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# Color Progress

*Exhibit of*

**AMERICAN  
COLORTYPE  
COMPANY**


**1933**

**A CENTURY OF PROGRESS  
CHICAGO**



# Color Progress

*An Exhibit*



**D**EMONSTRATING the basic principles of Light and Color and the relation of each to Color Excellence in Engraving and Printing.

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FOR ALL WHO LOVE COLOR, AND PARTICULARLY THOSE ENGAGED  
IN THE PURSUIT OF BEAUTIFUL AND PURPOSEFUL COLOR EFFECTS  
FOR HOME OR BUSINESS.



## The Governing Spirit of Harmony

**T**HE spirit of harmony governs all success. The food we eat, the air we breathe, every sight, sound, or condition to which we react, must vibrate at a pitch agreeably receptive to our senses, otherwise we would not thrive and be happy.

Our relations with our associates and surroundings is a striking example. It is obvious that our music must possess harmony. And when COLOR, that most vital element of our happiness, is harmoniously blended, it becomes an inspiration and an uplift.

The world demands color today as eagerly as it demands food. And the successful use of color in the home, in apparel, in industry, and in advertising and selling, depends upon the exercise of a color sense well grounded in fundamentals.

Scientific experiment has revealed to us the laws of color harmony and balance, and expert colorists have constructed guides for us to follow in combining colors, have even provided a system of color designation so that we may all think and work intelligently in the same terms.

The principles of COLOR PROGRESS are, therefore, open to all of us, and color achievement is a matter of understanding and application.

These principles are inseparably interwoven into the work of the AMERICAN COLORTYPE COMPANY. Progress in engraving and printing would not be possible without a color intelligence in step with advancement. Our service is patterned to the modern trend. We not only engrave, print, and publish—in many cases we begin with a blank sheet of paper, create, visualize, and follow through upon every phase of a printing program. Our responsibility demands full capability.

Unquestionably the principles of COLOR PROGRESS touch your life too. Whatever your chief interest—home,



apparel, decoration, color products, manufacturing or merchandising, advertising or selling—color is a factor of your livelihood or happiness. And you will find it advantageous to make a brief study of those demonstrated facts which are the open secret of color correctness.

At this Exhibit, all who have a common interest meet on common ground. The homemaker anxious to refreshen her kitchen or bathroom with new color treatment, the business executive seeking a new color note in his advertising, the manufacturer planning new color atmosphere for his product, each can here heighten his appreciation of the power of color and gain new conceptions of color possibilities.

Upon this occasion A CENTURY OF PROGRESS is host to millions interested in advancement in science and industry. We, as the leading exponents of COLOR PROGRESS, are host to all those who love color and particularly those engaged in the pursuit of beautiful and purposeful color effects for home or business.

## The Golden Rule of Balance In Light and Color

**S**UCCESSFUL color compositions are not haphazard creations. Color originality must be law-abiding. And the great principle of color correctness is the *law of complementary colors*.

That law is the inexorable commandment. Unerring Nature, who makes all physical and chemical laws, devised it, and it is as inescapable as taxes or the law of gravitation. It's the tee square, level, and compass of color procedure. It's the umpire's final gesture, from which there is no appeal.

Much homelife has been cheerless through neglect of this golden rule of color balance. Much merchandise has stagnated. Disorderly color schemes have too often been the grave of fondest advertising hopes.

Complementary colors are those colors which, when blended, neutralize the individual color power of one another.

In *light*, those colors are complementary which, when blended, produce *white light*.

In *pigments* (dyes, paints, printing inks) those colors are complementary which, when blended by disc rotation, produce different values of *gray*, the latter being the nearest point to colorless neutrality to which pigments can be brought.

Nature sets the grand example. A ray of light analyzed reveals that wealth of color we call the solar spectrum. Those color rays re-combined produce white light again—the livable light to which our eyes are attuned. This is a superb demonstration of complementary unity, showing nature's rare thoughtfulness for us.

