customers, however, are not always informed on these points. They do not realize why it is that certain things have to be done to get good results.

The demonstrations on the following pages may prove interesting and useful in showing economical ways of getting greater halftone legibility in all kinds of printed pieces.

Two main points are covered:

First, To get greatest detail reproduction in halftone prints, the screen must be suited to the paper stock. This is necessary, in order that the halftone dots be clearly printed. It is possible, by adjusting the size of the illustration, to get exactly the same detail value with a 100 or an 85 screen halftone on uncoated or machine book paper, as with a 150 screen halftone on coated paper. Little legibility need be lost by using the coarser screens, and printing can often be done much more economically by using the plain papers that are suited to the job in hand. The one necessity, as is pointed out in the following pages, is that the coarser screen print be larger, in order that its overall area may contain the same number of halftone dots as would the finer screen print in a smaller size. Two pictures—one coarse screen and the other fine—have practically the same detail value if the number of halftone dots in each *is* the same.

Second, Holding to one screen, the details in any object or objects pictured may be increased in direct proportion as the size of the illustration is increased, because as the picture increases in size there will be more dots defining each unit or area.

The relation of halftone dots to detail in pictures

When we look at any halftone illustration it is the sum total of the dots of which the printed picture is made up that tells us the picture's story. The legibility of the picture—the ease with which we can read its details—depends on these dots, the clearness with which each dot is printed and the number in each square inch of surface.

If two pictures of the same size have approximately the same number of halftone dots to each unit of subject illustrated—say a man's eye or ear—and the pictures are printed equally well on the same kind of paper, then obviously the two pictures will be about equally legible.

(*Continued on page 8*)

FIG. 1. *This halftone, tipped in, is 150 screen, 1¾ inches square, and contains about the same number of halftone dots as halftone in Fig. 3. Printed on Warren's Lustro*

THE pictures on these two pages and on pages 6 and 7 show that it is possible to enlarge two pictures of different sizes and screens to the same size and to get in the two enlargements the same detail value. Figs. 1 and 3 are the starting points for the demonstration. Here are two halftones of the same subject, one 150 screen and the other 100 screen. The 150 screen print is smaller than

FIG. 2. *This is a photographic enlargement of Fig. 1, thrown up to 4 inches square. Note similarity in tone and detail to Fig. 4*

the 100 screen. But each area contains about the same number of halftone dots. In turn, these are enlarged photographically, to Figs. 2 and 4, which are the same size, four inches square. There is more of an enlargement where Fig. 1 is thrown up to Fig. 2 than in the case of Fig. 3 to Fig. 4.

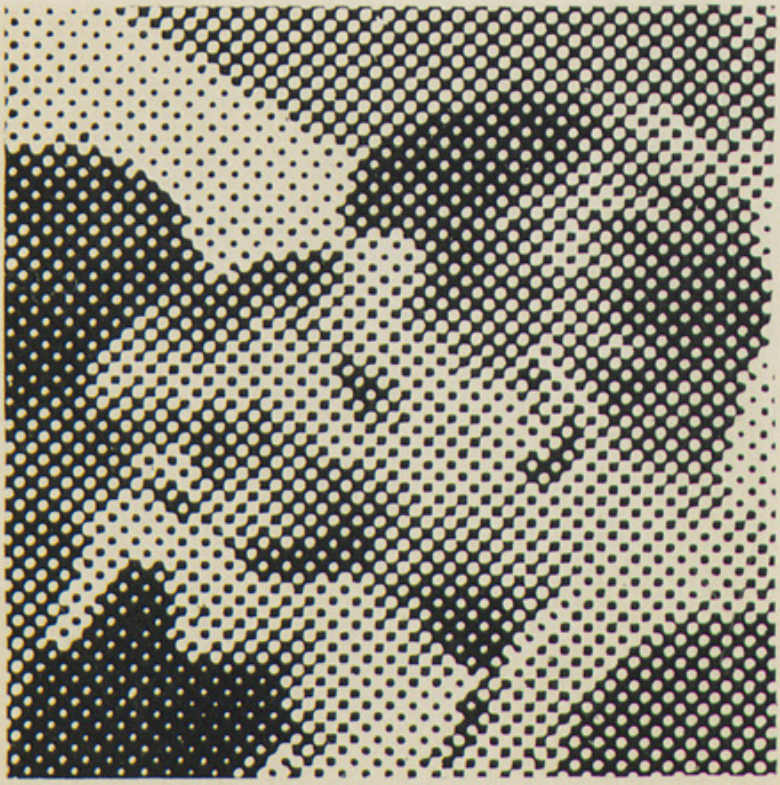
FIG. 3. *100 screen, 1 13/16 inches square. Contains about the same number of halftone dots as halftone in Fig. 1. Printed on Warren's Lustro and tipped in*

