

# 8

## **Color—the theory and practice of painting**

Famous Artists Course in Commercial Art,  
Illustration and Design

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### The color wheel

All the colors in this "wheel" are made from red, yellow and blue paint, out of tubes. These are called the *primary* pigment hues. Mixing yellow and blue together produces green. Blue mixed with red makes violet. Orange is made from a mixture of yellow and red. These three, green, violet and orange, are called the *secondary* colors. If we mix adjacent primaries and secondaries, we produce six other colors, which are called *intermediates*: yellow-green, blue-green, blue-violet, red-violet, red-orange and yellow-orange.

## An introduction to color

Every artist who uses color should have a clear understanding of what color is, how to organize it, and how to employ it to best advantage.

Color is a sensation we experience when our eyes are struck by light waves of varying lengths. We see objects because nature has given us a very sensitive and complex receiving system in the form of our eyes, nervous system, and brain. Our eyes pick up light waves and translate them into a sensation of sight, just as our ears pick up sound waves and translate them into a sensation of sound.

In order for us to see anything, there must be light. The rays of light which come to us from the sun we call white light. Yet, strange as it may seem, this white light contains all the colors that we see around us. This is demonstrated when you see a rainbow during a summer shower, or shine a ray of white light through a triangular piece of glass, called a prism. Sir Isaac Newton, in 1667, first discovered how pure white light could be divided into different groups of color waves by using the prism in this way.

All colored objects contain pigment which has the ability to soak up certain rays of color, while reflecting others. The pigment in the skin of a red apple, for instance, reflects only the red rays and absorbs all the others. A green apple, on the other hand, reflects only the green rays to our eyes while absorbing the others.

Some materials are especially rich in pigment. These materials are carefully selected and purified into the paints you buy at your local art store. They have been manufactured from various plants, animals and minerals. When you mix these pigments, you are mixing pure color. In other words, you are working with purified pigments which have the special property of reflecting the particular colored waves you want to see, while absorbing all the others. From now on, unless otherwise noted, all our color discussion will be in terms of pigment, and not of light.

Color is a highly personal and variable element. There are, however, certain basic principles in the handling of color which you must master. The material presented in these pages will explain these principles. Your ultimate development as a colorist, of course, will depend to a large extent upon your own imagination, ingenuity and taste.

Most people describe color in a vague, general way. They use such terms as "baby blue," "apple green," "grass green," "canary yellow," "coral," "peach," "rust," etc. Any person who works professionally with color, however, whether he uses it in making paintings or for some other purpose, must be more precise. He is faced with the problem of using and controlling hundreds of different colors.

Scientists prepared the way for the development of logical color systems. As long ago as 1866, a scientist named Helmholtz discovered that every color has three different characteristics or dimensions: hue, value and intensity. He neglected to work out a practical system for applying his theory, so it had little influence on art until much later. Around the turn of the century, Albert H. Munsell, an instructor in art, realized that everyone who wants to use color correctly must recognize and understand these color characteristics. Beginning with this theory as a starting point, he developed a complete system for the analysis and organization of color. Today the Munsell system is widely used throughout the world.

To work with color, it is not necessary for you to study or memorize complicated systems of numbers and letters. As a practicing artist, you are most concerned now with learning how to recognize, judge and control differences in the three dimensions of every color: *hue*, *value* and *intensity*.

The following pages will give you the information you need in order to do this. If you master this material, you will be able to judge and describe any color accurately. You will also know how to mix two or more colors together to make exactly the color you want. Finally, you will learn how to combine different colors in pleasing and effective compositions.

It is important to remember, however, that learning to understand and use color results not from reading about how it is done, but by actual practice of eye and hand. These pages will give you the information you need, but the most important thing is to apply this information to your own work with color.

## 1. Hue

The word “hue” is used in these lessons to denote the position of a color on the color wheel. It has nothing to do with whether the color is light or dark, strong or weak. Hue, in reality, is the term used to *name* a color. In speaking of people, one says, “What is the *name* of the man?” In art we say, “What is the *hue* of the color?”

Yellow, blue, green, violet, red-orange, and so on, are different *hues*. They lie at different points on the wheel. In the same way, we can distinguish variations of hue within a single, basic color. For example, yellow-green and yellow-orange.

The closer together hues are located on the color wheel, the more related and harmonious they are, because each color contains some of the color lying next to it. On the other hand, hues which are separated from each other are more distantly related. Colors which are opposite each other across the wheel have absolutely nothing in common. They form the strongest contrast possible, and create a neutral gray when mixed together.

### Warm and cool colors

When artists speak of “warm” and “cool” colors, they are again discussing the qualities of hue, rather than of value and intensity. If you will divide the color wheel in half by an imaginary line between yellow and yellow-green at the top, and between red-violet and violet at the bottom, you will see that the hues in the left half of the wheel, centering around orange, appear *warm*; whereas those on the right, centering around blue, appear *cool*.

This reference to colors as warm or cool results from association. The words actually describe the physical sensation we feel when we are surrounded by large masses of these colors. In a room with blue walls, for example, we tend to feel cool. In a room decorated with yellow, hot reds or oranges, we feel warm. There is a good reason for this physical reaction to color. From our daily experiences we associate yellow, orange, or red with fire. Thus, they mean *heat*. Cold, deep water is bluish or greenish. A starlit winter sky is blue. Ice has casts of green and blue. These associations account for our various emotional reactions to the temperature quality of all hues. We have more to say

about the psychological effects of color, later on in the text.

The colors halfway between these warm and cool extremes, such as yellow-green and red-violet, are fairly neutral; they seem neither very warm nor very cool. The warm and cool qualities of color at these points are very subtle. Seeing a green hue which is fairly close to yellow, we sense that it tends to be warm as compared with a green further around the wheel, toward blue. Thus we speak of a “warm green” and a “cool green.”

We can extend this distinction throughout all the hues of the color wheel. For instance, consider red or violet. If the red leans toward the orange, it is a warm red because yellow has been added. If it contains more blue, it is a cool red. Similarly, if a violet leans toward the red, it is a warm violet. If it contains more blue, it is a cool violet.

*In the main, any hue is warmed by the addition of yellow, and cooled by the addition of blue.*

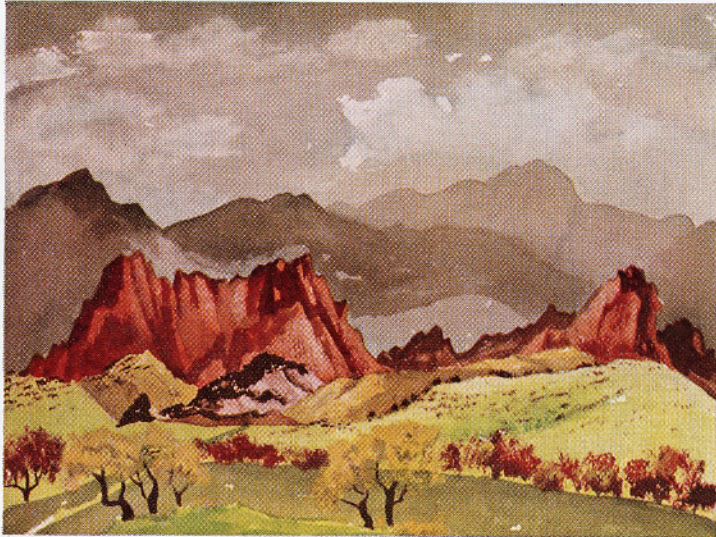
Theoretically, neither white, black, nor any neutral grays mixed from white and black, are colors. They lack two of the essential color dimensions, hue and intensity. However, they are both very useful for modifying the values and intensities of the colored pigments. Of the blacks, ivory black is considered warmer than lamp black, flake white warmer than zinc white.

It is not enough simply to understand the principles of the color wheel, and warm and cool color. You must be able to recognize them in nature, and in paintings. From now on, make it a habit to know the colors that you see around you, in clothing, cars, buildings, etc. As an artist, you cannot settle for the general color description of red, yellow, or blue. You must learn to recognize several different reds that range from cool, violet-red, to warm, red-orange. Certain painting subjects call for a warm color scheme, others require cool hues throughout. You may even combine both warm and cool hues in a single painting, if the problem calls for such striking contrasts. It all depends upon the ultimate effect that the artist has in mind. The important point is to *control* the warmth or coolness of the hues.

Later you will see how this knowledge will help you to paint a still life and portrait, and create the effect of sunlight and shadow in a landscape.



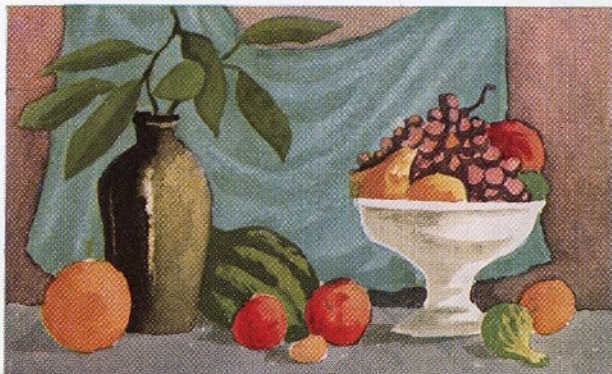
These three apples are different in hue. One is green, one is yellow, and one is red.



This is a warm color scheme. Dominant reds, oranges, and yellows, are appropriate for the sunny desert scene. Compare the warmth of the mountain and sky in this picture, with the cool bluish-grays in the same areas of the painting at the right.



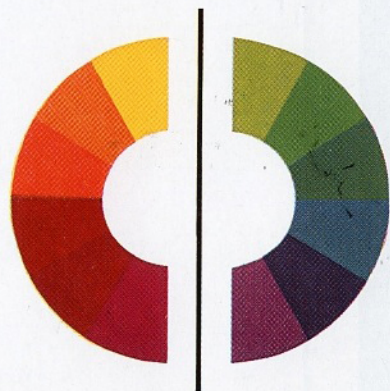
This is a cool color scheme. The colors in a winter landscape should reflect the temperature of the season. The artist here has captured this quality in cool hues of blue, green, and gray blue. Even the red of the barn is a cool red.



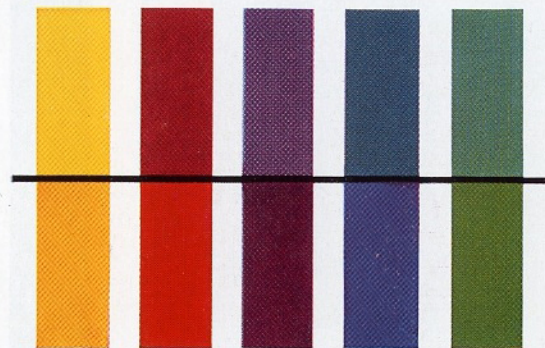
Here is a warm and cool version of the same painting. Both pictures contain the same basic hues, but the hues in the one at the left have been warmed by the addition of red, yellow, or orange to the basic colors. Blue has been added to the



colors in the picture on the right. For example, the background is a dull red-violet at the left, blue-violet at the right. The swatches in the center show the typical warm and cool variations of basic hues. The left column is warm, the right cool.



The hues in the left half of the color wheel are considered warm, those in the right half cool.



Each bar contains a warm and cool variation of the basic color. The upper half is cool, the lower half warm.

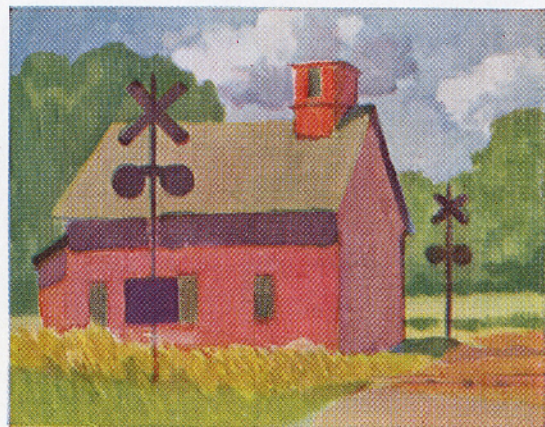


These two apples demonstrate what we mean by value. The red apple, at the left, is made up of all three properties of color: hue, value and intensity. The apple at the right is a colorless photograph which contains only values.

## 2. Value

The first dimension of color is hue. The second dimension is *value*. For any artist working in color, *value is the most important dimension*. It is impossible to overemphasize this simple fact. Mistakes made in choice of hue or intensity are far less serious than errors in value. At all costs, learn to keep your values correct! When we use the word "value" we are referring only to *lightness or darkness of a color*. It's that simple.

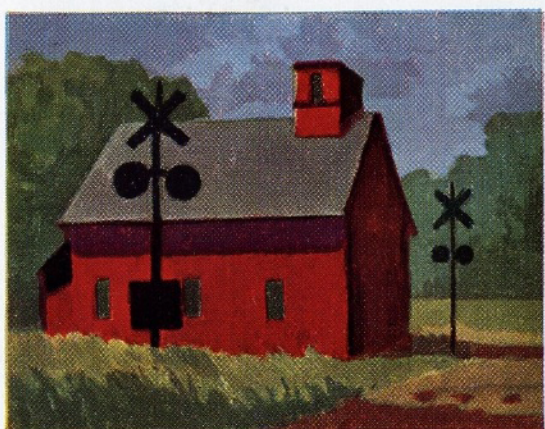
The words *tint* and *shade* refer to the value of a color. To make a tint we add white to a pure color; to make a shade we



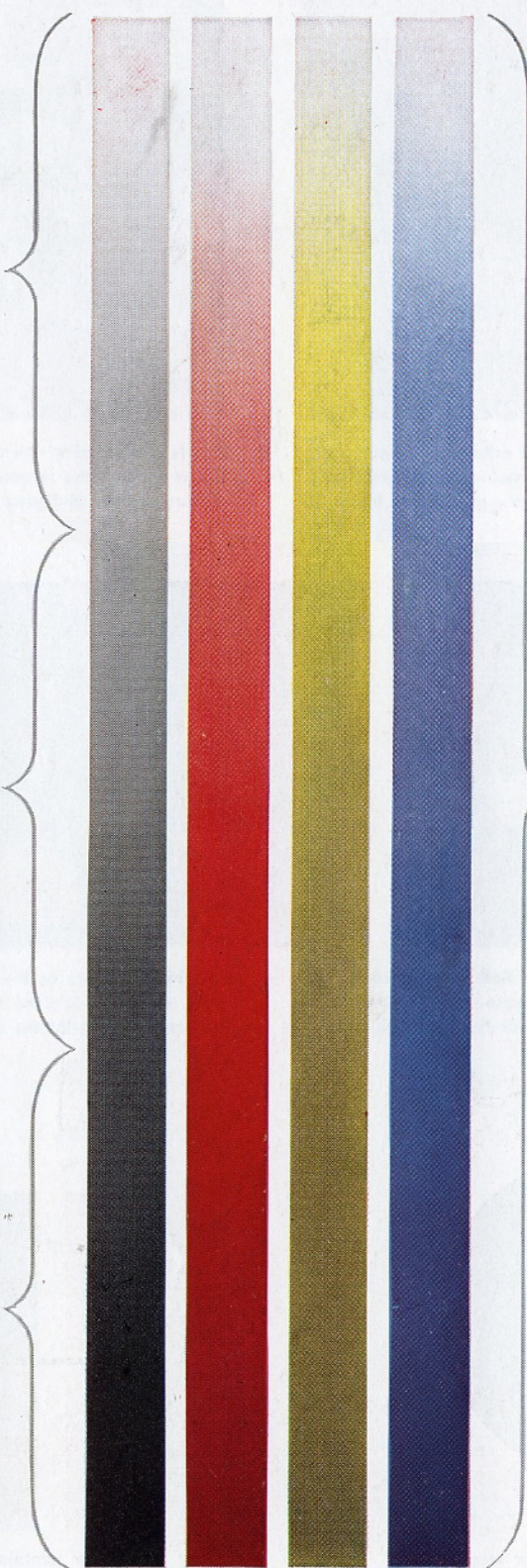
This is a high key painting. A large amount of white has been added to each color. Compare its values with those in the upper third of the columns at the right. This choice of values in a picture creates a delicate, pastel effect.