The master colorists who are our color guides have provided a diagrammatic color disc with complementary colors



located as opposites. When the disc is rotated, the entire array blends into gray, evidence of perfect balance. When any two complementaries in their opposite positions are rotated on another disc, they also blend into neutral gray. This establishes the principle to follow in color composition. The object in creating a color combination of any degree of vitality is to combine colors in values and proportions so that their blend produces a balanced stimulation of the color perceptions of the eye.

For instance, you view a painting in which the color values are rich and vivid. You are conscious of the existence of those colors in their full vigor and vitality. But, if those colors are correctly balanced, the entire combination produces a *balanced stimulation* of the color nerve elements of the eye, equivalent to the stimulation afforded by gray. Proof of such balance is had by rotating a disc duplicating the color areas and values.

In popular parlance, complementary colors are spoken of as *opposites* or colors of the greatest contrast. And so they are. Complementary colors are *harmonizing* colors, one heightening the effect of the other. And it is interesting to know the principle which establishes that fact.

It is to the study of light in the physics laboratory that we are indebted for our basic color knowledge. From the light laboratory we have learned what color is, how we see it, what colors are complementary, and what are termed the *primary colors* in light. To this background we owe our progress in the creation of correct color schemes, in plate-making and printing.

It is the purpose of this Exhibit to demonstrate a few of the basis principles of light (Division Number One) together with a few underlying principles of color combination (Division Number Two) and show the inter-relation of each in today's colortype work.

Division No. 1  
PRINCIPLES OF LIGHT

Exhibit "A"

A Study of the Solar Spectrum

THAT ray of light by which you read your book or newspaper may seem ordinary and cheap because it is so plentiful, but the fact is it has a soul of beauty, and without its constituent color rays we would have no color manifestation.

This exhibit is a study of the solar spectrum, a dispersion into sparkling color gems of a ray of light projected through a glass (V-shaped) prism.

The colors revealed by this dispersion are as follows: violet, indigo, blue, green, yellow, orange, and red.

An ordinary light ray is composed of color rays, the latter of varying wave lengths. Wherever that ray penetrates a medium of greater optical density, such as water or glass, it refracts obliquely from the direct line. That's why objects seen in water appear off the direct line of vision.

When a ray of light is projected through a prism, the difference in wave lengths in each color ray causes each ray to refract at a different angle. Red, with the longest wave length, refracts the least; violet, with the shortest, the most. The result is a fan shaped separation. Beyond the violet rays we have still shorter wave lengths called ultra-violet, and below red there are still longer wave lengths termed infra-red—radiations not perceivable by the human eye.

A study of the exquisite color beauty of the spectrum takes you behind the scenes on nature's stage and shows you how it's done—how we get the glorious beauty of flowers and other things, the make-up of the glorious light of day.

There is no such thing as *color* in the sense in which we ordinarily think of it. That is, there are no red apples, purple



grapes, or yellow squashes. Color is not a quality of objects. It is an interpretation given to the senses by the delicate functioning of the eye plus the resultants of two conditions—the quality of the light received by the object at which we are looking, the degree to which that object absorbs or reflects that light.

Perhaps the best way then to think of color is as a property of light waves, not of objects. When light strikes an object, the surface texture or pigment character of that object reflects some one or more of the constituent color rays, in dominance, and the object assumes a color character. An object that *absorbs* all the light rays it receives is black; an object that *reflects* all rays, white. An object is blue if it reflects the blue rays and absorbs all the others. Objects are but mirrors reflecting color to us according to their nature.

The seven colors of the spectrum are known as the *elementary* colors. From this *palette* is produced an inconceivable range of hues, tints, and shades. And this same wealth of vividness, recombined, works with us daily in the simple form of plain daylight.

### Exhibit "B"

## Complementary Colors in Light

The separation of color rays in a ray of light reveals the spectrum, and the *recombination* of all spectrum colors produces what we term white light. The unity of the spectrum colors, *in the proportions* revealed, is complementary. Proportions are vital. Too much of one color would unbalance the whole. Nature knew what she was about.

This proportion is so precisely developed that if you extract from the spectrum any one color, the unity of the remaining colors forms another individual color minus the color so eliminated. That color and the color extracted become complementary colors. Recombined they would produce white light.