FIG. 4. *Enlargement of Fig. 3 to 4 inches square*

FIG. 5. *Print from electro made of the upper right-hand square inch of the plate from which Fig. 2 was printed*

Though the halftone dots were closer together in Fig. 1 than in Fig. 3, they are dissipated over a larger area, in proportion to the original area, in Fig. 2 than are the dots in Fig. 3 in the Fig. 4 enlargement. The result is a very nearly identical spread of dots over the four-inch area, in each case. Figs. 5 and 7 are square-inch sections of Figs. 2 and 4. These are, in turn, enlarged four times to equal size, in Figs. 6

FIG. 6. *A four-time enlargement of Fig. 5 to make it easy to count the actual halftone dots in area*



and 8, making it very easy to see the equality of dots in each enlarged area. In Figs. 1 and 3, then, the detail is carried by the same number of halftone dots. The 150 screen of Fig. 1 would not print well on plain paper. Fig. 3, which as is here demonstrated has the same number of halftone dots or detail carrying value, does print well on a plain surface.

FIG. 7. *Print from electro made of the upper right-hand square inch of the plate from which Fig. 4 was printed*

FIG. 8. *A similar enlargement, four times, of Fig. 7. The halftone dots in each picture can easily be seen to be the same in number*

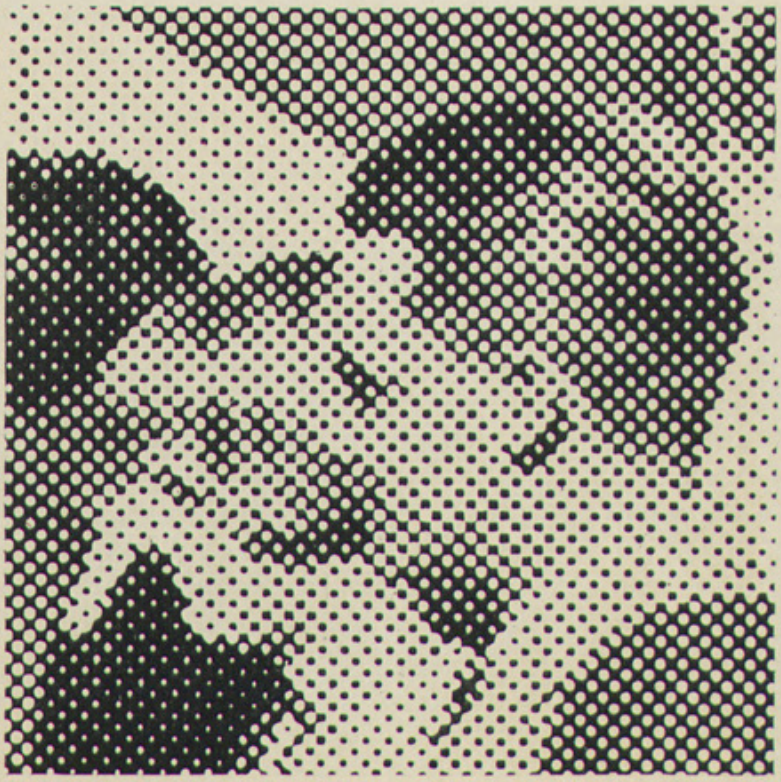


FIG. 9. *100 screen halftone. An example of losing legibility by crowding too many figures into small space. Details do not stand out clearly*

(*Continued from page 3*)

It is equally true if the area is different in the two pictures, they will be legible in practically the same degree even though the dots are smaller and closer together in one picture (finer screen) and larger and farther apart in the other (coarser screen), *if the number of dots remains the same in each*. The coarser screen picture will cover a greater area. That is all. Because there are the same number of dots giving detail, the two pictures tell the same story.

Getting same detail with coarse and fine screens

Halftone Fig. 1 is an inch and a quarter square, in 150 screen. There are 150 dots, then, to the inch, defining the detail of the figures around the table, or 150 x 1¼ or 187½ dots across the width of the picture.

Fig. 3 is a halftone 1 13/16 inches square in 100 screen. This halftone has 100 x 1 13/16 or 181¼ dots across the width, defining its details. The number of dots in each is approximately the same.

To make this clear, and show that the legibility of one is just about the same as the other, Fig. 1 is enlarged to four inches square in Fig. 2 and Fig. 3 is thrown up to the same size in Fig. 4. A study of these shows that a 150 screen print and a 100 screen print can, under the restricting condition of having approximately the same number of halftone dots, carry the same detail and tone.

Graphic proof that this equality of detail value is due to the fact that both contain about the same number of dots is clearly shown on pages 6 and 7.