This picture was painted with a middle range of values, no extremes of dark or light. Because very little white or black was added to the colors, they are more intense than those in the high or low key pictures.



The values in this low key picture come from the bottom third of the column scale on the right. Notice that the light areas, here, are about the same value as the dark areas in the high key picture.



### Value scales

The first scale on the left contains the familiar gradation of grays, ranging from white to black. The second column contains different values of a single red hue. The value gradations in this column match those in the first column. The yellow and blue are arranged in exactly the same way. Squint your eyes, and move them horizontally across any level in this group of scales. You will see that the four strips of gray, red, yellow, and blue are *the same in value*. The same hue simply becomes darker or lighter. The pure yellow, as it comes from the tube, is near the top of the strip, while the pure red and blue take their place lower in the value scale. On the opposite page, you see a black and white photograph of this value scale, in which all four bars are exactly alike.

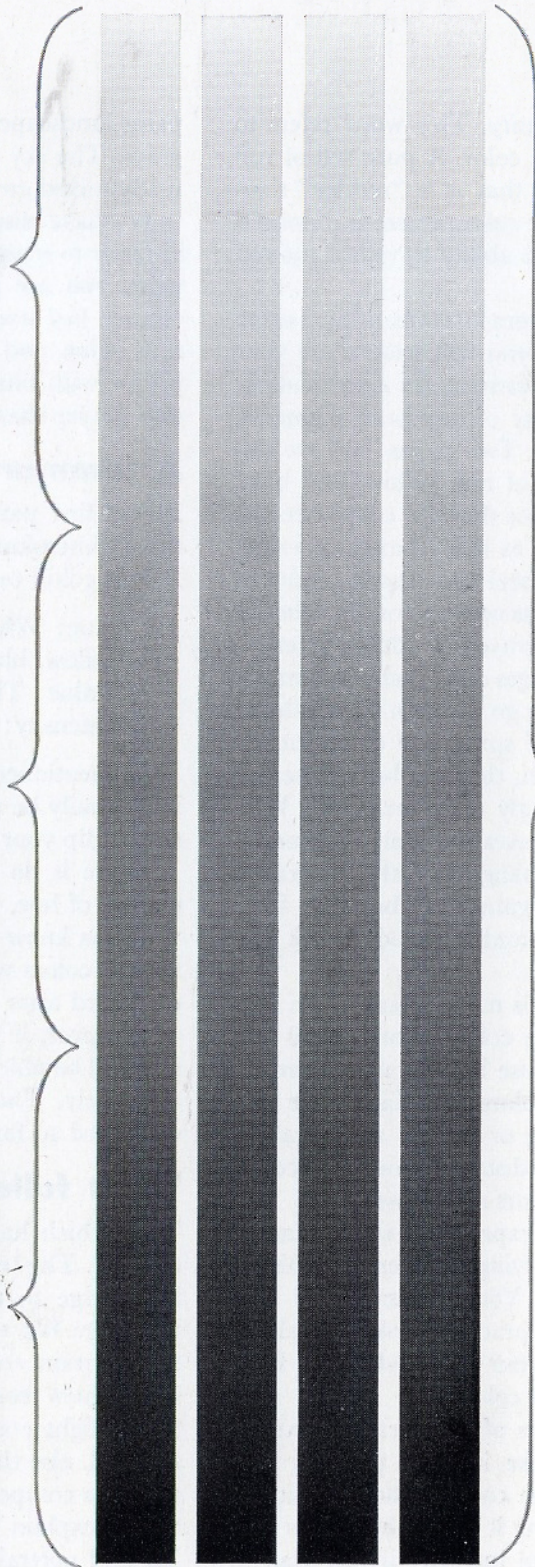
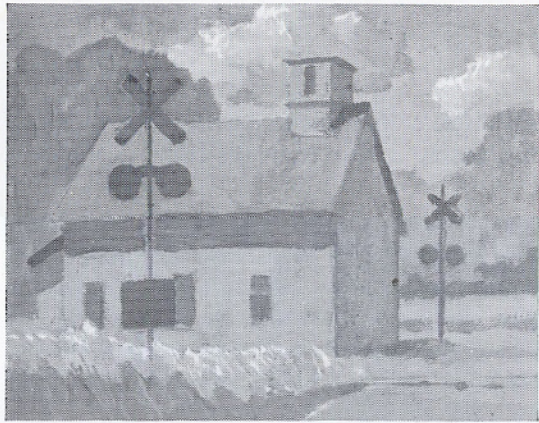


In this picture we have used the full value range from white to black to create maximum contrast and visibility.

add black. In neither case do we change the *hue*—only the value. The chart on the opposite page shows how the value of pure colors from the tube can be changed and controlled by the addition of black and white.

To handle color effectively you must first be able to see and recognize these value differences in your subject, then interpret these differences on your palette. We say interpret, rather than match, because the range of values in nature is much greater than that of your pigments. Black paint is much lighter than a very dark shadow; white paint many times darker than sunlight reflected from a shiny surface.

The artist, looking at his subject, decides which area is the lightest and which is the darkest. Then, he decides how light or dark he will make these extremes in his painting, and relates all the other values to them. The examples on this page show you that the value-spread from light to dark can be limited to a high, middle, or low key, or include the whole range from black to white. The choice depends on the effect you wish to create. The main point to gain from these pages is the *importance of value control.* Once you decide on a value range that seems appropriate for the effect you want, keep it consistent throughout your whole picture.



This page is simply a black and white photograph of the opposite page. It demonstrates the importance of recognizing and controlling different values in your paintings. The pictures are effective, although they contain only values, no hues or intensities.



### 3. Intensity

The third dimension of color is *intensity*. This word refers to the *strength, saturation, or purity* of a color. A pure red of full intensity gives our eyes the sensation that it is “redder” than when diluted with gray, or some other color. There is more red pigment in the pure red. It has greater ability to reflect the red rays of light.

Most colored pigments are of maximum intensity as they come from the tube. In painting a picture, you will seldom use your colors in this pure state, unless you are striving for a particularly brilliant effect. To reduce the intensity of any pure pigments, you may add black, or white, or gray. Two pages back we discussed the value changes in the bars of red, yellow, and blue. Now turn back to that chart, and notice that the colors become *weaker in intensity*, at the same time as they change in value. The intensity of any color on the wheel can also be reduced by mixing it with its *complementary* (its opposite on the wheel). For example, red can be weakened or grayed by adding green.

All around us, we may observe changes of intensity in familiar colored objects. The leaves of the trees go through two cycles of intensity each year. The first leaves of spring are of an intense yellow-green. As the summer wears on, they gradually lose this first brilliance, and become increasingly a grayer-green. With the first frosts of autumn, the same leaves suddenly become intense again. This time their hue also changes and they appear as intense yellows, oranges, and reds. Again, they begin to fade. By mid-winter they turn gray-brown, and are ready to rot into dark gray leaf-mold.

The color in a pair of “blue jeans” is most intense when they are new. With repeated washing, the color becomes dull and faded, less intense. The color of a house is at its maximum intensity when freshly painted. The colors of a landscape lose their intensity when seen through fog or smoke, and regain it in brilliant sunlight. Colors in the distance are reduced in intensity, as compared to the same colors seen close-up.

As part of your practice with color, experiment with changing the intensity of all your colors in varying degrees. Do this on your palette, or on scraps of paper. You’ll be surprised how many different effects your patches of practice strokes will show. This exercise will help you to fix in your mind what you have just read about the third dimension of color.

You will see, in the following pages of this section, that the color in practically every brush stroke in each painting is a different combination of two or more colors. The intensity of each color has been adjusted by mixing it with others. It is particularly important to learn to control intensity if you plan to

paint landscapes, still lifes, or portraits. Nature is full of subtle grays. The sky is not simply a blue from the tube, nor grass a ready-mixed green.

We have discussed the three dimensions of color separately, in order to make each one clear. However, you must realize that when you are actually mixing color as you paint, you rarely change *just one* of its dimensions. In most cases you alter the hue, value, and intensity simultaneously. For example, if we mix yellow with blue-violet, we create a bluish green that is lighter and grayer than the original blue-violet.

#### A summary

In the first part of this section we showed you that color has three dimensions: (1) HUE, (2) VALUE, (3) INTENSITY. Before going on, let’s briefly review these dimensions.

1. Hue: What we commonly call the name of a color. Red, yellow, blue, blue-green, etc., are *hues*.
2. Value: The lightness or darkness of a color.
3. Intensity: The strength or purity of a color.

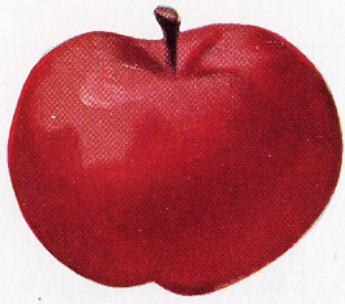
As mentioned above, when you mix colors for a painting you will usually be changing hues, values and intensities all at once, as you dip your brush from one color to another on your palette.

There is no need for you literally to stop and measure the change of hue, value and intensity each time. With practice you will soon know what effect one color has on the other, and mixture of colors will become as familiar and automatic as writing one word after another to create a complete sentence.

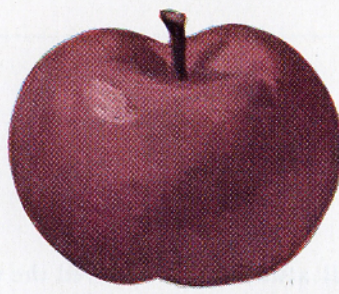
However, if you understand and recognize these dimensions, you will be able to create the color effects you want, quickly and effectively. Therefore, be sure you understand what we have explained so far, before proceeding.

#### What follows

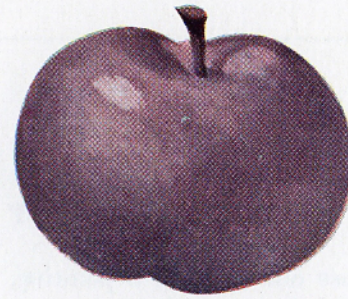
That which has gone before has dealt with the basic structure of color. The text which follows will show you how to apply this knowledge to the actual pigments you mix and use in your painting. We will demonstrate how one color affects another, how certain colors appear to come forward in a picture, and how others recede. We will show how colors change under different light conditions. The emotional effects of color will be covered, also the control of moods, and the use of color proportion in a composition. Following this you will see demonstrations which explain the important steps in painting landscape, still life and portrait.



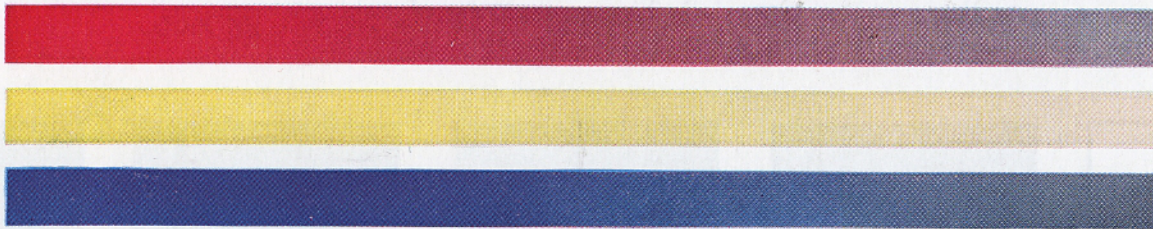
This red apple was painted in full intensity, with pure pigment as it came from the tube.



Here a moderate amount of gray has been added to reduce the intensity. The hue, however, is still red.

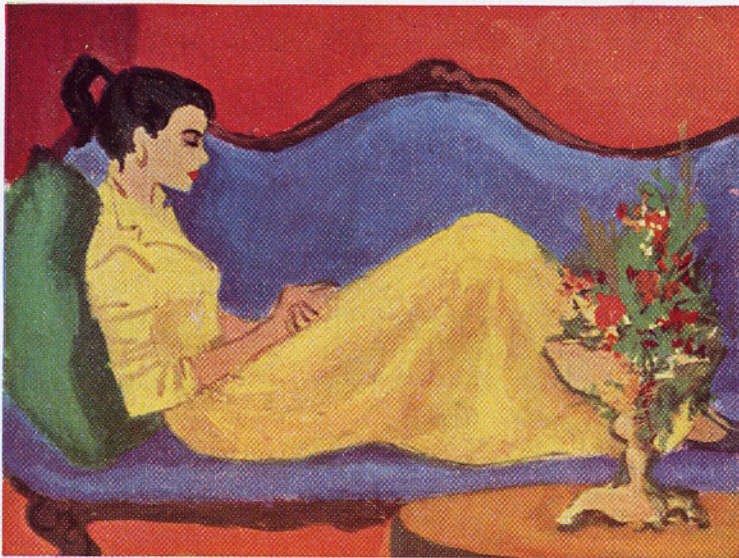


Sufficient gray has been added to this apple to make the color barely perceptible. There is very little intensity.



Starting with full intensity colors at the left end of the bar, we have gradually reduced the intensity of each color by adding more and more gray as we painted toward the right, until we

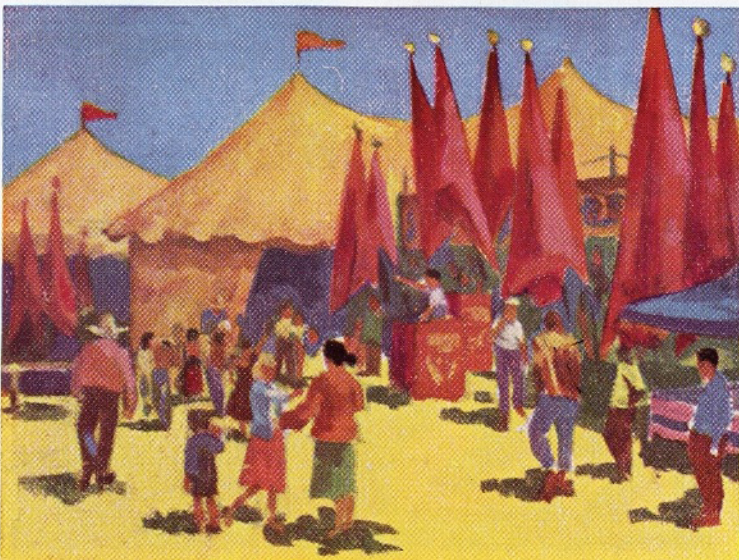
reached pure gray. In this case we have changed only the intensity, not the value. Squint your eyes, and notice that the value remains the same throughout the entire length of the bar.



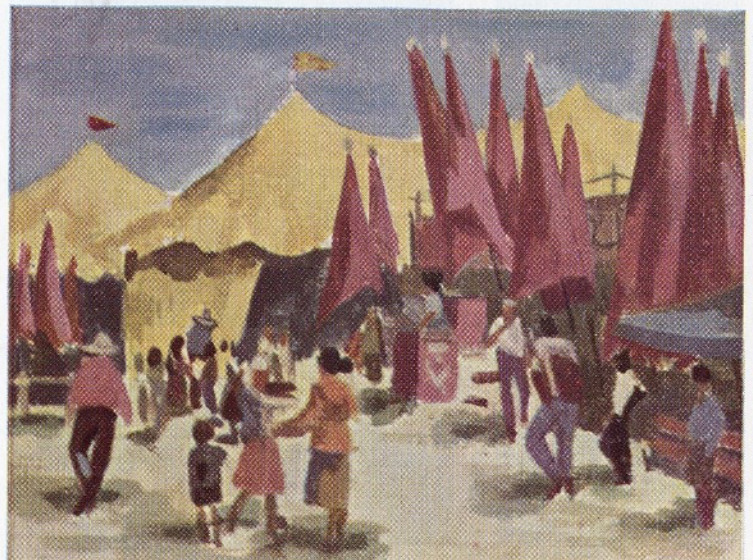
Here is a picture full of high intensity colors. Many have been made with pure pigment just as it comes from the tube.