Demonstrate it to yourself. Press the red button, which will eliminate the red rays and you will see blue-green, the natural complement of red. Eliminate each color in turn and you will observe its complement.

The principle of this demonstration is interesting. The light is first projected through a prism to obtain the spectrum. An opaque shutter then shuts off the red or any other color. The remaining rays are then *recombined* by another prism, and the recombined rays form the complementary color.

Perhaps you may ask why is it necessary to work in complementary harmony. All colors are beautiful so why not go along as we did for ages, and as many do now, and use color in haphazard style.

The answer, already given, bears repeating in another form. All musical notes are good, too. But some *combinations* are discordant while others are melodious. Your ear would rebel against atrocious music, and your soul would corrode. In all things visible, the eye is the channel to the mind, and the eye must be pleased as well as the ear. Neither raucous sound nor raucous color is healthful. Music has a purpose, and so has color. Each accomplishes the greatest good when its power is enhanced by harmony. Color is a great force in our existence. Its misuse is a criminal waste of power; its orderly application, a blessing.

### Exhibit "C"

## Primary Colors in Light — Red, Green, Blue-Violet

### Theatrical Lighting

LABORATORY experiment has disclosed that there are three colors which, when combined, will not only produce white light the same as the complete blend of the



spectrum colors, but when employed in different combinations will produce *any desired color*.

These colors are RED, GREEN, and BLUE-VIOLET. These are termed the *primary* colors insofar as *light* is concerned.

This exhibit is a demonstration of this fact. Manipulate the dial and note the colors produced.

Some theatrical lighting is done in this way. 'Colored lamps of these three respective colors are manipulated to create the desired color.

Please understand that these are the *primary* colors only so far as *lighting effects* are concerned. They are not the *primaries* in *pigments*, meaning paints for home, dyes for fabrics, ink for color printing.

This demonstration is interesting and illustrates a basic principle applicable later to color separation in four-color process reproduction. This procedure will be shown later.

## How We See Color

Perhaps at this point it would be well to touch upon the color perception process of the human eye.

The theory advanced by leading scientists is that the retina of the eye is equipped with three sets of nerves, each being sensitized to one of these three primary colors, *red*, *green*, and *blue-violet*.

When all three nerve elements are equally stimulated, the sensation of white light is produced. When red light waves enter the eye they stimulate that set of nerves, and we see red. As the other primaries register, the respective nerve centers produce a corresponding sensation of that color.

Colors other than the primaries stimulate two or more of the sensitized centers, bringing a realization of the shades and tints of all conceivable colors. Thus the human eye is equipped with an adjustable apparatus receptive to any color projected in it.

The theory of color blindness is as follows: When a person cannot distinguish one color from another, one or more of the three sets of nerves in the retina which are sensitized to color is defective. The apparatus in the eye does not, therefore, function so as to perceive color fully. On the other hand, many have a keen color eye, which means an excellent functioning of the color perceptions.



Division No. 2  
IN THE REALM OF PIGMENTS

Exhibit "D"

The Pigment Spectrum or Color Disc

THROUGH light experiments we learn the principles of light and color. Next comes man's feeble attempt to duplicate the majestic color example of nature on the walls of our homes, on the pages of our printed books, and do so harmoniously.

When we get in the realm of pigments we tackle a big contract, one that requires the best chemical brains operating in the paint and ink laboratories.

However, it is not unorganized. Master colorists have simplified the entire matter for us, and have created a guide for us to follow in the composition of our color schemes. We have, therefore, a *pigment spectrum* with which we can experiment just as we do with the solar spectrum.

Perhaps the best way to illustrate would be to show the color disc or wheel, which locates the major hues and intermediates in proper positions with complementaries shown as opposites.

Please note that there are five major colors. Reading clock-wise on the wheel these are *purple, blue, green, yellow, red*. There are five intermediates—purple-blue, blue-green, green-yellow, yellow-red (otherwise orange) and red-purple. These constitute ten principle points on the wheel. There are, naturally, many intermediate gradations, the transition of one color to another, but for purposes of balance these are sufficient for a pattern.

In the case of *spectrum* colors, all color rays combined produce white light, daylight, the livable light in which we work and which is endurable and healthful to the eyes.