Figs. 5 and 7 are prints from electros made directly from the halftones in Figs. 2 and 4 respectively. Fig. 5 is printed from an electro of the upper right-hand square inch of Fig. 2. Fig. 7 is printed from an electro of the upper right-hand square inch of Fig. 4.

Figs. 5 and 7 are then enlarged four times to equal sizes. Fig. 5 is enlarged to Fig. 6 and Fig. 7 is enlarged to Fig. 8. The resulting pictures make it easy to count actual halftone dots in one, as compared with the other. They are practically the same.

Enlargements of any two halftone prints that bear this relation of size and screen will show the same number of dots to each unit.

It is a valuable thing for the planner and user of printing to be able to manipulate sizes and screens and still hold the same detail value.

It enables him to use an economical plain paper like Cumberland Machine Book when it best fits the conditions surrounding the production of a job, with the proper coarser screen halftones to print well on that surface—and with that combination get nearly as good

FIG. 10. *This is the same group picture as in Fig. 9, about two and one-half times enl inch in this picture as in Fig. 9, but the size of each figure has been increased to cover*

detail results as from a smaller fine screen halftone on more expensive paper. It is true, however, that to gain certain effects and impressions of smoothness and gloss, coated papers are generally more satisfactory.

This relation gives the planner of illustrations a guide, also, for working from larger coarse screen illustrations to smaller, finer screen effects. The only necessity, to keep the same detail, is that the number of dots be kept approximately the same, whether you enlarge the illustration and decrease the screen lines or the dots to the square inch, or make the illustration smaller and increase the number of screen lines or dots to the square inch.

How detail increases with size of halftone

The second thing it is important to remember when planning legible halftones is that the larger the illustration, holding to one screen always, the more readable individual details of the picture will be.

(Continued on page 15)

enlarged. Same screen—100. There are just the same number of halftone dots to the square er more dots. Therefore, the picture is more legible, as it has more dots in it to carry detail

FIG. 11. *This picture is an enlargement, about twice, of Fig. 10. It is still in 100 screen. Yet note the clearness with which detail is brought out, compared with the detail in Fig. 9. In each successive picture, Figs. 9, 10 and 11, there has been no change of screen, simply an increase in area or size of the picture. Compare the legibility here with that of the two groups preceding*

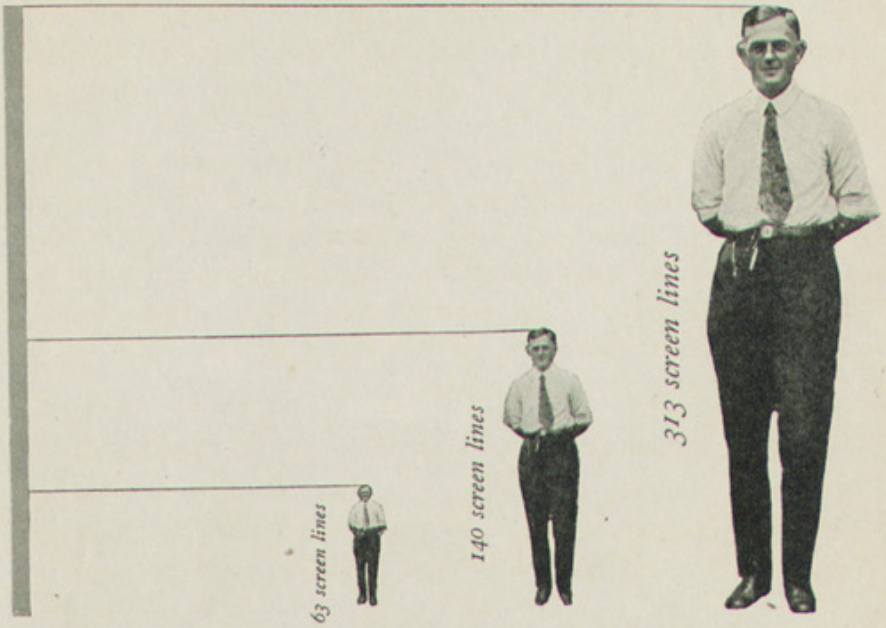


FIG. 12

The three men above appear in the three relative sizes of the group pictures, Figs. 9, 10 and 11, from which they are taken, and show clearly the increase in legibility that comes from increase in size, although the screen remains constantly the same. The screen here, as in each of the group pictures, is 100. As a measure, a strip of screen lines—100 to the inch—has been placed at the left. The screen line that comes on a level with the top of each man's head has been extended to touch it, to make comparison easy. By actual count there are 63 100-screen lines to the height of the smallest man—or 63 halftone dots—140 screen lines to the next larger and 313 to the largest man

More actual details will be shown in a print of an 85 screen halftone, four inches square, than in a print one inch square of the same subject reduced. In the smaller picture, the whole story would be told by a total of 7225 dots. In the picture, four inches square, it would be told by approximately 115,600. In the four inch picture, 16 dots would represent the portion of the picture that one dot would represent in the square inch picture. The 16 dots can tell more detail. As the size of a halftone increases, the amount of detail held increases proportionately, because more dots are available to reproduce each portion of the picture.