In this picture we have taken the same hues that you see in the picture at the left, and lowered their intensity by adding gray to each color.



This sunny circus scene contains intense reds, yellows and blues. The shadows, as well as the lights, contain pure strong colors.



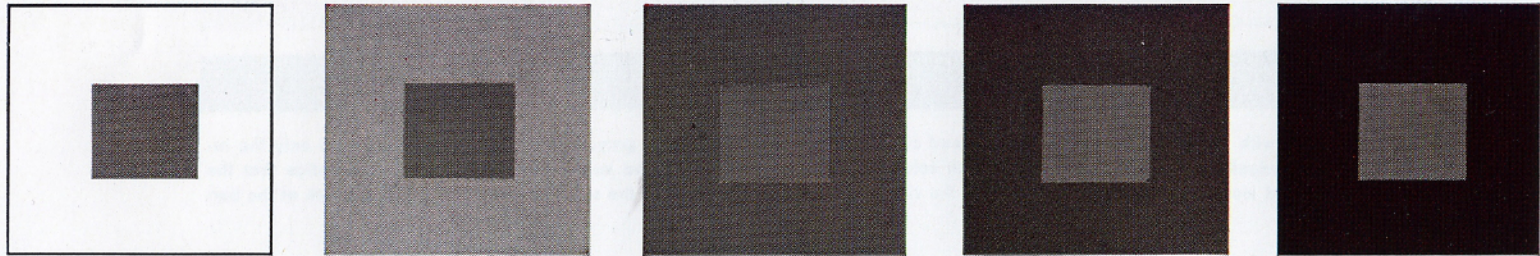
Here is the same picture painted in low intensity. Compare it to the one at the left. In the painting above, each color has been grayed.

## One color affects another

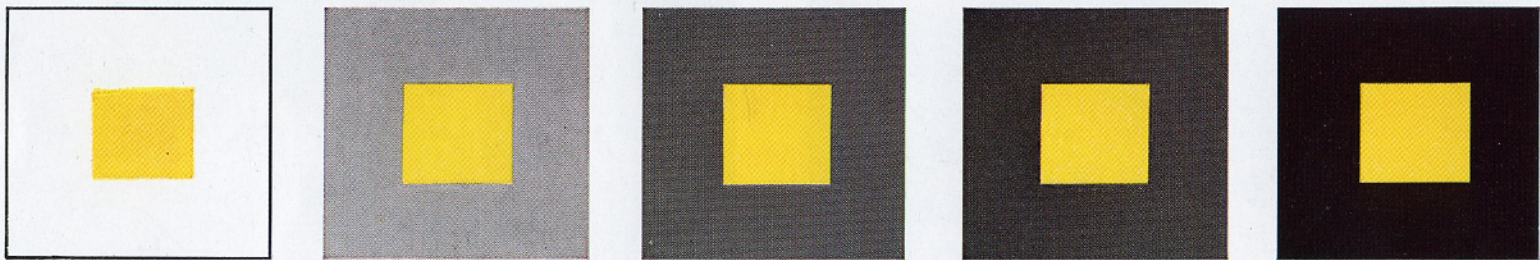
Whenever you use one color in a painting, it will always be affected by the colors around it. As you gain painting experience, you will be able to anticipate these effects of one color on another.

For example, when you first lay in your shadow tones on a piece of white paper or canvas, they may appear too dark. This is due to the white area around them. As soon as you have

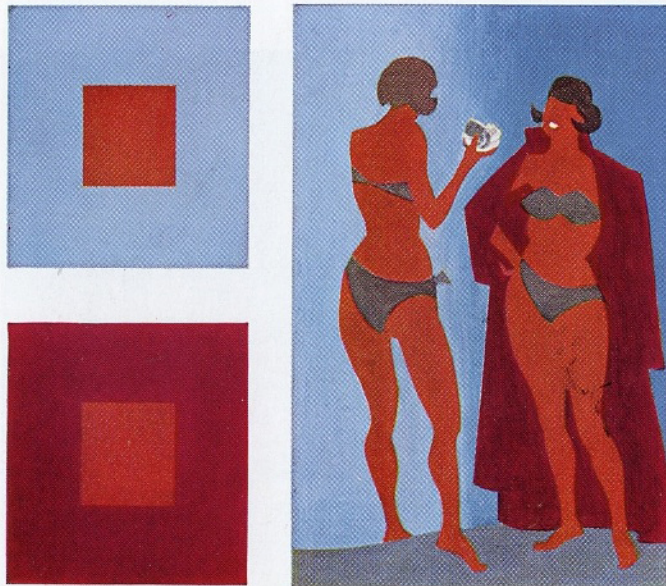
covered the whole canvas, the shadows begin to take their proper place and appear just right. This illusion of a change of values is the most common problem for the painter in handling color. However, the hues and intensity of every color are also affected by the colors next to it. You will find that painting is actually a process of making constant adjustments of hue, value, and intensity.



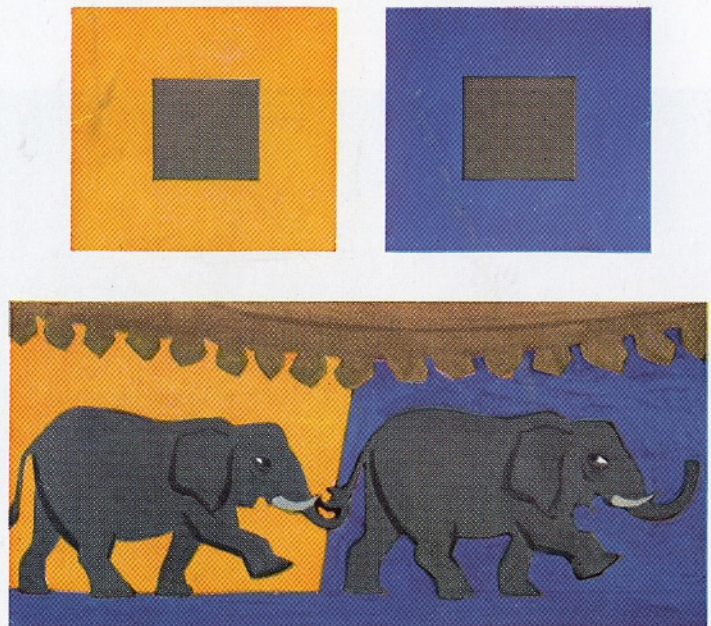
This series of five squares-within-squares illustrates how variations of value can affect one another. The inner squares are of the same value from left to right; only the background values are changed. Notice how much lighter the inner square on the extreme right appears, in contrast to the one on the far left.



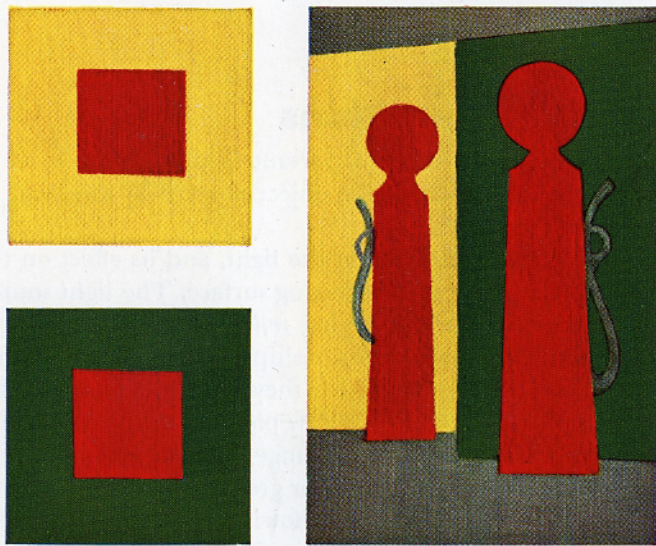
The illusion demonstrated above in gray tones is similar when we use color. All these yellow squares are exactly the same, but as the background becomes progressively darker, the yellow squares appear to become lighter. This principle can be used effectively in emphasizing, or subordinating, any area in your picture.



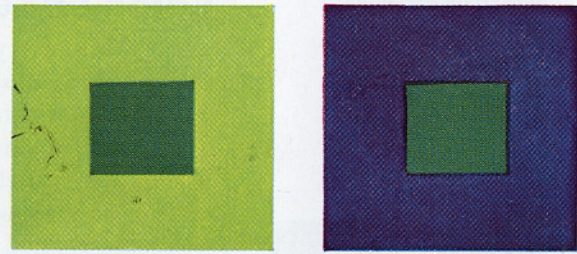
Both figures were painted with the same color, but the red looks darker and cooler against the light blue sky; lighter and warmer against the darker red robe. See how this is emphasized in the squares on the left.



Both elephants are the same gray. The one at the left appears to be a dark, bluish gray, the other one a light, yellowish gray. The color squares demonstrate the same illusion.



A strong red appears lighter, and slightly orange, when set against a dark green. Opposed to a yellow, the same red appears darker and cooler.



The small inner squares, and the two clumps of pine trees, are all the same color. Notice how much lighter and greener they appear against the darker backgrounds. Against the lighter yellow-green, they seem much darker and bluer.

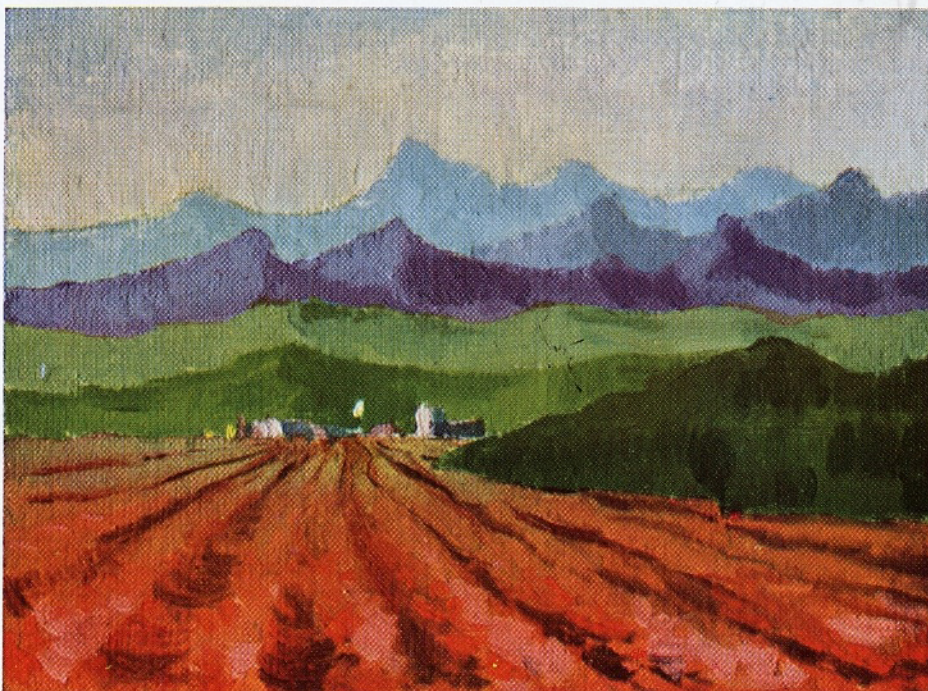
## Advancing and receding color

Every painter should be familiar with the way in which some colors appear to come forward, while others seem to recede. He can use this knowledge either to stress or subdue the feeling of depth in his pictures.

Warm colors, like reds, oranges, and yellows, actually appear nearer to us than cool blues, greens or violets, seen from the same distance.

In addition to becoming *cooler* with distance, colors also become *lighter* and grayer, or less intense. This is due to the

atmosphere between the object and our eyes. The use of these color-changes to create the illusion of distance in a painting is called *aerial perspective*. The picture below demonstrates how this principle works in a painting. Although the earth in the plowed field is the same throughout, the foreground *appears* most intense in color. See how the color gradually becomes grayer, cooler, lighter, in the distance. The same principle has been used to create the illusion of great distance between the nearest and farthest hills and mountains.



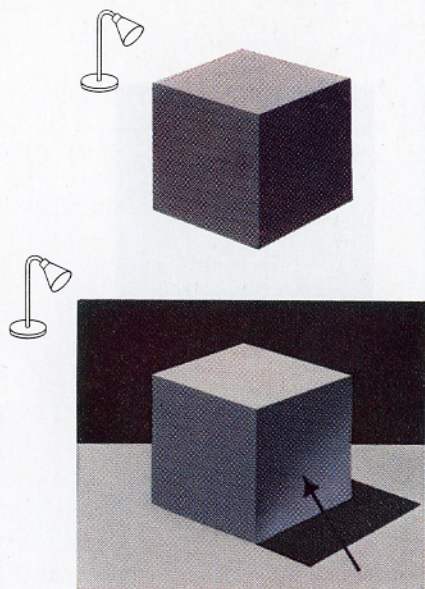
These receding colors are used to give distance to the mountains at the left.



Here are the greens in the rolling hills.



These are the colors in the plowed field.



### Color under different light conditions

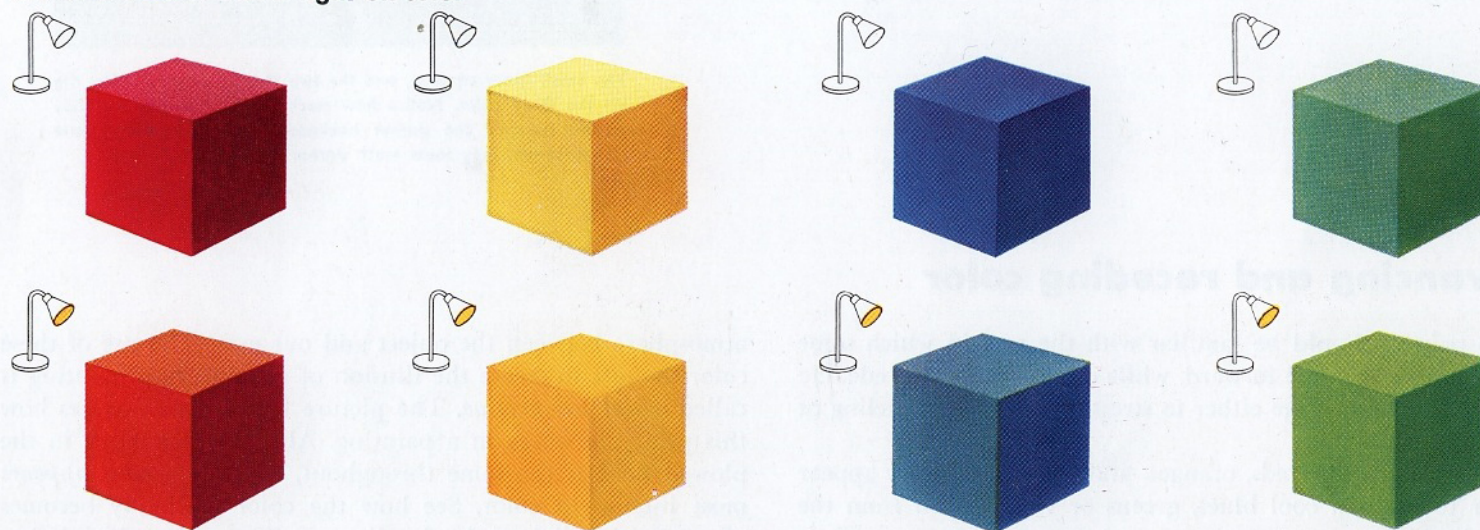
The color of every object you see is determined by three important factors: 1) the local color of the object; 2) the color of the direct light under which the object is seen; 3) the local color of any surfaces which reflect light back upon the object.