In pigments, the test of blend is made by rotating the

disc upon which the colors are shown. Rotate the disc, in this exhibit, and you have *gray*, the point of neutralization corresponding to the white light which is created when the spectrum colors are re-combined. This proves the complementary unity of all colors on the disc.

When colors blend in this manner they are said to minister to the point of rest in the human eye—to be readily accepted, digested, and assimilated without exhaustive strain. The right pitch in music soothes the ear and arouses no resistance. The color scheme which establishes an affinity with the eye without effort or strain is a success.

Whether you are conscious of this principle or not, you have experienced it. The rooms, the pictures, and home possessions you have lived with, must have had that wear-well quality insofar as color is concerned, or you would have rebelled. The layman may not be aware of the color story back of the scenes, but as color designers and printers, it is our business to create color compositions based upon correct principles.

Exhibit "E"

Pair of Complementary Colors

While the previous Exhibit was an illustration of the blend into gray of all hues on the color disc, this Exhibit is a demonstration of the complementary character of two opposites, red and blue-green. Rotate the disc and observe how they merge to form gray, the color most tolerable to the eye for prolonged diet.

Exhibit "F"

A Negative —  
Disorderly Color Combination

This Exhibit is introduced to demonstrate the contrary—hues out of harmony. Red and purple-blue are non-



complementary. (See diagram disc in Exhibit "D.") When the disc is rotated these hues do not blend harmoniously into gray, but into a faint purple. It is obvious they are out of balance.

### Exhibit "G"

## The Addition of a Balancing Hue

However, the foregoing color combination can be saved by being thrown into balance. This Exhibit shows the same Red and Purple-blue plus Yellow-green, a color taken from the opposite side of the wheel. This is termed balanced contrast. Rotate the disc and you will observe how this combination blends into gray.

This series of Exhibits is given to demonstrate the basic principles of light and color harmony. Time and space would not permit an exhaustive treatment of the subject beyond underlying principles. These Exhibits treat the tool-kit we have to work with and aim to establish a foundation. However, to those who desire further information on the subject of balanced color combinations, a very exquisite book issued by The International Printing Ink Corporation entitled "IT GOES WELL WITH BLUE" would be extremely valuable. This book gives visual examples of color combinations scientifically developed.

### Exhibit "H"

## Calico versus Silk

Color is a gift that brightens our lives—a resource to business, a personal blessing. Business should know more about Color. Merchandising should have constant recourse to the color laboratory. All products arrayed in color should pass the color qualification test before going on sale.

The power of color to accomplish its varied purposes, to enrich the home, to give sales power to merchandise, to advertise and sell our manufactured products, depends upon the degree to which originality and taste pay respect to harmony. Therein lies color magic. Color correctness lifts any color effort to the dignity of an achievement. Whether the effect registers vigor and hardihood or delicacy and refinement, the key to power and influence is still *harmony*. A lowly calico skirt in color balance will always defeat a highbrow silken flounce extravagantly out of kilter. (Rotate the two examples.) The application of color intelligence is evidence of business intelligence. *Color progress* on the part of business means *sales progress*.

### Exhibit "I"

## Can You Describe Color?

Paint manufacturers give individual names to the colors shown in their folders, and makers of women's apparel introduce new designations of popular hues. What signifies one thing in one case, means something else in another.

To work intelligently in color, however, it is necessary to have *one* system of description, and perhaps the best is the Munsell system, which has been used by various departments of the U. S. Government.

This system of color designation bases color description upon *three dimensions*—HUE, VALUE, CHROMA.

*Color* is a generic term meaning all colors, or more correctly speaking, all *hues*, shades, and tints. Hue is a specific term. Hue is the basic characteristic of a color, the quality by which we distinguish a blue from a yellow. If you want to specify *green*, green is the *hue* or *first dimension*.

There are a vast number of hues, hundreds in fact. The range is not confined to the ten major hues shown on the color wheel exhibited here.

Green in turn becomes a generic term because this *hue*



*dimension* alone covers all greens, and further designation is necessary before arriving at the specific result desired. The other two dimensions are VALUE and CHROMA.