Consider the outline of any one object in the two pictures. In the

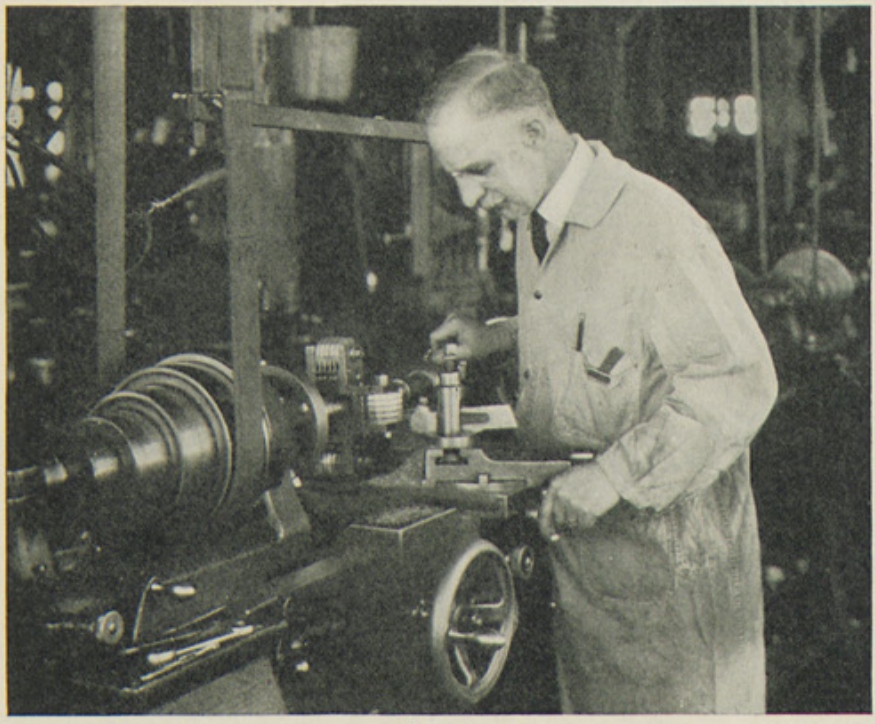


FIG. 13

This photograph was taken to show a machine operation. For effectiveness, compare with Fig. 14

four-inch print, the outline of that object would actually enclose more halftone dots than the outline of the object in the smaller picture.

A careful study of the small group picture at the top of page 8, the enlarged group picture on the opposite double-fold page and the still larger one in the center spread, all in the same screen, will show the increase in detail that comes with increase in size of illustration.

Note the lack of individuality in any of the persons of the group in the smaller picture. The general impression is that of a *group*—and not much interest is aroused by the individuals in that group. Men as *individuals*, however, become interesting at once when you turn to the center spread. You know about them. The picture tells you more about them. It is easier for you to read the picture.