At the left, above, is a solid cube showing the direction of the light, and its effect on the three visible planes. Below this cube is another cube, set on a reflecting surface. The light source is the same. The shadow plane at the right is the only plane receiving *reflected* light.

All the colored cubes below retain the *same value* relationships in the light, half-tone, and shadow planes, regardless of the color of the light under which they are seen. To paint the cubes illuminated by yellow light, we added a small amount of yellow pigment to the colors of the top and left vertical planes. If we added the same amount of red, orange, blue, or green, we would create the illusion that the cube was seen under red, orange, blue, or green light.

In the bottom row of cubes, the color of the shadow plane showing reflected light depends on three factors: 1) the color of the direct light; 2) the local color of the reflecting surface; 3) the local color of the plane receiving the reflected light. To paint the shadow plane showing reflected light, we added a small amount of *reflecting surface color* to the shadow plane.

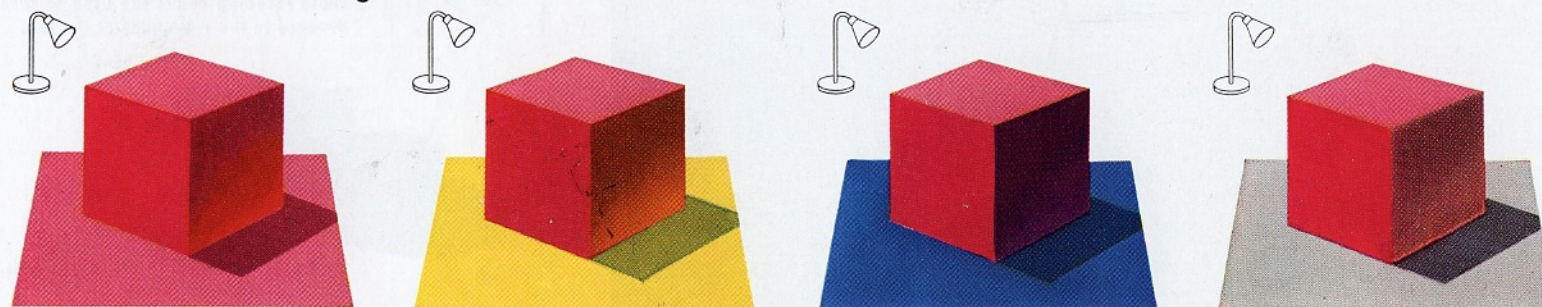
#### The influence of direct light on color



The cubes in the upper row, above, were dipped in buckets of red, yellow, blue, and green paint, and placed under a neutral white light. This light reveals true local color accurately. You will notice that within each cube, the colors of the planes differ slightly. The true local color, the color in which the cube is dipped, is seen best in the vertical plane at the left, where the color is least affected by strong light or shadow. In the lower row, the same cubes have been placed under a warm yellow light, similar in effect to sunlight, or the warm light from a lamp bulb. This change in light affects the colors in only the top and left vertical planes.

Compare the planes of the cubes in the upper row with the same planes of the cubes in the lower row. Notice that the colors of these planes under the yellow light are definitely warmer than under white light. To mix a paint which would demonstrate the effect of yellow illumination, as shown in the lower row, we simply added a small amount of yellow to the original local colors of the two planes, as seen in the upper row. Since none of the yellow light strikes the shadow planes in the lower row, the *shadow planes* of both rows of cubes are the same.

#### The influence of reflected light on color



Here is a red cube, placed on four reflecting surfaces of different colors. The cubes are illuminated directly by white light. In all the cubes, the top and left vertical planes are exactly the same. But notice what has happened in the *shadow planes*. They are modified by the colored light from the reflecting surface. The red reflecting surface intensifies the red color of the shadow plane. The yellow reflecting surface creates an orange tone in the shadow plane. The blue creates a violet tone. The gray reflecting surface is neutral, and therefore the reflected light does not change

the hue of the shadow plane. In each case, the top and left vertical planes are unaffected by this reflected light. The artist must be aware of this effect of one color on another, and make it work for him in all his painting. In this demonstration, we have used simple cubes. Remember, though, these same principles apply to everything—clothing, flesh, a building, the side of a hill, any situation in which we have direct and reflected light.



This still life is struck by a warm yellow light that might be either sunlight, or warm artificial light. Each plane in light is warm, each shadow area, cool. Although the compote is actually white, in this light it appears slightly yellowish.

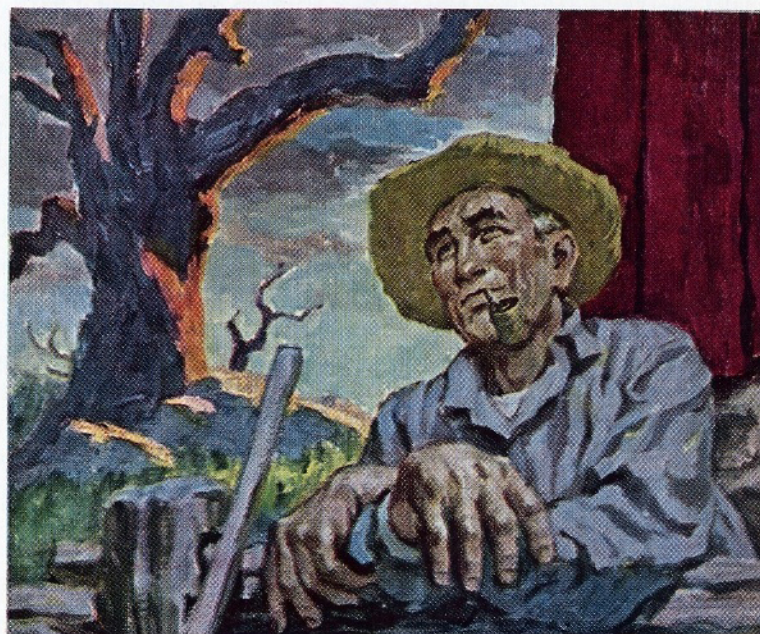


In this picture the light is cool and bluish, like the light that would come through the window on the north or shady side of a building. The light planes are cool, the shadows relatively warm.

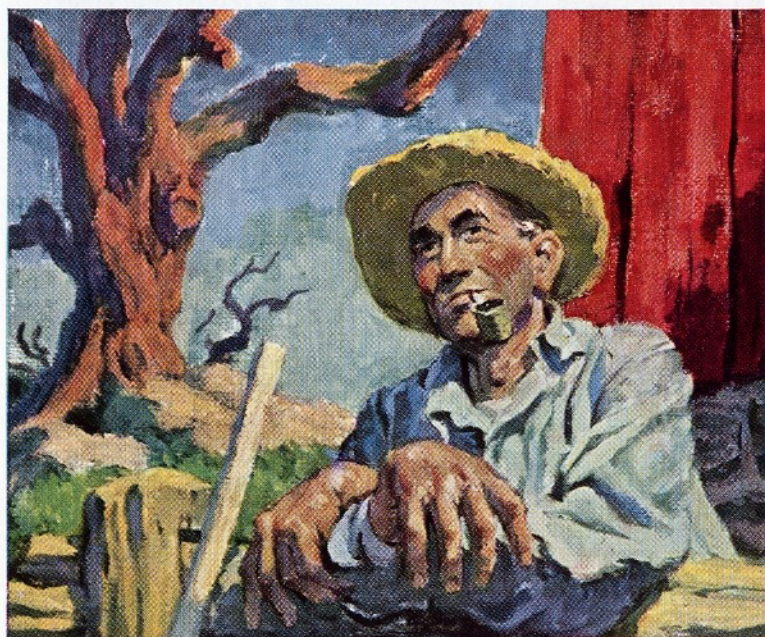
**Different lights create different colors**

Before you start any painting, decide first on the *effect* you wish to create, then on the colors needed to produce this effect.

Make it a practice to study the color differences caused by various types of lighting, such as sunlight, artificial light, moonlight, fire light, the light on a cloudy day, etc. As you view the scene under these different lighting conditions, analyze it. Picture in your mind's eye the colors you would use to paint it. Study it through squinted or half-closed eyes. This eliminates any confusing details and makes it easier to compare the hue, value, and intensity of each color. On this page, you will see that there is no such thing as a ready mixed flesh color, or sky color, or grass color. Each different type of lighting creates a new set of colors. The only way to know and understand what happens to color under different conditions is to observe and remember the color characteristics of each type of illumination.



The barn casts a shadow over the fence and farmer. The cool bluish light within this shadow comes from the sky. Only parts of the grass, rocks and tree are struck by direct warm sunlight.



This is how the scene would look in direct sunlight. To create this effect we use warm colors such as red, yellow and orange in the light-struck planes. The shadows contain cool blue and violet tones.

## The emotional effect of color

Colors have a strong effect on our emotions. They can create almost any kind of mood. According to where and how they are used, they can make us feel cheerful or depressed, excited or soothed, filled with longing, or at peace. In paintings, quite apart from subject matter, drawing, or design, they can be used to affect the emotions of the viewer in any way that is required.

Because of this, it is vital for you to learn as much about these effects as possible, to gain control of them, and to take full advantage of them to create the mood you want in your pictures.

You are probably familiar already with the more usual associations between color and emotion, such as red suggesting excitement or heat; blue, calm or distance; green, nature or coolness; yellow and orange for sun and sunshine; violet, mystery. Later we discuss these associations and color symbolism in detail.

Now, open your own awareness much, much further. See the extent to which color is used in all art forms to induce mood and emotion. In the theater you see it used for lighting and costumes, for atmosphere and setting—even for characterization. For instance, pink may be used for scenes of sentiment and romance, a green light for ghostliness and horror, blue to suggest moonlight and evening. Bright, warm colors in light and costumes are used for excitement and gaiety, and cool grayed ones for a mood of stillness or despair. Movies use colors in the same way, and so does color television.

The visual art forms, however, are not alone in using the effect of color. Look at this excerpt from *Gone With The Wind*, by Margaret Mitchell, and see how strongly we react to a written description of color.

“Spring had come early that year, with warm quick rains and sudden frothing of pink peach blossoms and dogwood dappling with white stars the dark river swamp and far-off hills. Already the plowing was nearly finished, and the bloody glory of the sunset colored the fresh-cut furrows of red Georgia clay to even redder hues. The moist hungry earth, waiting upturned for the cotton seeds, showed pinkish on the sandy tops of the furrows, vermilion and scarlet and maroon where shadows lay along the sides of the trenches. The whitewashed brick plantation house seemed an island set in a wild red sea, a sea of spiraling, curving, crescent billows petrified suddenly at the moment when the pink-tipped waves were breaking into surf. For here were no long, straight furrows, such as could be seen in the yellow clay fields of the flat middle Georgia country or in the lush black earth of the coastal plantations.”

### Applications in other fields

In many other forms of art, too, color is drawn upon to create emotional response. In hospitals, rooms are painted in soothing colors where patients are to convalesce or wait, and in more stimulating colors where they need to be cheered and encouraged back into activity. In factories, stores, and organizations of all kinds, colors are used as backgrounds to enhance products, induce well-being for employees, and in general increase the customer's desire to acquire products. In the fashion world, a garment in a particularly appealing color will sell out immediately, while the same garment in another, less enticing color, will not move off a rack. The colors used in travel folders can affect us so strongly that we yearn to visit a place.

Weather affects us powerfully, also, with its shifting colors. A clear day in which all the colors of earth and sky are brilliant, warm, makes us optimistic, gay. A day with little light, and therefore little color, can lower our spirits for no other reason. On a brilliant, hot day a pool of cool blue will look wonderfully inviting. See how the same color can create an opposite effect, however. Imagine the same cool blue pool on a cold, gray day. The warm red of a fire on a hot day will make us feel stifled but the same red on a gray day will make us feel cozy. By using the varying colors of the seasons, too, you can re-create the hopeful feeling of spring, the finality of fall, the laziness of summer, or the bleakness of winter, no matter what season it really is. The effects of color are too numerous to list, so look around you and observe for yourself as many as you possibly can.

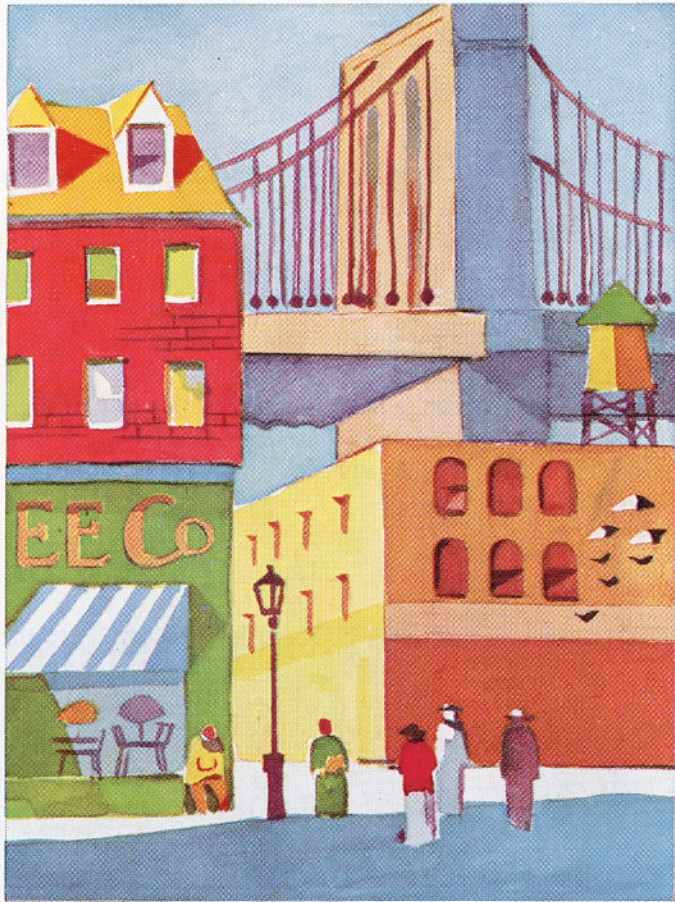
### Make color symbols consistent

You will find it helpful to study paintings, as well, for their color content alone. With experience, you will soon learn that certain artists are so consistent in their choice of colors that you could recognize their work from a distance, without even seeing the subject matter on which it is based. Try to visualize, as a test, how ineffective a painting by Rembrandt would be if the harsh, clashing colors of Van Gogh were substituted for the warm, low-keyed reds and browns. Note how other painters, like Ryder, Caravaggio, La Tour, and El Greco, have chosen palettes and colors that invariably give an aura of mystery to their work. In sharp contrast to these men is the work of such painters as Dufy, Bonnard, and Monet. Their bright, high-keyed colors make the majority of their work seem festive, full of light.

The artist should have a good understanding of color associations and symbolism and keep them very much in mind when he plans a painting. In one picture he may want to create a light and airy mood. In another he may wish to surround his subject with a somber, brooding atmosphere of mystery. Certain colors immediately suggest certain moods to the average person, so each of these paintings calls for the use of different colors. In every picture the artist must apply his knowledge of color and how people respond to it if he is to achieve the effect he wants.

You may, of course, take liberties with the accepted and credible but you should always have a good reason for doing this. Sometimes you will find situations where the natural color of the subject matter contradicts the effect that you want. This may be due to a number of elements, such as the color of the light, or surroundings, etc. The circus scene with the elephants, referred to on the opposite page, is an example of this. Therefore, before picking up your brush and starting to paint, you should always ask yourself a number of questions. Some of them should be: Are these colors typical of the subject? Do they create a warm or cool effect? Which effect do I want? What colors might suggest the right mood? Are the colors in good taste? Should some colors be grayed, others made more intense? Should the over-all effect be colorful or muted?

It is wise to make this rule for yourself and keep to it faithfully. Before you even squeeze your colors on your palette, try to visualize the effect you want and how you are going to create it. If you follow this rule you will be in a good position to use color to its fullest advantage.