VALUE means the lightness or darkness of a hue. Light values are called tints; dark values, shades.

CHROMA means the color strength or intensity, the quality by which a strong color is distinguished from a weak one.

Suppose you had specified green as the first dimension. It is necessary that you specify *value* next, a tint or a shade, and third, *chroma*, whether you desire green like an olive or green like an emerald.

In this system, the last two dimensions (value and chroma) are given in numerals. A scale of decimal divisions has been established for each dimension, through which it is possible to indicate the value and chroma of any given hue.

Please refer to Exhibit "I" and note the demonstration given.

First Dimension	—HUE	—Green
Second Dimension	—VALUE	—Specimens are shown demonstrating the range available, each numbered
Third Dimension	—CHROMA	—Specimens showing range, each numbered

The final example shown at the base of the chart is green 5-8, an index indicating Hue, Value, Chroma.

If it is important that we have standards of weight and measure to synchronize the doings of the business world, it is equally vital that we have a method to describe color to co-ordinate the efforts of those working in the color field. Such a system enables all who will so equip themselves to speak the same color language with assurance of certainty of effect.

In one sense, it is not necessary that you master any color system. That is our regular business. We have done

that for you, just as we have done other valuable and constructive things. But it is desirable that you know that creative color is not a haphazard game. Scientific knowledge must be back of your color designing and printing if it is to register success.

### Exhibit "J"

## Example of Color Composition in Correct Balance

This exhibit is one of the very finest examples of color composition correctly balanced. Here is a reproduction in ten printings with striking color values so distributed that when its areas are measured and duplicated in direct proportion on the disc, rotation reveals a perfect blend into the gray tone, the symbol of correct harmony.

This is one of those color conceptions which, because of the feeling of the eye comfort it radiates, would, upon long and close association, elicit rising admiration. It is the cover design of the INTERNATIONAL PRINTING INK CORPORATION'S "COLOR PAGEANT," a convenient wall hanger of ten divisions portraying the varied beauty of a range of popular colors suitable for flat printing. Another thing of merit has been accomplished here—a triumph in the application of printing ink to color effect and purpose. This result is a testimony to laboratory brains in producing intricate color combinations in inks that will withstand the light strain and retain their values.

### Exhibit "K"

## Retinal Fatigue

The value of this exhibit is that it demonstrates further the complementary color principle, and confirms the theory



already given concerning the color perception processes of the eye. Gaze intently at the bright red spot on the board for approximately one minute. Then transfer your gaze to the plain surface below and the spot will duplicate itself faintly in *blue-green*, the complement of red. This phenomenon is termed *retinal fatigue*, or *negative after-image*. The retina of the eye grows excessively tired of red and refuses further stimulation. The red process of perception is temporarily suspended in the eye, and when you look at the white ground the other colors minus red combine to form the complementary, blue-green—and the eye sees that color.

### Exhibit "L"

## Are You Color Blind?

The color which we see depends upon, first, the quality of light received by the object at which we are looking; second, the degree to which that object reflects or absorbs that light; third, the color sensibility of our eyes.

This is a simple experiment to determine whether the color perception process of your eyes is normal. Read the numbers on these plates, and if they correspond to the numbers opposite each one, you are naturally equipped for perceiving color.

### Exhibit "M"

## Four-Color Process

Men grew acquainted with the principles of light, accumulated knowledge concerning pigments and printing ink, and then after a long stretch of laborious experiment, inventive genius produced a masterstroke — *four-color process*.

There has been no more vital contribution to business development for over a generation than colortype print-

ing. Four-color process gave advertising and selling an opportunity to mirror the color beauties of its products in millions of homes. A national color-mindedness is the result.

Before the invention of four-color process, a multi-colored subject had to be reproduced and printed with a separate plate and a separate impression for each individual color.

Science saw that advertising and selling would get nowhere by this cumbersome and costly method. So she experimented with the primaries in light (*red*, *green* and *blue-violet*), worked with the primaries in pigments, *red*, *yellow*, and *blue*, stolen from the palette of the painting world, and finally found a way of dovetailing the reactions of both. The result was that plates were produced through the use of *red*, *green*, and *blue-violet* filters which when printed in *red*, *yellow*, and *blue* inks reproduced color work and gave a rich and adequate diversity of color.