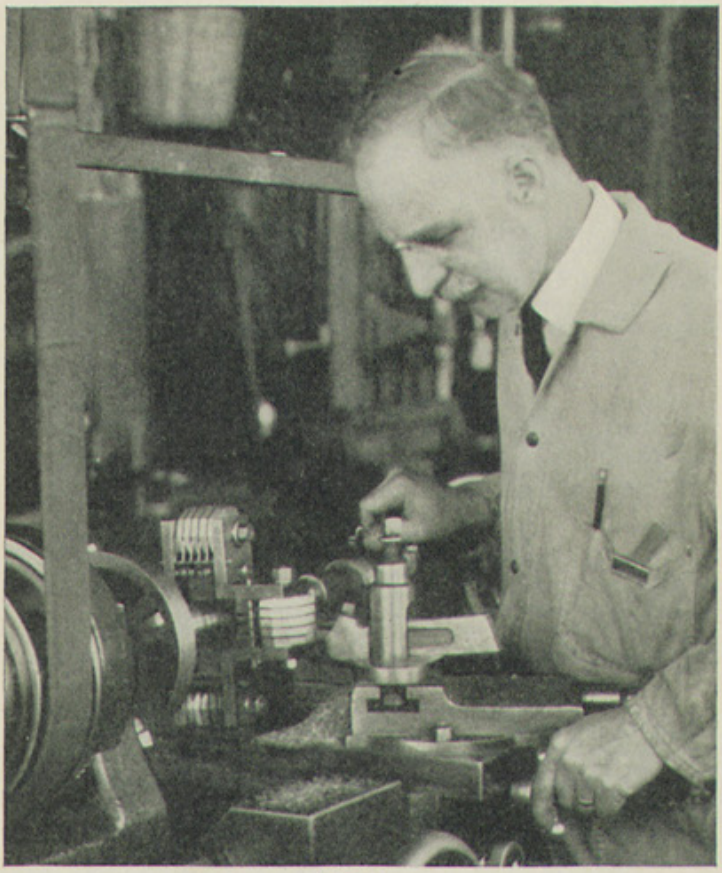


FIG. 14

Same photograph after unessentials of background have been cut away, and the picture has been enlarged to show details. Both halftones are 100 screen and have the same number of square inches in area

Eliminating unessentials helps to secure greater detail in pictures

The size of pictures which may possibly be used, of course, is not always flexible. For instance, size of pictures is often limited by the size of the page or of the printed piece in which they are to appear. It often happens that keeping the printed piece to some standard size or to some size that will fit in a standard size envelope or will go

FIG. 15
Original picture from which enlarged section in same screen and same area on next page is taken

with some other material already planned is of more importance than the size in which individual pictures will be run.

Again, column widths or depth of space in newspapers and magazines may dictate the choice. Or the relative importance of the picture

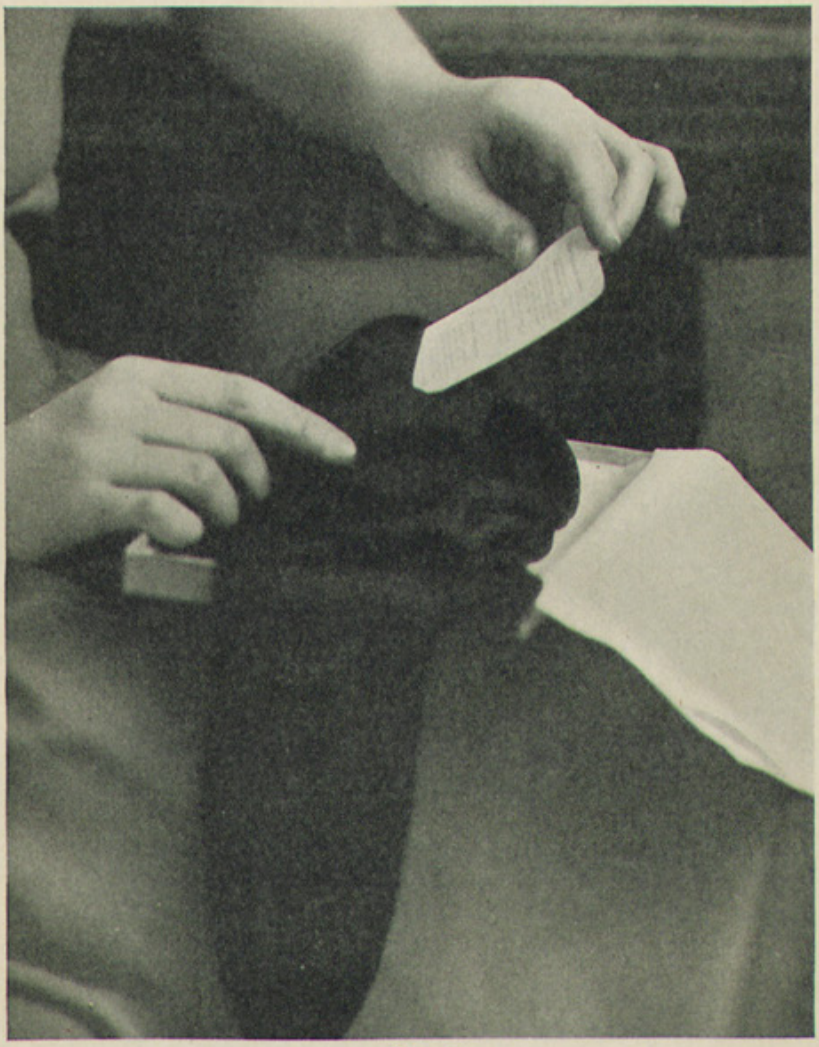


FIG. 16
Same picture cut down to the hands, the package and insert, to focus interest on that particular portion. Both 100 screen halftones

to the type story with which it is used. Each user of pictures will have to study his own problem, keeping in mind that there is a maximum effect he can gain, within the limitations that happen to surround the particular job. One thing to remember is that you can always cut

(Continued on page 22)