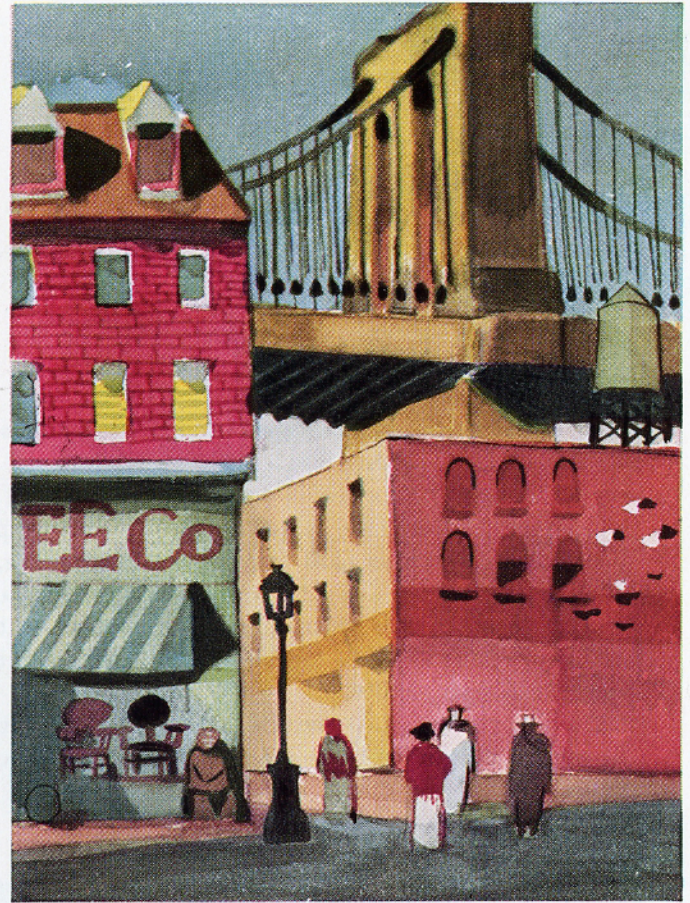
Here, the artist wanted a gay, sunny mood. The picture was painted in a high value key, with pure intense color dominating the scene. The swatches below the painting are typical colors found in the picture.

### Color creates different moods

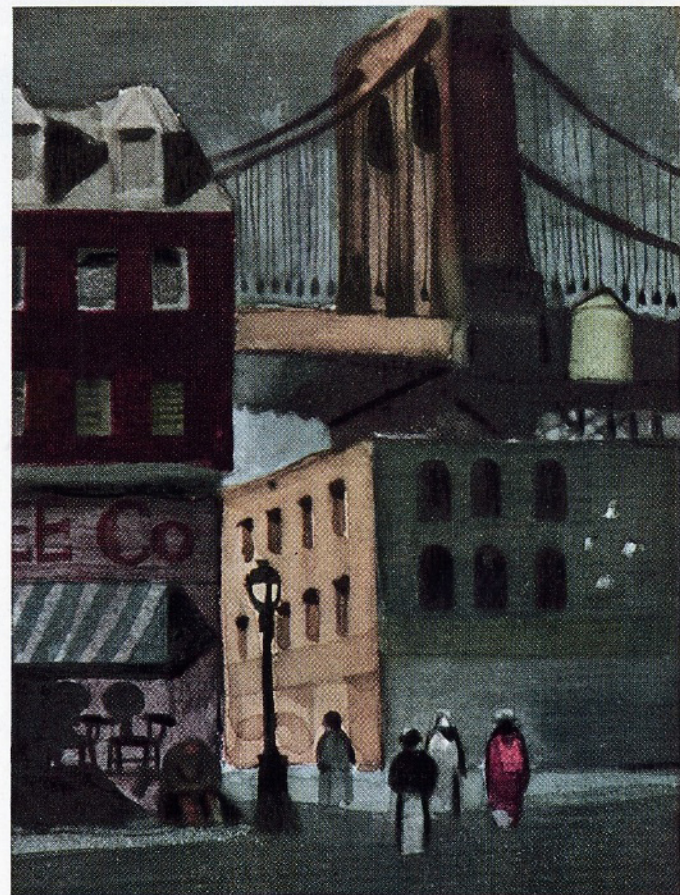
The paintings on this page demonstrate how you can use color to produce a definite *mood* in your picture. It is important to choose colors which will strengthen the other elements in your picture — subject matter, drawing, and composition. For example, the light, gay mood of a party, circus, or wedding, suggests a high key painting full of bright colors. Dark, low intensity colors would be better suited to a scene of mystery or tragedy.

Often, you will find that the actual colors in the real scene do not coincide with these principles. For example, a certain view of a circus scene may be dominated by dull gray elephants, seen against the dark blue or violet shadows of a tent, or the dull brown earth. The clothing of the trainers, or handlers, may consist of dull gray cover-alls. From the standpoint of color, the scene actually suggests drabness.

If your painting is to have a gay, carnival spirit you must either select another, more colorful scene, or change the colors to gayer, more festive ones. In any case, be sure that you control the colors in the painting, to create the mood you want.



This is the same scene painted with colors that are factual and objective. The artist simply matched the colors that he saw, as accurately as possible. A color photograph would be very similar in color to this painting.



In this case, the artist chose colors which were very low in value and intensity, to create a mood of darkness, gloom, and mystery. Compare the swatches beneath this picture with those below the first one.

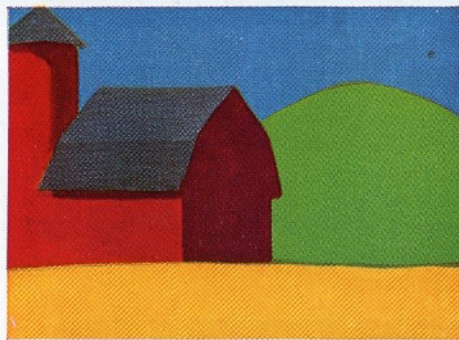
## Color proportion

Color in paint, like color in decoration or dress, can be abused, or used in good taste. Although all of the hues in the color wheel are available for use in your pictures, you will probably never employ all of them, at full strength, in a single picture. If you study the colors in good paintings or illustrations, you will be surprised at the limited range of hues that you find in most of them. In fact, one of the major problems for the beginner in colors, is to avoid a tendency to put every pigment on his palette into each picture.

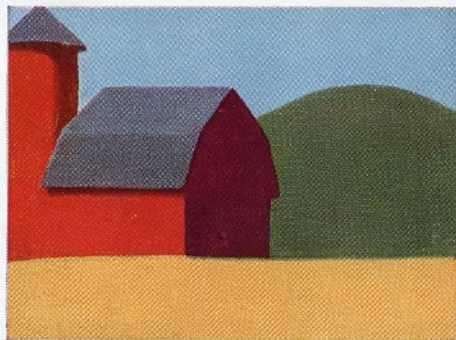
The experienced artist uses fewer hues, but takes advantage of the infinite number of color differences which can be created by

variations of *value* and *intensity*. For example, a red can be varied to produce a pink or brown.

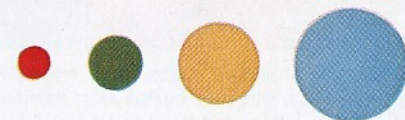
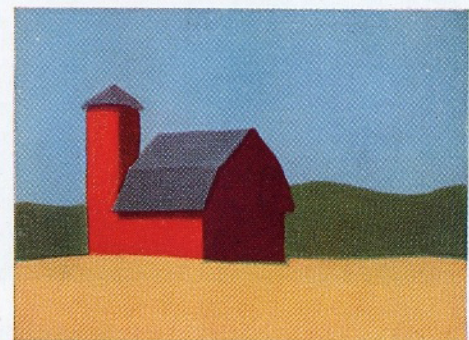
Normally, bright, advancing colors serve their purpose best in small areas to attract attention — as accents. A good decorator uses this principle skillfully in planning an attractive living room. Background colors are quiet, livable, and neutral. Against such backgrounds, a sparkling accent, or small brilliant area of color is most effective. The same principle applies to paintings. Don't use several equally intense colors in the same-sized areas. They will compete with each other, and their individual effectiveness will be canceled out.



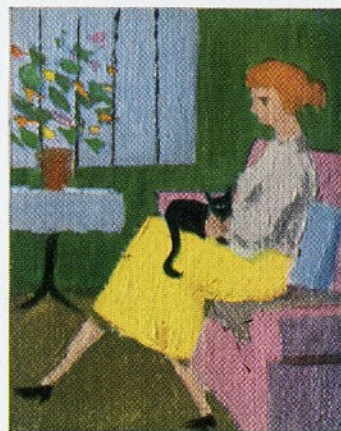
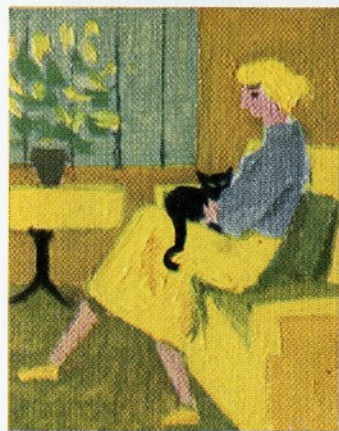
The color proportion, or distribution, in this picture is very disturbing. All four colors — red, yellow, blue and green — are equally intense, and fight each other for attention.



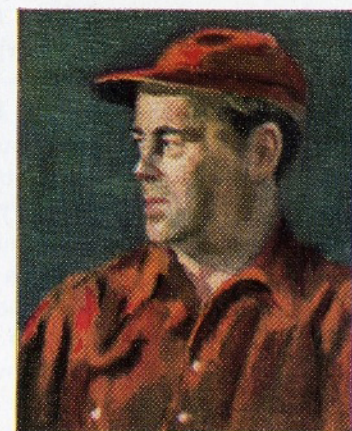
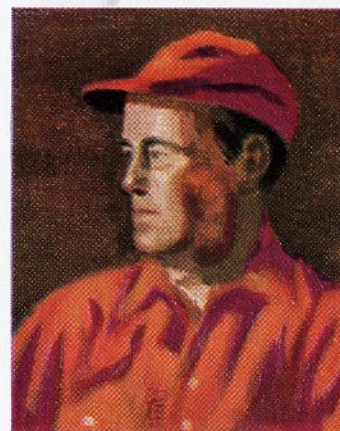
Changing the *value* and *intensity* of some of the colors helps to eliminate confusion, and improve the picture.



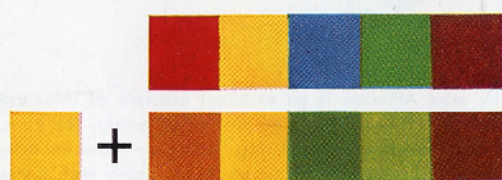
Finally, by changing the size or proportion of the areas, we create a pleasant and well balanced color scheme, with the barn as the center of interest.



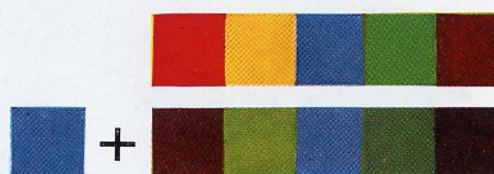
An overpowering amount of yellow has been used in the picture at the left. Yellow is the most advancing of all hues, and hence one of the best accent colors; but *all* accent is no accent. In the picture at the right, the yellow is confined to the girl's skirt, and is in good proportion to all other colors in the painting. It now stands out as a pleasing accent.



At the left, is a typical misuse of color. Because the man's jacket is red, the beginner painted almost all of it with pure red from the tube. This same red, repeated monotonously in the background, overwhelms the color in the face. At the right you see a more tasteful way to paint the same subject. A few, small accents of pure red are enough to show that the jacket is red. Now, the head stands out clearly against the less intense color in the jacket and background.



In painting this picture, the artist added a small amount of yellow to all the colors on his palette. This creates an over-all effect of great warmth. The swatches in the bottom row show how this addition of yellow affects the pure pigments in the top row.



Here is what the same picture would look like if we added a small amount of blue to our usual palette of colors. Now the whole picture is cool.

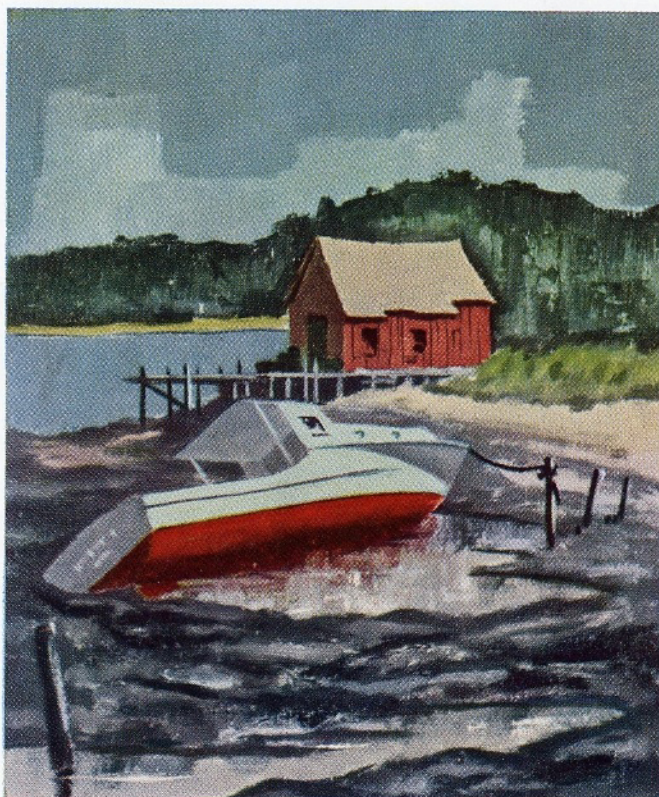
## Set palette

One of the simplest ways to achieve color harmony, or unity, in your picture is to paint it with a *set palette* of colors. This can be done in various ways. The pictures on this page show how to create color harmony by adding a small amount of any *one* color, or gray tone, to *all* the others on your palette. Note that the added color has greater effect on its "complementary" (color opposite on the wheel), less effect on the colors adjacent to it. You can vary this procedure by adding one color to all the light areas in your painting, and another color to all the shadows. These added colors may be warm, or cool, depending on the effect you desire. If you wish to emphasize one color in your picture, the color you choose to add can be mixed with every other color, *except* the one to be accented.

This principle can be extended to emphasize two or more colors. You can create value harmony, and establish the key of your whole picture by adding a light, middle, or dark value of any hue to each color on your palette. Since the colors which you add to your regular palette can vary in hue, value, and intensity, the number of combinations is endless.

A set palette is not suitable when the chief objective is to obtain an accurate color record of nature. In that case, you should match the hues, values, and intensities of each color in your subject, as closely as possible, using any and all combinations of colors. If you wished to paint the same subject with a set palette, you would add a small amount of unifying color (or colors) to each of the colors in the realistic painting.

When using a set palette, you must be consistent throughout the entire picture, or the whole purpose of creating unity and harmony by this means is defeated.



This time, we have lowered the intensity of the colors by adding a small amount of gray to each one. The color effect is soft and muted.