Photography is the first step in four-color process—extraordinary photography—*color separation* by means of colored filters.

This procedure is demonstrated in Exhibit "M," Compartment No. 1.

Look through the clear glass first and you will see the full color oil painting. Now please look through the blue-violet, green, and red filters in turn and observe how each accentuates its complementary value.

(1) The *Blue-Violet* filter eliminates the blue-violet and kindred values and what you behold is an intensification of the complementary value, yellow. From this exposure the *yellow* plate is made.

(2) The *Green* filter eliminates the green and kindred values, emphasizes and accentuates the red (complementary) value, and this exposure is the basis of the *red* plate.

(3) By the same principle, the *Red* filter eliminates red and kindred values, and from this exposure is made what is known as the *blue* plate.



These three plates are sufficient to give color richness and diversification to the reproduction. Black, the fourth color, gives depth and definition and serves as a seasoning element in the blend of the colors. The negative for the black plate is made through a manipulation of filters governed by the character of the subject.

This Exhibit cannot portray the laborious process of making these photographic plates, the technical skill required in printing upon sensitized copper, etching, proving, re-etching, and the full succession of abilities that must co-ordinate in the successful color reproduction of a painting. We are confining ourselves to a dramatization of principles which are the foundation of today's four-color process excellence.

Other features of this Exhibit show the progressive printing of the subject and the manner in which the inks combine and re-act.

The succession of printings in four-color process is a marvelous unfolding of color beauty. The process of plate-making has distributed the color wealth of the original subject over four pieces of copper, the etched surface of each revealing a diversity of tones ranging from intensity and near-solids to delicacy in vanishing dots. Any one of these plates alone is intelligible only to the plate-maker or pressman. To the layman it may be positively ugly. But with all these four surfaces in perfect combination, the result is a revelation of magnificent hues, shades, and tints.

Compartment No. 2—shows a proof of the Yellow plate.

Compartment No. 3—shows a proof of the Red plate.

Compartment No. 4—shows the Yellow and Red plates proved together.

Compartment No. 5—shows a proof of the Blue plate.

Compartment No. 6—shows a combination of the Yellow, Red, and Blue plates.

Compartment No. 7—shows a proof of the Black plate.

Compartment No. 8—shows the final combination of all four plates.

As you have studied these progressive steps, perhaps you have noted the magical color growth which is apparent with each step.

We have four plates—yellow, red, blue, and black. We have no green, no purple, no orange, but thanks to the inter-action of pigments, the *subtraction* of color rays when pigments combine, and the progress made in ink intelligence, when we get through we come out with all the color wealth needed.

In *light*, blue and yellow make *white light*. In *pigments*, blue and yellow produce *green*. The fact is that pigments in combination *subtract* certain colors from *white light*, failing to manifest these absorbed colors by reflection. Hence the difference between light mixture and the over-laying of pigments.

Supplementing these principles and in addition to the capability of our engraving organization, there is also involved in successful four-color process printing, the technical skill of the pressroom—the spirit of the craftsman which joins hand and brain in a good job of make-ready, the right touch of ink, and in countless ways contributes human talent to printing excellence. Colortype work of the highest grade is a job for knowledge of principles combined with human judgment, skill, and taste.

## Exhibit "N"

### Third Dimensional Portrayal—Macy-Art

Anyone familiar with photographs or black halftones printed in newspapers and magazines is conscious of the fact that subjects "stick" to their backgrounds. Objects in perspective or in direct line with each other appear on the same plane. There is no visualization of depth or distance.



We do not see things that way naturally because we have *binocular vision* while the camera has one eye. It would be highly desirable if all printed pictures could portray depth and separation. Illustrations of all merchandise would then convey a true impression of proportion and character and would radiate greater sales power.

Fortunately for business, there is a method by which this effect can be achieved. That method is MACY-ART *Third Dimensional Printing*, a process controlled exclusively by the AMERICAN COLORTYPE COMPANY.