The relation of areas and screens necessary

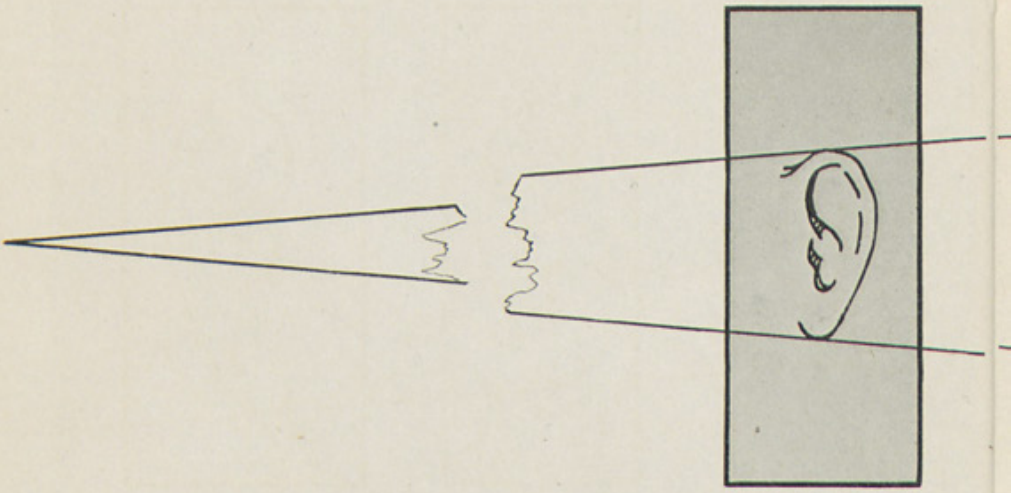


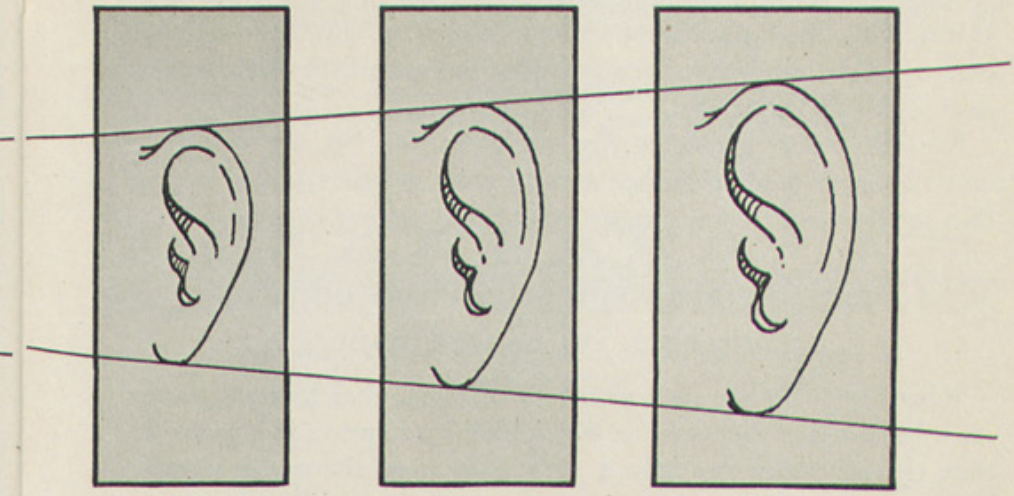
FIG. 17. *If the same subject—an ear for instance—is to retain the same printed from halftones of various screens, 150, 120, 100 and 85, the area*

The diagram above shows the general relation of size of illustration and screens when the legibility, or actual number of halftone dots, remains the same in each picture or portion of a picture, but areas are increased and screens are made correspondingly coarser.

An ear has been chosen for this demonstration, as it seems to be a subject which makes the point of this discussion and the application of the theory particularly clear. It is very often legibility of the human figure that we are interested to get.

The smallest drawing of the ear has a 150 screen laid over it. The next has a 120 screen overlay, the next 100 screen and the largest 85 screen. In each case, the ear, from tip to tip, covers just 150 dots—or if the diagrams were straight halftones the detail of the ear would be defined by 150 dots in each case.

to preserve same detail in halftone illustrations



120 Screen *100 Screen* *85 Screen*

amount of detail, it must be defined by the same number of dots. When increases as the screen becomes coarser, as shown in the diagram above

Lines drawn through dots in similar positions in each picture converge to a point. Dots defining every other portion of the four ears are distant in the same relation, from these dots, because of the nature of the screen. And there are the same number of dots in each section.

Therefore, straight lines from this point of convergence through each dot in the 150 screen ear will pass through dots in similar positions in each of the coarser screen halftones.

Looking at it in another way, the three larger ear pictures may be thought of as successive photographic enlargements of the 150 screen picture. As the number of dots in the 150 screen ear are dissipated over larger areas, as the size of the picture increases, they take, in turn, positions they would assume if they were straight prints from all the intermediate coarser halftone screens.