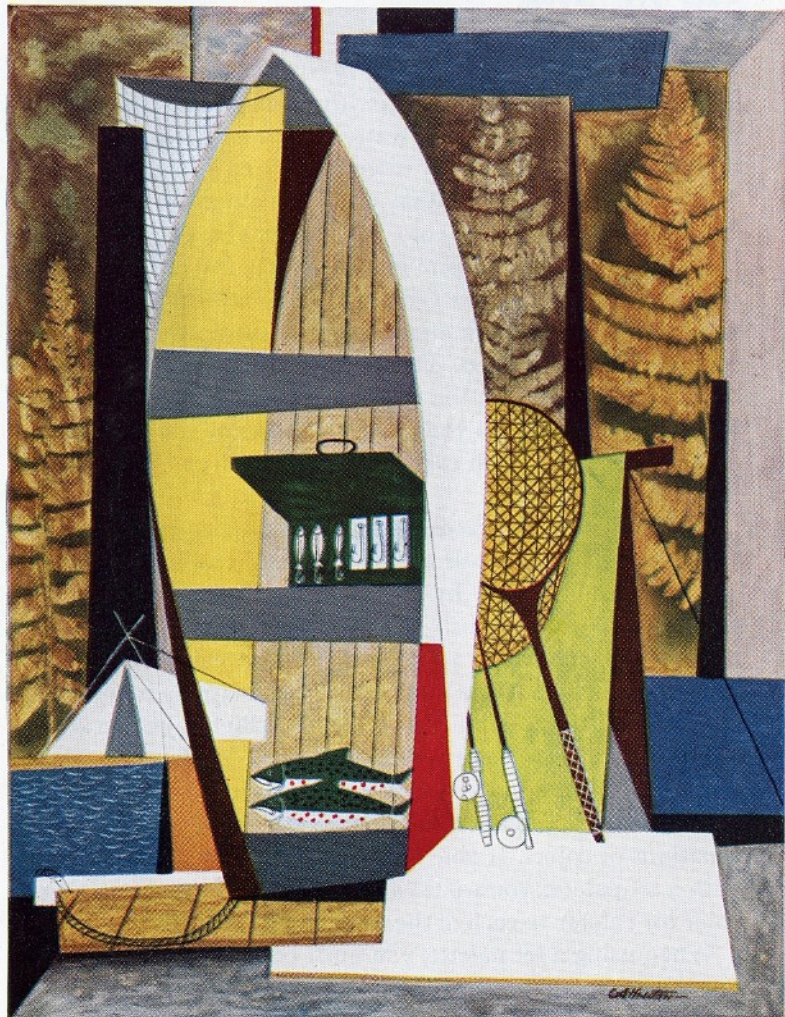


Courtesy True Magazine

This painting by John Atherton is an excellent example of color used in an imitative or naturalistic way to create an illusion of reality. The hues, values, and intensities of the colors are based very literally on those the artist saw in his still life objects. The forms are almost photographically real; it would have seemed inconsistent if the colors were not equally accurate.

### You can use color in two ways

The colors in this painting, also by Atherton, have been used in an entirely different way than in the picture above. These colors are the product of his imagination, rather than the record of what he saw in front of him. This is an inventive, creative use of color. No one ever saw these objects as they appear here. The forms are based on natural objects, but they have been modified and adapted by the artist to suit his design. The colors have been used in an equally arbitrary way.



## Using what you have learned about color

Color can make your pictures successful or it can mark them instantly as the work of an artist lacking the knowledge and ability to use color intelligently and artistically. The people who see your work can be just as depressed or exhilarated by its color as they can be by the weather. You must decide early in the development of your picture just what color "climate" you want to create.

To use color effectively you must possess a sound knowledge of its three parts — hue, value, and intensity. Besides having a good understanding of these basic principles and applying them in your pictures, you must also make sure that the colors you choose are appropriate to your subject and consistent with the concept of your picture.

Suppose that you are painting a very realistic or naturalistic picture of a pine tree. It makes sense that the colors you use should be just as realistic or natural as the actual tree is. On the other hand, if you are interpreting the tree in a more personal way and are taking deliberate liberties with the design and drawing, your use of color should be just as free and imaginative.

The color reproductions of the paintings on the facing page are excellent examples of color used in its most effective way. In each case the artist's approach to color is based on his original concept of the painting.

In the painting of the fish the artist's main interest is in creating the illusion of reality. He is reporting very literally what he saw. Because he drew the forms just as they actually appear, he used his color in the same way.

Try to imagine this picture with the fish's spots a bright red. We are sure you will agree that no matter how beautiful a red it might be, or how well it related to the rest of the picture in value and intensity, it would be a very incongruous addition to an otherwise completely factual picture.

In the second painting the artist has taken his forms and designed them in a very personal way. He was not trying to make a realistic picture, although he used real objects as a starting point. His purpose here was to create a highly individual and original design of interesting shapes, textures, and color combinations.

Since the artist was not trying to paint an illusion of reality, he no longer needed to represent the objects with their factual color and was able to select and use his color in a more personal and arbitrary way. For instance, he found the strong contrast of the yellow against black and gray exciting, and did not hesitate to use it even though this color combination was not present in his subject.

As you paint more and more pictures you will find your work developing a distinctly personal style. With experience and increased confidence you, too, will feel free to give color fuller rein — not feel compelled to copy what you see, but originate, invent and create exciting color combinations.

The success of a picture depends very much upon the psychological effect it has upon the people who see it. If they see color and color patterns which please them, they are attracted to the picture consciously or unconsciously. It is your job to see that they are attracted.

### Choosing your medium

Just as the picture can often dictate how you interpret color, it can also to some extent dictate your choice of medium. Effects vary greatly with the medium, and in planning a picture you should decide which one will suit it best. Eventually you should become familiar with all mediums. As you acquire experience, you can tell very quickly which medium and which colors offer the most intelligent solution to the problem of the moment.

Oil paint is the traditional painting medium. It is most versatile in the effects you can achieve with it. It can be applied thinly or thickly, so that surfaces ranging from perfectly smooth, flat ones to heavily textured ones are readily created. Because of the opacity of oil paint it is easy to make changes, but it does take much longer to dry than any of the water-soluble mediums.

The word "tempera" generally means any opaque water color or gouache. Tempera is usually applied rather thinly; excessive piling up of paint results in cracking and flaking. It dries quickly and has a lovely mat surface. Another opaque water-soluble medium which has found widespread use is casein tempera. It can be handled thinly like ordinary tempera or, because of the strength of its casein binder, built up like oils. It can be used by itself, in combination with other water colors, or as an underpainting for oil paint.

Transparent water color is useful when light and airy effects are desired. Its spontaneity and immediacy lend themselves quite beautifully to certain atmospheric effects. Acrylic or polymer paints are becoming increasingly popular. They can be used in various ways — as a thin wash or thick opaque, for example.

Colored inks and aniline colors and dyes are sometimes used individually, but frequently they are combined with other mediums in the same picture. As you experiment with the various mediums you will soon discover which are best for your own work. You should try each medium and become familiar with all of them.

### Using color to suggest mood

One of the ways you achieve mood in a picture is by composition or the placing of your objects and forms. You can also suggest mood by the use of color. As a rule, you would not do a quiet, sentimental scene in hot reds and yellows and you would not use cool grays for an exciting, violent picture.

As we said before, color has a strong effect on people and causes definite reactions. Red, for example, is a universally successful color in advertising because of its elementary qualities of

strength and visibility and its appeal to the basic instincts of people. Red suggests strong emotions and, by varying the shade, you can suggest variations of such emotions. A bright, clear red generally is most pleasing, while a dark, dirty red can suggest powerful emotions such as passion and hate.

Orange has great warmth. It lends itself well to grayed tones and is usually a good color to use when friendly or warm human qualities are to be expressed. It is also an *appetizing* color and goes well with pictures of food and interiors. Yellow is a cheerful, happy color, suggesting sunlight and life. A yellow set against a dark or black background stands out more clearly and sharply than virtually any other color in a combination.

Green is nature's color and gives an effect of outdoors and growing plants. In its yellow-green tones it combines well with yellow to provide a cheerful atmosphere. In its cooler or bluish-greens its effect is nearer to that produced by blue, which is a color suggesting distance, air, water, and a quiet, peaceful atmosphere. Blue can also give a picture a gloomy, somber quality when its tones are dark and grayed.

Purples and violets are also useful for expressing dark and serious moods in a picture. The red-violets are very rich and hence can be used to indicate luxury and elegance of background. A predominance of grayed blue-purples is likely to be depressing. Avoid them unless you are purposely trying to suggest such a mood.

All of these colors can be darkened or grayed, and then they produce different effects. Richness or, in some cases, a serious or gloomy atmosphere will be suggested, particularly if the surrounding colors are similarly grayed or darkened. In doing a still life of food or drink, avoid suggestions of blue, green-blue or purple in the food or drink unless they actually appear that way. These cold colors suggest mold and decay, just the opposite of the freshness and warmth which you probably desire to suggest.

### Colors affect each other

All color in nature is affected by its surroundings and in turn has its effect on its surroundings. Think of a color not only as a color by itself, but also in relation to its neighboring colors in the picture — how it affects them and is affected by them. We will not consider the chemistry of color or its scientific aspects involving the breaking down of light into the spectrum. Instead, we will approach the subject more directly by considering just how the colors which you buy in an art supply store can be used in making pictures.

When you paint one color next to another, often it does not appear the same as it would by itself. Our eyes react strangely in such cases. For example, if you place side by side two contrasting colors of the *same value*, such as bright red and bright green, you will find that they vibrate or “jump,” and the effect is disturbing and confusing. But if you mix a little white or black with one or the other to change the value, the effect becomes much more pleasing.

Always keep enough difference in values between adjoining colors to avoid this “jumpiness,” unless you are striving for such an effect. When the colors are more grayed and not so bright, they can be combined in nearly the same values much more successfully, but in placing contrasting colors side by side it is always best to darken or lighten one to create a variation in their tonal relationship. This gives added interest to both colors.

You can combine two contrasting colors or two complemen-

tary colors successfully by adding a little of each color to the other. If they are used in their pure form, the contrast may be too harsh. The slightest alteration will often effect a proper balance.

We have found by experience how certain colors affect each other when placed together. Earlier we saw that probably the strongest contrast is obtained with yellow on a black background — it is even stronger than white on the same background. Yellow has the quality of “carrying” well and can be seen at a great distance. But yellow on *white* is hardly visible at a distance. Each color is altered in appearance when placed against a light background or a dark one. Light colors look darker against light backgrounds and lighter against dark backgrounds. Much stronger color can be used against a black background or with a black separation or outline than if the black were some other color.

Some modern painters achieve a sort of stained-glass effect by using very pure color separated by heavy blacks. The results can be very beautiful because the colors do not seem to defeat themselves as they would when used without the foil of the black to separate and enhance them. If you use a gray next to a strong color, the gray will then tend to appear more like the complementary of the strong color than if it were by itself. Sometimes it is necessary to alter such grays to overcome the optical illusion resulting from such contrasts.

### Handling black, grays and shadow areas

Black — theoretically the absence of color — will be considered here as a color. It is one of the great colors in art and you should learn to use it intelligently. You can get it in a tube or it can be mixed in many ways. It is one of the great foils for other colors, particularly brilliant ones, and gives them added interest by accentuating their qualities. Black can be used as a means for darkening or grayed other colors or a neutral gray can be made by mixing black with white. Grays made from black and white are likely to be very cold and lacking in quality unless used with other grays or tones of color which enhance them. However, many artists prefer to obtain grays and middle tones by the use of color itself. By this we mean grays made from *colors* which together give the effect of grays. Colorful grays may always be mixed by using complementary colors and white together, leaning toward one or the other color to make the grays warm or cool.

Shadows are never a solid or opaque color. Invariably they are lighted in some way by the reflection of surrounding colors. Of course, when you do a decorative picture or a design you should not be governed by a realistic color approach. The design itself, and not the shadows as we observe them in nature, will dictate the color. In a painting intended to reproduce natural effects, shadow areas can frequently be a means of introducing interest where otherwise it would be impossible to do so. Shadows often provide an opportunity for your imagination to have free rein.

Avoid the harsh purplish tones which can make a shadow so unattractive. If a shadow is warm, a suggestion of coolness at its edge, where it turns into the light, will help give it more luminosity and reflected light, and avoid an unnatural opaque quality. A warmth along the edge of a cool shadow will create the same effect. Remember these points when painting shadows.

Usually the pigment should be thin in shadows and heavy in the areas of light. The most strongly lighted areas are the

most prominent and reflect the most light, so they require thicker paint to suggest this. Do not allow your lights to become chalky, pale or lacking in color. Keep your shadows rich and transparent. A strong color is always best next to a weaker one. Several strong colors together defeat each other and the result is a muddle of gray.

An over-all sameness in paint quality is as bad as monotonous textures. Keep your paint thin where areas are quiet and unimportant. Load it or try to achieve variety in textures where accents are needed. In a picture filled with complicated areas of color, you need occasional relief. Keep some parts simple and flat to make the busy ones stand out by contrast.

### Choosing a palette

In the beginning, limit yourself to working with a rather small selection of colors. Trade names for colors vary, so you may be able to determine the exact color you need by consulting a company color chart or trying the color on paper yourself. When you have learned to control the simple basic palette which we describe later, you'll find it useful to add other colors. In general, these should be colors which give you a warm or cool variation of each basic hue—for example, your more advanced palette might include a warm yellow-green as well as a cool blue-green, a pale yellow and a deep yellow, a hot or orange-red and a cool or purplish red, and so forth. Such variations as these, together with black and white, will take care of most of your needs.

Of the whites, titanium is probably the best for all-around use. Lead white (Chremnitz white) is excellent but is extremely poisonous if it should enter your system through a cut or through the lungs. Titanium is more opaque and covers better than either lead or zinc white. Its one drawback is its tendency to dry slowly. Zinc white has excellent consistency and is very useful when opacity is not desired.

You need not buy the most expensive paint, although good color helps. Try to effect a compromise between cost and quality. Do not sacrifice too much in quality or pay a price that is too high. There are many brands for you to try before you can discover the one which may prove effective for your purposes.

### Doing a picture in color

In the beginning, it will be best for you to use the simplest possible color scheme and treatment in the rendering of all your work.

When you work in color from nature, do not be influenced too much by the local color, that is, the exact color of the object which you are painting. Interpret this color in your own terms, and be more concerned by what the picture needs than in putting down exactly what you see. The color of objects or forms is influenced so strongly by the effect of light upon them that you will find, at times, the actual local color will be almost entirely lost. It will be defined to a great extent by the color of the light and the manner in which the texture of the form reflects or absorbs the light.

Where the surface is hard and reflects light strongly, you will have little local color. Where the surface is soft and absorbs the light, it will be much less affected and will appear more normal. Shadows will be found to tend toward the complementaries of the lights, particularly along their edges, although this is hardly a rule. But your own choice of color, the color which will make the best picture, is more important than observing how color

reacts chemically or scientifically. It is taste that counts most.

Avoid those acid-appearing contrasts. It requires a great artist to place bright orange next to bright green, but you can make these colors beautiful together by toning each one so that neither cries out. When many of the objects in your picture are lacking in color or are of subdued color, you can use a considerable area of bright, pure color as a foil and for contrast. Or, if there are many areas of bright-colored objects and forms, a large, simple grayed tone will make them much more beautiful.

In doing a picture in color, the background color is important and should be established first of all. Then you will be able to select and relate the colors in front of it more easily. Values are extremely important in any color scheme; to determine how they will work out, you will find it helpful to mix several of your important colors and try them next to each other on a sheet of paper. Otherwise you may discover, after painting a large area of your picture, that it must be done over because of the wrong choice of color or value.

When you make grays, some lovely colors can be created by using certain combinations. White and raw umber produce a fine, warm gray. With burnt umber it becomes slightly pink, a fine foil for a cooler, more neutral gray. Some of the dark, shadowy tones which are very useful in a picture can be obtained with a combination of cobalt blue, white and burnt sienna. The tone can be made blue or brown by leaning toward the blue or the sienna. You can also make grays by painting one thin color over another in the picture, instead of mixing them on the palette. These grays, called "optical grays" by the old masters, have infinitely more variety, color and transparency than mixed grays.

Beautiful rich blacks can be created with ultramarine blue and burnt sienna or burnt umber.