This exhibit is a demonstration of the Macy-Art idea. Look through the colored spectacles and note the result.

Macy-Art is a realization of the third dimension (depth or distance) in illustration printed upon a flat surface. This stereoscopic result was previously considered unattainable in printing, but is now a practical reality.

The principle involved is that of optics as well as the rule of complementary colors. In ordinary sight, the retina of each eye receives an image, but the power to focus merges the two images into one.

Macy-Art reproductions must be made from stereoscopic photographs, the product of a two-eye camera—a picture for each eye at abnormal focal distance. The two pictures are then printed over one another, out of focus, one in orange, the other in blue.

To get the effect, the scope or spectacles consisting of one red and one blue lens must be used. When you look at the picture through the scope, here is what happens. The red scope filters out or eliminates the red part of the picture and intensifies the blue image so that the left eye forms its separate picture. The blue scope filters out the blue part and intensifies the red image, and the right eye gets its separate image. This double image takes us right back to our natural way of seeing things.

Macy-Art pictures in motion produce a strange sensation of weird animation. This method of printing provides

an opportunity for the display of extraordinary effects, particularly in relative depths and contrasting detail.

Macy-Art is suitable to all purposes—displays of merchandise, demonstrations of product, exhibits of processes of manufacture, dramatization of ideas. It has even added a new element of fascination and final climax to picture puzzles of the jig-saw type. It is a strong reinforcement to the cause of selling.

#### Exhibit "O"

### Macy-Art—Transformation or "Before and After" Phase

The same principle which produces an image for each eye in Macy-Art Third Dimensional portrayal, may be utilized to produce a composite of two pictures of totally different character, each visible in rotation.

The effect is obtained by looking through the red and blue scope and closing and opening each eye alternately.

This phenomenon offers tremendous possibilities for contrasting pictures designed to dramatize a sales story, to display the old and the new, or for any other emphasis by immediate and mysterious comparison. Try it and note the startling effect.

#### Exhibit "P"

### Flaming Scarlet—

#### Undisputed Champion Attention-Getter for Over Three Billion Years

Oftentimes the laboratory is asked which hue is the strongest in attracting attention. That question was settled long before there was a laboratory. It's RED—Flaming Scarlet, to be exact. No champion ever held the crown



in any field of endeavor for so long a period. And right now there is no "colored" hope to dethrone him. Human nature made the selection, and the supreme court of physics confirmed it.

Red is the *human* color, a manifestation of blood, life, and vitality. Man has always responded instinctively to it. He paints it on his battle flags, he waves it at a bull, he uses it for Valentines. It is the symbol of every intensity. And all that is as it should be for red is certainly pleasant to look at.

### Exhibit "Q"

## Yellow

### Queen of Visibility

The question is also often asked, what color combination can be seen the farthest. Yellow is the Queen of Visibility, the penetrating golden ray that projects the greatest reflective power, and attains its greatest radiance when reinforced by black.

For this queenship, yellow is constitutionally endowed by divine right. Yellow rather dominates white light, and daylight has a yellow tinge. The laboratory tells us that yellow reflects a greater volume of light than any other color. This maximum light reflection is, therefore, the scientific answer to the supremacy of yellow.

It is fortunate for us poor mortals that this power is in the keeping of a hue so bright, buoyant, and cheerful. Yellow is truly delightful, and admits of exquisite treatments. It is good from shade to tint, always interesting, always a creator of appeal and feeling.

### Exhibit "R"

## Direct Color Reproduction

Another advancement which has a distinct bearing upon the progress of colortype work is *direct color reproduction*.

In the first stages of four-color process reproduction, objects or scenes to be printed in color had to be painted in color, or photographed in black and white and accompanied by a color sketch as a guide for working color into the plates.

Improved facilities later made it possible to bring objects into the photographic studio and perform the color separation work direct from the original subject.

The latter was a decided advantage as many of the details and color refinements lost by the old method were caught by the eye of the camera.

But another problem remained—the home and its floral landscaping which could not possibly be gotten into the studio.

This task, once so formidable, has finally been mastered, and today no object or merchandise can escape being "taken" in full color if the artist-photographer can find any place to set his apparatus and obtain satisfactory lighting.