(*Continued from page 19*)

out and discard the unessentials of a picture and enlarge the important part. Figs. 13, 14, 15 and 16 show the results of such cutting.

Retaining the significant portion of a picture, and throwing that part up to the maximum size advisable, is an expedient often used to gain attention for details.

Note the effect gained in Fig. 16 by cutting Fig. 15 to include only the hands holding the box and the package insert, and enlarging that section to the same size as the original picture.

Why coarser screens must be used on uncoated papers than on coated papers

When you make the statement to a customer that halftone plates must be suited to the paper on which they are to print, it is probable that the customer has only a very hazy idea about the reasons involved.

By showing him the plates below and on page 23, you can make these reasons very clear to him.

Figs. 18, 19 and 20 show how rough the surface of newspaper stock is, in comparison with that of machine finish and coated

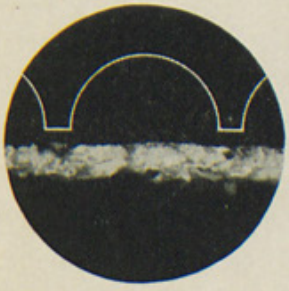


FIG. 18. *Enlargement showing edge of a piece of newspaper and cross-section outline of coarse screen halftone suited to it*

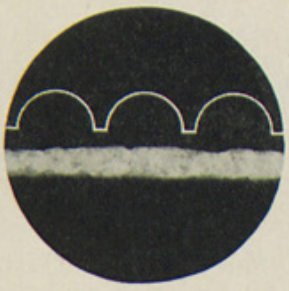


FIG. 19. *Enlargement showing edge of a piece of super paper and cross-section outline of medium screen halftone*

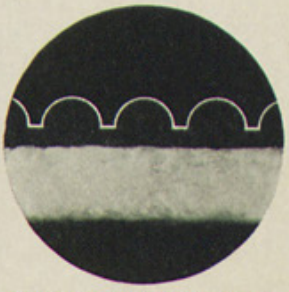


FIG. 20. *Enlargement showing edge of a piece of heavy coated paper and cross-section outline of fine screen halftone*

All enlarged 50 times

papers. They show, also, the cross-section outlines of the coarse and fine screen halftones that are most suitable for printing on each.

(*Continued on page 24*)

FIG. 21. *Cross-section diagram showing the impression of a 120 screen halftone on a piece of coated paper. The ink is being transferred from the surface of the dots only. The impression is just sufficient for the paper to meet each dot lightly*

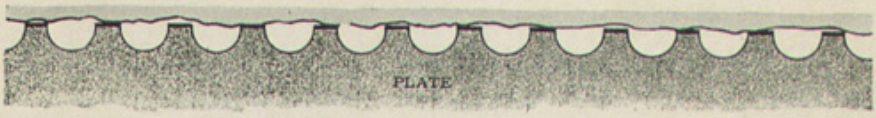


FIG. 22. *Cross-section diagram showing a 120 screen halftone being printed on rough paper. The impression is just sufficient to take the ink from the surface of the dots. Consequently some dots do not print, as they do not come in contact with the low areas of the rough or uneven surface*

FIG. 23. *Cross-section diagram showing a 120 screen halftone being sufficiently squeezed into rough paper to make all dots touch. This creates excessive pressure from the high spots of the paper, causing the ink to spread and to be taken from the sides of some of the dots. This will produce a heavy, muddy result*

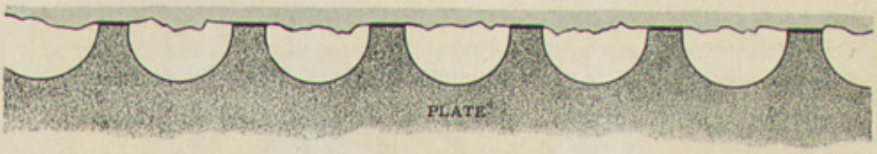


FIG. 24. *Cross-section diagram showing a 65 screen halftone printed on rough paper. Although the printing area of each dot is larger than shown in the foregoing diagram, the increased space between the dots will produce the desired tones of light and shade, and will obviate the heavy, muddy result produced by the finer screen plate*

Magnification in all four diagrams about 40 times

Illustrations on pages 22 and 23 are from "The Process and Practice of Photo-Engraving" by Harry A. Groesbeck, Jr., and are shown through the courtesy of Doubleday, Page & Co.

(*Continued from page 22*)

The four plates, Figs. 21, 22, 23 and 24, show the reasons why coarse screens are necessary, for greatest legibility on rough paper, in order to obviate the muddy result that comes from ink spreading around the dots and from the sides of the dots, when small, fine screen halftones are pressed into rough paper.