Sometimes you will find it difficult to make a light golden brown color appear bright enough. By using pure raw sienna or a mixture of yellows with browns such as burnt sienna or burnt umber, and by keeping the color thin, you can achieve a much brighter effect. The color should be thin enough to allow the white paper or canvas to show through. In fact, whenever you wish to make any color bright and glowing, it is best to keep it thin so the white background comes through to provide transparency. Of course, you can make lighter tones very bright with thicker paint, but in the middle or dark colors it is best to try to retain a feeling of the white background underneath.

To achieve brilliance and purity in colors, mix them with other colors on the *same side* of the wheel. For example, to produce a very bright green, you should use a pale lemon yellow and either a yellow-green or a blue-green, not a purple-blue. You would not achieve as brilliant an orange by combining yellow and alizarin crimson as you would by mixing vermilion and yellow. To gray an orange, add a bit of complementary blue from the opposite side of the color wheel.

When you mix a color, decide in advance which of the colors you are mixing most resembles the desired color. Then start with that particular color. For example, in mixing a yellow-green, start with yellow if the color you desire is to be very light and pale. Start with green if the resulting color is to be on the green side. Adding white will help in such a combination, but do not use much; it will cause your color to be chalky and lacking in richness. Again, if you are mixing a blue-green, start with blue if the final color is to be more blue than green, but if the result is to be on the green side, start with that color.

## Using color to center attention

On the opposite page are four paintings which show you how to put your control of hue, value, and intensity to practical use when it comes to solving an actual picture-making problem. In this case we are going to do a still life. The center of interest is a bottle of perfume. We want to paint it in a decorative setting which will make it stand out clearly and sharply. The effect we want to create is one of gaiety and liveliness.

It is readily apparent that the painting shown in Figure 1 is ineffective. This is due almost entirely to choice of color, both in the bottle and background. The bottle, with the package, box, or wrapper, does not “stand out.” It is lost in overtones of similar colors and values. In spite of the fact that we have centered the bottle in an obvious attempt to make it important, it still does not “carry.” What can we do to concentrate the observer’s attention on it?

To be pleasing, the colors in a painting must be chosen and arranged to create harmonious “overtones,” avoiding harshness and poor relationships. The colors must also be carefully adjusted in hue, value, and intensity. We do have harmonious overtones here — but the colors are *too* harmonious. These colors are all analogous — chosen from one side of the color wheel — with the exception of the few spots of blue. Even the gray drapery behind the bottle is a *warm* gray, and the ground is still warmer in tone.

What the picture needs in order to accentuate the center of interest is a more evenly balanced relationship between analogous and complementary colors, as well as a proper use of contrast.

Our first step will be to work on the bottle itself. In the first picture it is done in rather dingy tones, with no sparkle to suggest glass. Examine the picture shown in Figure 2. The over-all scheme is exactly the same, except that the colors of the bottle and box have now been raised in value and made more intense. A few accents have been added to bring out form and texture. Already we can see an improvement, but more can be done.

Figure 3 shows our first really constructive attempt to make the painting better as a whole. We can easily see that introducing a dark, cool color in the drapery behind the bottle and box has added strength to the picture immediately. The cool, bluish gray provides better contrast with the yellow and orange bottle and box than the previous color did. Next we introduced a cooler gray on the flat, boxlike form which is used as a base for the bottle, and also made the ground area slightly cooler and

grayer. This has an effect similar to the change in the color of the drapery. Now, at least, we can see the bottle more easily and quickly.

There were other obvious weaknesses, so we have rectified them. The shadows were too pale and too near the color of the bottle. We wanted to keep them warm, however, since a warm shadow is more lifelike and pleasant. It suggests the presence of sunlight. Therefore, all the shadows were darkened with a brown of a reasonably neutral hue. Notice how this immediately strengthens the picture. The three-dimensional effect is also heightened. The shell in the foreground is rather disturbing in hue and value. It detracts from the center of interest. Giving it a pattern of dots improves it somewhat, but let’s consider it further. We want the eye to see the bottle immediately, without being distracted by objects in the foreground.

In Figure 4 you will notice that the most important change in the picture has taken place — the introduction of a new and different sky color. It would have been nice to retain the orange sky, to lend the picture that pretty, sweet overtone, but at last it was obvious that it should be sacrificed. Discovering the exact blue took a bit of experiment, since it had to be *right*; not too light or too dark, too bright or too gray. It tends toward a faintly purplish blue rather than a greenish one, which would be harsh and “acidic” when used against or with orange. Notice how much gayer the picture appears. This color adds a note of freshness, and the bottle and box become even more important.

That shell in the foreground had to be changed, too, so we made it a lighter pink. With its pattern of spots it now takes its place without interfering with the bottle. The eye looks right over it. Now we add a few finishing touches to the bottle itself; strong touches of dark and light enhance the “sparkle.”

Let’s summarize what we have done. The most important alterations were the dark gray drapery and the blue sky. Next in importance was the addition of the gray top on which the bottle rests. Of almost equal importance were the value changes in the shadows, designed to give the painting more strength and to increase the illusion of a third dimension. The actual alterations on the bottle were of secondary significance, although one might naturally think of them first. All these changes make the bottle more prominent. The picture as a whole has considerable “sparkle” and color, but there is no doubt about what is the center of attraction.



1 The problem here is to make the bottle the center of interest. This first color scheme fails because it lacks contrast.



2 First a few dark accents are added to the bottle, and a cast shadow is introduced on the box. Now the center of interest is seen a little more easily.



3 Next the other shadows are lowered in value. The drapery is changed to a deep, cool blue. An interesting pattern is added to the shell. Already the picture is much more forceful, and the bottle seems more important.



4 The warm sky still distracts the eye, so it is changed to a cool blue which forms a retiring background. The shell is made a lighter pink. Accents on the bottle are made still stronger. Now the most important form commands attention.

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### Select a color theme

Always plan the color in your picture to create a definite effect that will strengthen the picture idea. The pictures on these two pages are fine examples of such planning. Next to each one is a strip of typical colors taken from the picture and isolated, to emphasize the color theme of the painting.

In Doris Lee's *Snake Charmer*, the limited colors consist chiefly of warm, dusty browns, appropriate for the heat of the North African locale.

Ben Shahn's *The Staircase* is a perfect demonstration of how to center attention through the use of color. The single discordant red note stands out dramatically against the cold grey-blues that dominate the rest of the picture.

Ernest Fiene's *New Snow* is an excellent example of how effective a limited number of grey, muted colors, can be when used in a sound design with strong value contrast.

Doris Lee's other picture *Summer Idyll*, contains dominant blues and greens which make this mid-summer scene a pleasantly cool one. Had she used *warm* greens, greys, yellow, etc., the effect might have been disagreeably hot.



Doris Lee — Snake Charmer



Courtesy City Art Museum of St. Louis



Ben Shahn — The Staircase





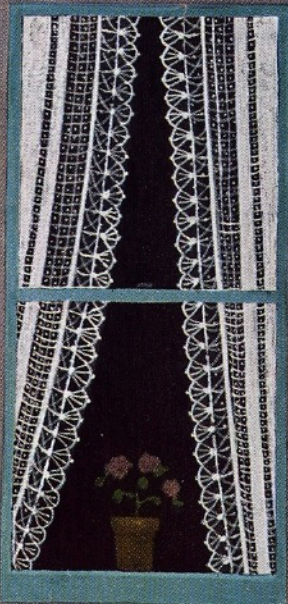
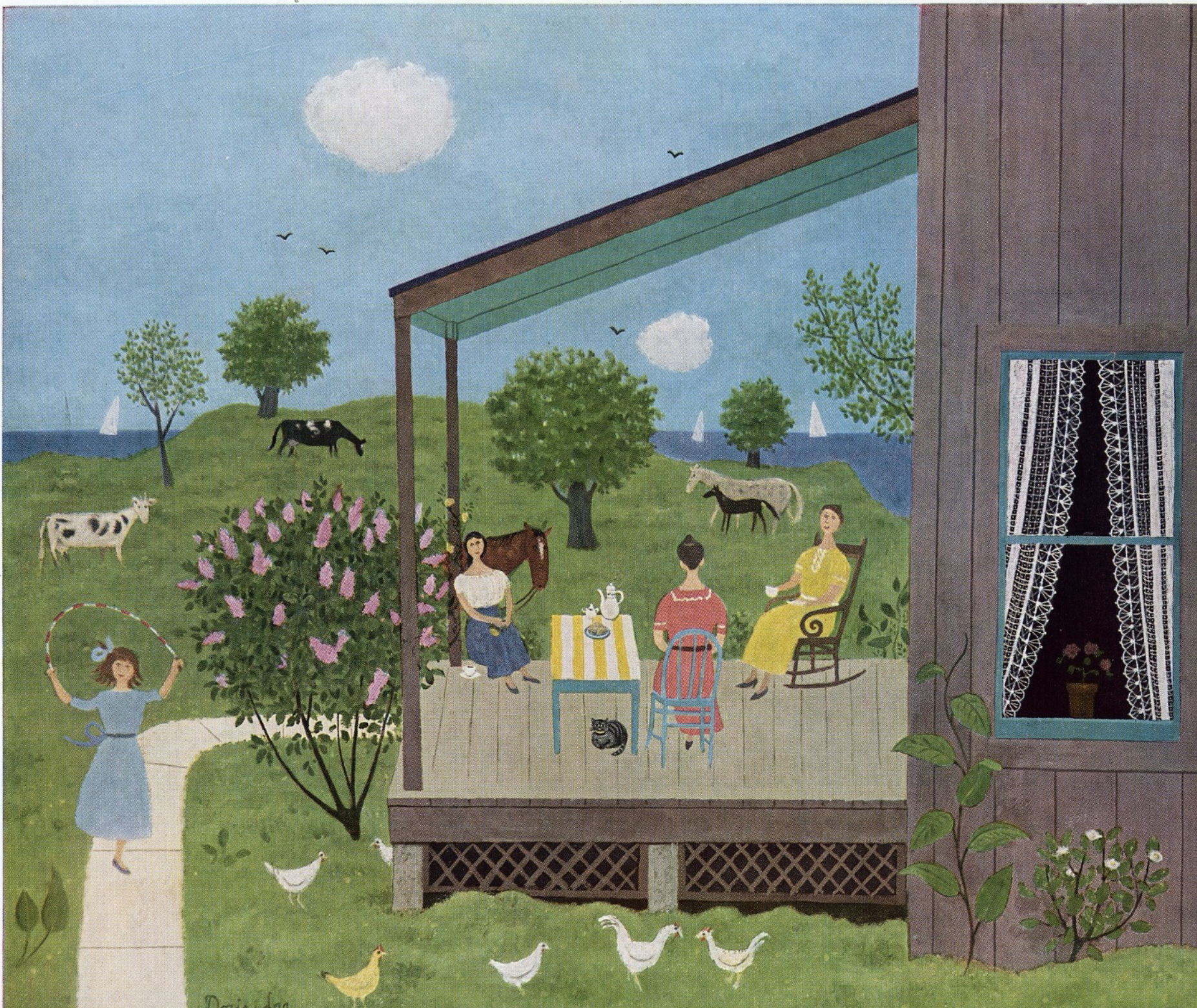
Ernest Fiene — New Snow

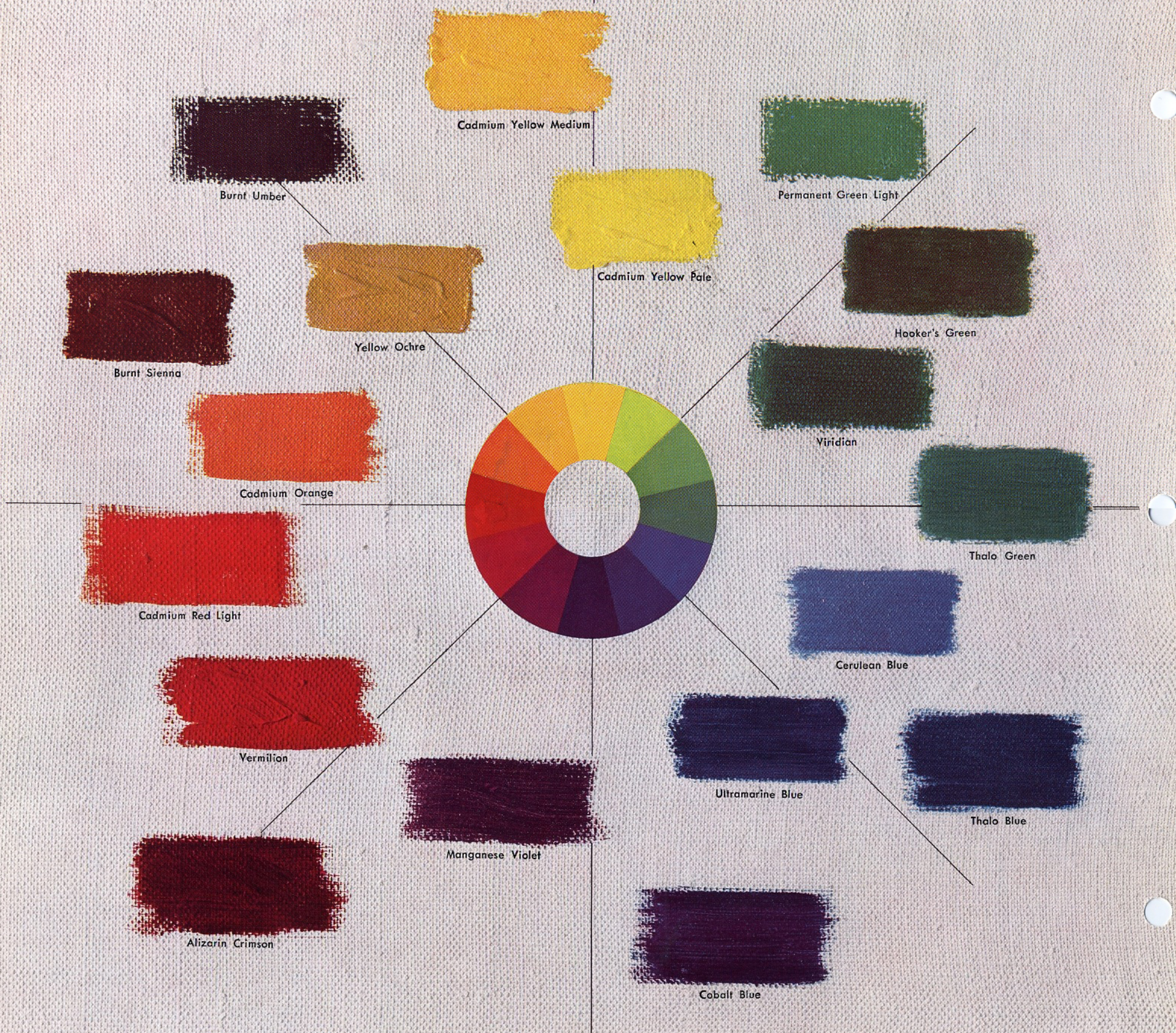
Courtesy The Metropolitan Museum of Art



Doris Lee — Summer Idyll

Courtesy Abbott Laboratories





## The pigments you use

So far, we have described color only in terms of the hues of the color wheel, that is, yellow, yellow-orange, orange, red-orange, etc. However, the tubes of color which you buy in art stores are not named like the colors in the wheel. Instead, the colors are identified by *pigments* rather than hue. Pigments made from minerals have names like Cadmium Yellow, Chromium Oxide, or Cobalt Blue. Others, such as Ultramarine Blue, or Van Dyck Brown, take their name from their appearance, or from the artist who made the pigment popular.

On this page, we have arranged some of the most common and useful pigments around the wheel, to show you their *true hue*. For example, Burnt Sienna is orange in hue, although it is much

darker and less intense than pure orange in the color wheel. Cerulean Blue is a green-blue, while Ultramarine Blue is a more violet-blue.

Knowing the true hue of the pigment is especially helpful when you are using very dark colors in a painting. For example, if you wanted a consistent cool effect throughout your picture, you might spoil it by using Burnt Sienna, or Burnt Umber, for the dark accents because the basic hue of these colors is yellow-orange. A cool, dark pigment such as Viridian, or Ultramarine Blue, would be better. In order to recognize the true hue of these dark pigments more easily, mix a small amount of white with each of them.