This obviously has enlarged the field of color work and enables advertisers and merchandisers to employ illustrations portraying an actuality and a realism heretofore impossible. True representation of intricate and delicate merchandise, beauty of line and form, and exquisite colorings, are now possible through direct color reproduction. The basic principles of extracting and registering color values by means of primary filters is the same as described in Exhibit "M."

### Exhibit "S"

## The Dot—the Key to Excellence in Colortype Work

To produce a halftone printing plate, it is necessary to delineate the subject upon the surface of that plate in projections of varying size and density so that an inked impression from it will reproduce the original subject.



This is done by photographing through a *screen*—a glass plate ruled with fine lines both ways. The result is that the plate surface is broken up into *dots*, in some areas the size of pin points, in others the size of small periods, depending upon the color depth to be portrayed and the character of the image.

The dot is the key to excellence in colortype work. Taken individually, its infinitesimal surface must carry an immeasurable film of ink. The deposit of that film of ink upon paper by the yellow dot, for instance, must synchronize with the deposits of the red, blue, and black dots. The margin between perfect coordination of all four and the contrary is dangerously narrow. And it is here that technical skill and an artistic sense on the part of the etcher is imperative. The dots as manipulated must tell the tale. They are the contact surface which transmits image, contour, and color character. The final excellence depends upon the degree to which dots have been perfected—the manner in which four delicate surfaces print successive impressions on a printing press and progressively reveal a color unity reflecting all the vigor and delicacy of the original subject.

This exhibit shows the possible gradations of colortype printing plates ranging from solids and through intermediate tones to the place where the dots approach the vanishing point, and portrays the values obtainable with the same impression of ink.

## Exhibit "T"

### South Wall Display

In this display you will find a number of specimens of the products of the American Colortype Company and its subsidiary companies—The American Art Works, The Osborne Company, The A. C. Rehberger Company, and Samuel Gabriel & Sons Company.

No organization has done more, no institution has con-

tributed ability and resource more generously to the cause of Color Progress than the American Colortype Company.

One of the first colortype reproductions ever made in Chicago was produced under the auspices of the American Colortype Company over a third of a century ago. This subject is shown in this exhibit. It is doubly interesting from the standpoint of the early merit shown.

The diversified character of our work keeps us alert to advancement, sensitized to customers' needs. We are serving American business on a broad scale, and the adaptability of our products gives us a country-wide identity with business-building.

The smallest business units and the largest manufacturing or merchandising institutions are our customers. The calendar, greeting card, or other direct advertising used by the crossroads retailer; the metal sign, the lithographed display, the store and counter cards as well as all other materials and direct advertising campaigns used in large centers, are of our make. The especially created printed matter of some of the best known names of American business emanates from our organization. To an astonishing degree, American Colortype Company's products participate in the promotion and making of the sales volume of the nation.

Facilities are one thing—highly important. We have them—in Chicago, in New York, at Coshocton, Ohio. We have all departments essential to our purpose. We print on all paper surfaces both by letterpress and the offset process. We also print on metal.

Technical organization is another thing—also highly important. We have that in all departments.

Beyond these two, the next biggest thing is the manner in which capabilities and resources are unified in the spirit of advancement and progress, and the fruits of that endeavor passed along in the form of helpfulness to users of printing for their business gain.



We excel there, too. In the last analysis, our work is to interpret, for users of printing, the principles of color creation and reproduction in varied forms and according to the tenets of originality and taste. This Color Laboratory has been designed and installed to further the cause of color and to stimulate the desire for color correctness. From it, all who have a color interest can extract much profit and pleasure, and it should prove particularly valuable to those identified with color uses in advertising and selling.

Those further interested in the principles of color harmony and particularly those interested in a visual demonstration of correct color composition, will find that exquisite book "IT GOES WELL WITH BLUE" a fitting sequel to the studies enjoyed here. It may be obtained by sending to Mr. Charles F. Clarkson, Vice-President, The International Printing Ink Corporation, 75 Varick Street, New York City.

## AMERICAN COLORTYPE COMPANY

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