Summing up the need for large pictures

When planning and printing halftone illustrations, it is well to keep in mind the importance of picture legibility as well as type legibility.

There are two principal ways of getting all the value and interest possible out of the halftones you use.

First, Make your pictures large enough and you can get the same detail effect in the screen that will print to best advantage on the paper surface you have chosen, as in any screen you might wish to use on any paper. That is, if your paper happens to be a plain book paper, you can get approximately the same detail effects with a coarse screen halftone on it, if the illustration is large enough, as you would get with a finer screen halftone on coated paper.

This is because it is the number of halftone dots in any picture that gives it detail. The same detail may be gained by these dots placed closely together (fine screen) in a small sized picture, or the same number of dots placed farther apart (coarse screen) in a larger picture. The only necessity, for approximating equality of detail, is that the two areas embrace the *same number* of dots.

Second, The larger in size you carry any picture, in any screen, holding to that screen at all times, the greater the detail that will be shown, because the greater the number of halftone dots that will define each area.

WARREN'S
STANDARD PRINTING PAPERS

Warren's Cameo—Dull Coated Book	*Dull Surface*
Warren's Cameo Post Card—Dull Coated	*Dull Surface*
Warren's Cameo Cover—Dull Coated	*Dull Surface*
Warren's Silkote—Dullo-Enamel Book	*Semi-dull Surface*
Warren's Silkote Post Card—Dullo-Enamel	*Semi-dull Surface*
Warren's Silkfold—Strong Dullo-Enamel	*Semi-dull Strong Coated*
Warrenfold—Strong Coated	*Glossy Strong Coated*
Warrenfold Coated Writing	*Glossy Strong Coated*
Warren's Lustro—Superfine Coated Book	*Glossy Surface*
Warrentown Coated Book	*Glossy Surface*
Warren's Cumberland Coated Book	*Glossy Surface*
Warren's Litho Coated	*Glossy Surface*
Warren's Litho Super	*Super-calendered*
Warren's Litho Machine	*Machine Finish*
Warren's Offset	*Offset*
Warren's Printone—Semi-coated	*Extra Smooth Surface*
Warren's Library Text—Fine English Finish	*English Finish*
Warren's Olde Style—Antique Wove (Watermarked)	*Eggshell Finish*
Warren's Olde Style—Antique Laid (Watermarked)	*Laid Antique*
Warren's Olde Style Mimeograph—Laid (Watermarked)	*Mimeograph*
Warren's Cumberland Super Book	*Super-calendered*
Warren's Cumberland Machine Book	*Machine Finish*
Warren's "1854" Publisher's Book	*Medium Finish*
Warren's No. 66 Book—Bulking Antique	*Antique Finish*
Warren's Thintext—India Paper	*for Thin Editions*
Warren's Thinweave	*Carbon Copy Bond*
Warren's Fineleaf—Makeready Tissue	*Makeready Tissue*
Warren's Booklet Envelope Paper	*Sold only in Warren's Standard Booklet Envelopes*

All Warren's Standard Printing Papers Are Tested for Qualities Required in Printing, Folding, Binding

Specifications

PAPER—*Inside:* Warren's Cumberland Machine Book, basis 25 x 38—60
Tip-ins: Warren's Lustro—Superfine Coated Book, White, basis 25 x 38—80
Cover: Warren's Silkfold—Strong Dullo-Enamel, Ivory, 25 x 38—80

INK —*Inside:* Carlson's 4075 Black
Cover: Barta-Griffin's Van Dyke Black

HALFTONES—*Inside:* 100 screen
Tip-ins: 150 and 100 screen

Warren's Cumberland Machine Book

Carried in stock as follows, all packed flat, in cases of about 600 pounds

	Substance
24 x 36	36, 45, 55
25 x 38	40, 45, 50, 60, 70, 80
28 x 42	50, 62, 74, 87
28 x 44	65, 78
30½ x 41	66, 79
32 x 44	59, 74, 89, 104
33 x 46	80, 96
36 x 48	72, 90, 110
38 x 50	80, 100, 120
42 x 56	124

Warren's Silkfold—Strong Dullo-Enamel

Carried in stock as follows, all packed flat, in cases of about 600 pounds

	Substance
25 x 38	70, *80, *100
26 x 29	*63
28 x 42	99, 124
28 x 44	104, 130
29 x 52	*126
32 x 44	104, *119, 148
35 x 45	116, *133
38 x 50	140, *160, 200

*Made also in Ivory

better paper ooo better printing

Printed in U. S. A.

This Cover is printed on Warren's Silkfold, Ivory, basis 25 x 38 - 80

July 2016

THE REFLECTED WORKS