With the pigments which are laid out along the edge of your palette, you can create almost any color effect that you wish. We recommend the following pigments as a good beginning palette. As you see them here, reading clockwise, they are:

- Ivory Black
- Cerulean Blue
- Viridian Green
- Flake White
- Cadmium Yellow, Medium
- Yellow Ochre
- Cadmium Red
- Alizarin Crimson

One cup holds your painting medium, the other contains the turpentine for cleaning your brushes. Notice that the warm colors are laid out along the top edge, the cool colors along the side. Later, as you develop personal color preferences, you may want to add other pigments to these or substitute new ones.

The demonstrations in this section are done with oil paints, but you can apply the same principles of color mixing to other painting mediums such as casein, acrylic, or tempera colors, which you mix with water instead of oil or turpentine.

## The palette

The term "Palette" has two meanings to the artist. One is the actual board or mixing surface, as shown above; the other (and most important meaning) is the particular group of colors which shows up repeatedly in an artist's work, and helps us to identify it. In many cases the palette of the artist is so strongly personal that you could recognize a painting of his by the colors alone.

Even a casual study of the work of well known painters and illustrators shows how the palette of each one helps to personalize his work, and distinguish it from that of other artists. Some examples are the clashing colors of Van Gogh, the intense colors of Gauguin, or the pastel colors of the Impressionists who excluded black and earth colors from their palette.

Artists are apt to change their palette from time to time. They may do this simply because they become tired of the old one, or because the solution of a particular picture problem requires a new group of colors. Study the paintings by Doris Lee, Ben

Shahn and Ernest Fiene. They clearly demonstrate the value of an individual palette.

## Mixing

The best way to become thoroughly familiar with your palette, and gain confidence in using color, is to start right in mixing pigments. Begin with two colors, plus white. Each time you vary the amount of one of the three pigments, you create a new color. You will soon realize that with just a few colors, plus black and white, you can make limitless combinations.

Notice particularly, that the tints created by the addition of white to these colors tend to make them appear cooler; adding black tends to make them warmer.

It is not enough to read and study the next few pages. Get paints out, and actually mix up the combinations demonstrated. As you mix, note the colors you create with each mixture.



Here are the colors that we can make by mixing the yellow at the left with the red at the right. These two colors create orange. The orange and red make red-orange, and the orange and yellow make yellow-orange. Directly beneath are tints of these five colors, made by adding white to each one.

**Mixing** *continued*

Practically all the colors you will ever put down on canvas will have to be *mixed* on your palette. For this reason, you should form good mixing habits right from the beginning. Mix your color in the center of the palette, and wipe off your brush before picking up the pure colors squeezed out along the edge.

Above all, keep the mixtures *simple*. With two or three colors,

plus white, you can create almost any color you will ever need. If you mix up more than this you will probably end up with a muddy, dirty gray. Avoid dipping your brush aimlessly into one color after another. If you cannot seem to mix the color you want, stop, take a fresh look at the color in your subject, and compare it with those around it.



### Mixing grays

Every artist must learn how to mix a wide variety of grays and grayish colors because the subject matter that he will be painting contains more of these muted passages than pure hues of high intensity. You will rarely find occasion to use color, straight from the tube, in your picture. Grays can be made in two ways: from black and white, or from complementary colors and white.

We have already discussed the handling of grays. We pointed out that lovely grays can be made from colors rather than from black and white paint. This principle is followed by many artists, though there is plenty of support for the use of black and white in making grays and gray colors. You should experiment and decide which method best suits your style and taste.





Seurat — An Afternoon at La Grande Jatte

Courtesy Metropolitan Museum of Art

### The eye mixes color

On the preceding pages, the different colors were made by actually mixing or stirring one pigment into the other, with a brush or painting knife. For example, red mixed with yellow makes an orange paint, or red mixed with blue makes a violet paint. This, of course, is the usual way of mixing colors. However, you can also create the effect of an orange area in your painting, by placing small strokes, or dots, of pure red and yellow alongside of each other. Viewed from a slight distance, these red and yellow dots merge and appear orange. Red and blue dots appear violet. Dots of complementary colors, such as red and green,

yellow and violet, create a richer, or more vibrant gray than we get by mixing these colors on the palette. This type of painting, letting the eye mix colors, formed the basis for a whole school of painting, called "Pointillism," which developed in France during the 19th century. The detail above is from "An Afternoon at La Grande Jatte" by Georges Seurat, the best known member of this group. The pairs of swatches around the detail show in one square how the pure colors would be placed side by side. The other square shows the general effect of these colors when seen from a distance.

## Let's start painting

The demonstrations on the following pages are designed to show you: (1) how to recognize colors in nature; (2) how to mix up these colors on your palette; (3) how to apply them to your canvas.

To demonstrate these points, we have used color photographs to represent a real still life. When you study these photos, look at them as if they were *the actual objects*. Even before you pick up a brush, sit down and study the colors in the subject you are going to paint. Look at them through squinted, or half-closed eyes, and see them as *shapes of color*. We have already pointed out that there is no such thing as a single color for grass, another for sky, etc. The color in all materials will vary with each change in the light that strikes it. As you study the subject you are about to paint, ask yourself questions like these: First, what is the color of the light? Is it warm, or cool? Where is the darkest dark in the entire picture; the most intense color; the grayest color? If there are several red colors in this subject, which ones are cool, which warm? Each of these questions can be answered, by comparing *one color with the other*. In fact, you should be able to make a sort of mental color sketch, in which you accurately paint the relationship of all the colors in your subject. Unless you can create such a picture in your mind's eye, there is no use in mixing up pigments on your palette, since you won't know what color you are trying to create. Therefore, spend plenty of time simply looking at the colors in your subject.

Once you do begin to paint, relax and have fun. Put your colors down confidently, but not carelessly. Make it a special point to look for, and recognize, the wide variety of colors in the light, half-tone, and shadow areas of your subject. As you make these observations, follow through in your painting by mixing up small amounts of color, and making color changes with every few brush strokes. Do not mix up a large puddle of color. This encourages you to ignore interesting color changes, and to substitute large, monotonous areas of a single color.

### Compare colors on the canvas

Make it a habit to compare your colors *on the painting*, not on the palette, because one color is strongly affected by the other. Mix the color you want, and put a few strokes of it on your canvas. Then, stop and look at it. Compare it with the color next to it; decide whether it is too light, too dark, too red, etc., or just

right. Don't waste a lot of time trying to mix the exact color on the palette. Remember, your color will look different against the palette than it will on the painting.

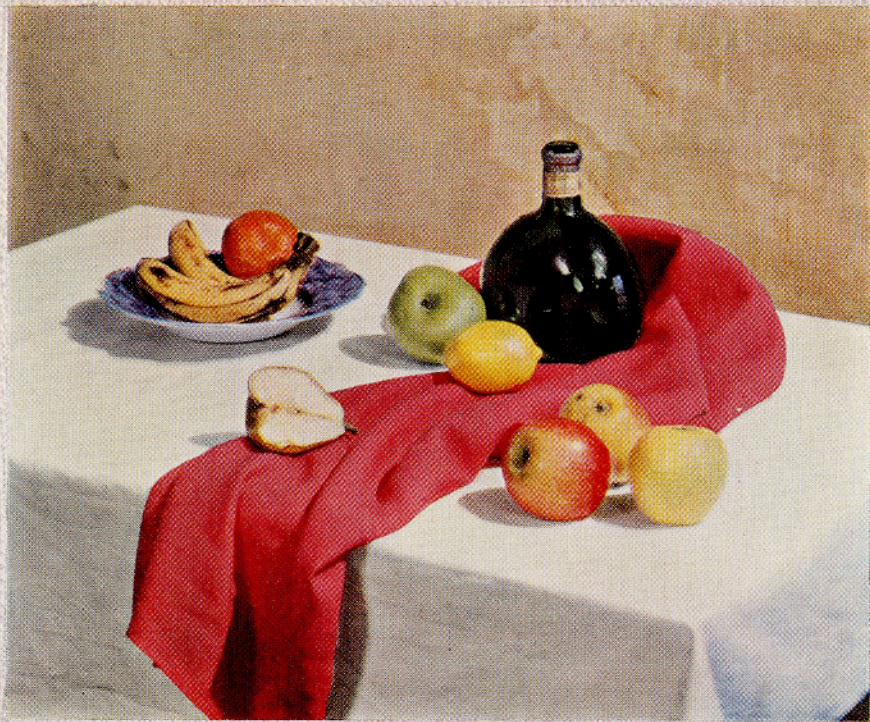
Another thing to keep in mind is the *manner* in which you apply this color to your painting. Avoid mixing one color into the color alongside it, or beneath it. For example, suppose you decide on a certain color for a sky area, and a certain color for a foliage area: when you have mixed up the sky color, put it down and leave it alone. Do the same for the foliage. If you start brushing the color of the foliage into the sky, you will end up with paint which is neither the color of the sky nor the foliage.

### Painting from nature

If you study nature carefully, you will soon realize that you rarely see colors that are as strong, or as bright, as those you squeeze onto your palette. Colors like pure Cadmium red, or Cadmium yellow, should be used sparingly. Equally rare are cases in which you will find it necessary to use values as dark as pure black, or as light as pure white. Some painters find it helpful to tack two small squares of paper — one white, the other black — in the corner of their canvas. Then, they check the value of dark and light tones against these extremes. Whenever you are painting out-of-doors, there will be much more light on your painting than there will be when you look at it back in the studio. This stronger, out-of-door light makes the colors in your painting lighter, and more intense than they would be on your studio wall. Subtle color differences that seem just right while painting outdoors disappear in the weaker interior light. With experience, you will soon know how to compensate for this difference between indoor and out-of-door light.

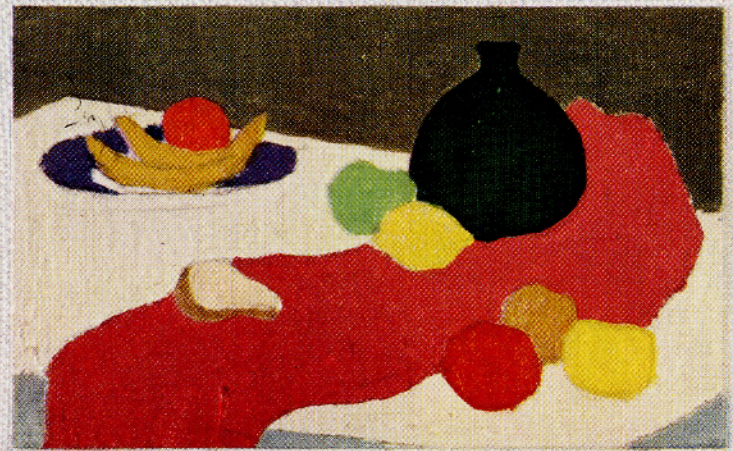
You will also find it helpful, occasionally, to look away from your subject for a few minutes, in order to gain a "fresh eye." If you stare at the subject for long periods, you will lose sight of the proper color relationships.

Always be aware of the great variety of color that exists in everything you see. A group of rocks, or a pile of logs nearby, may seem to be the same in color as the sand on which they rest. The color variations may be very subtle, but they are there. In such a case, imagine how these materials would look if we actually sprayed all three of them with a single color.



Let us assume that we have set up this still-life and are about to make a painting of it. Before we even pick up a brush, we study it carefully, comparing one color with another, deciding what colors are darkest, lightest, grayest, or strongest. At the same time we also try to decide what combination of pigments we need to create these colors.

### Color in a still life



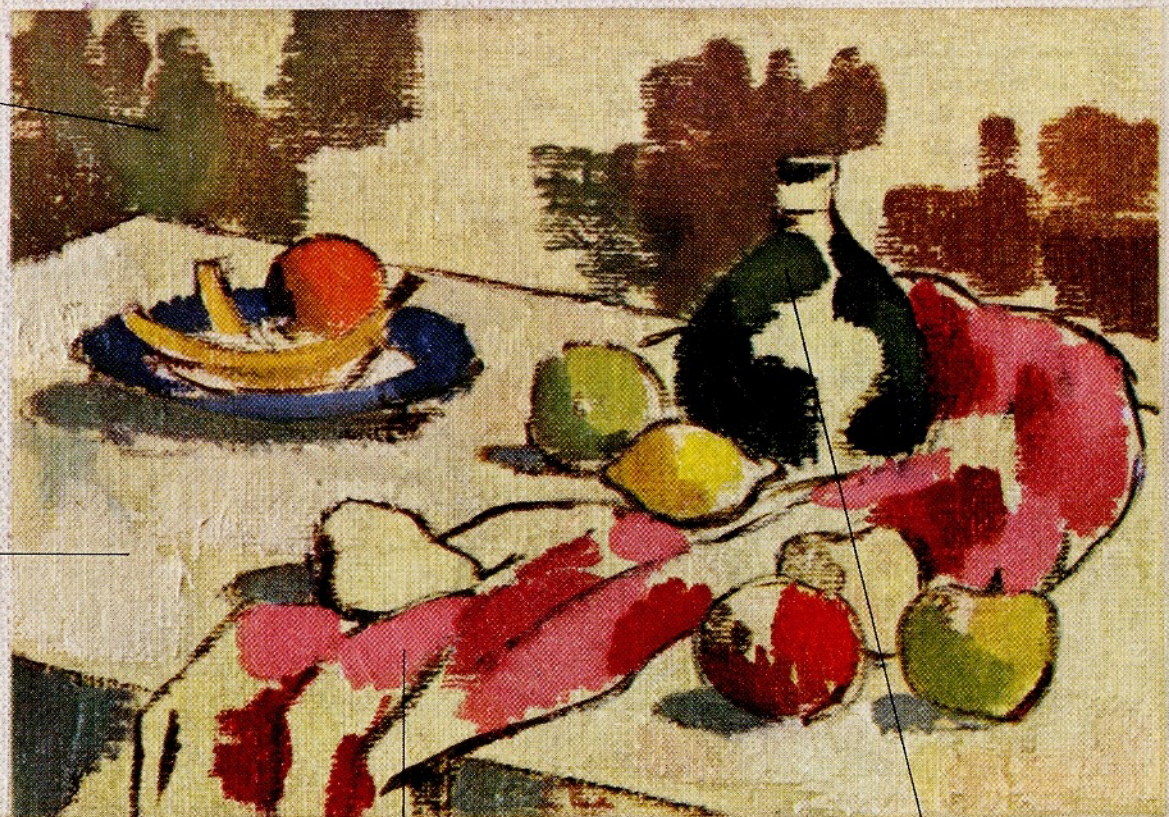
Although we look for a variety of colors within each object, we must not lose sight of the *basic local color* of each one. The bottle is green, the drape pink, the tablecloth white, and the background a warm gray. We decide to darken the background to bring out the tablecloth and drape.



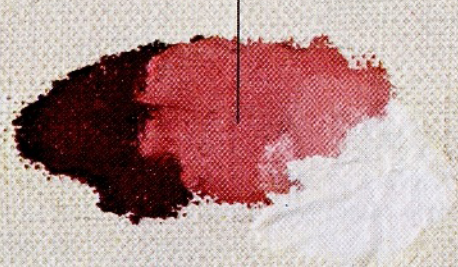
Burnt Sienna, Viridian and White



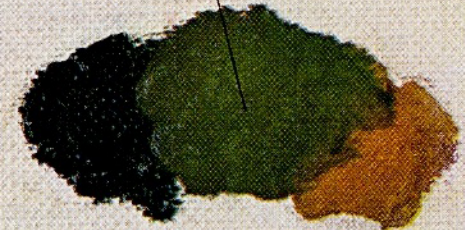
White and Yellow Ochre



**Stage 1.** First we *tone* the canvas with a thin, light wash of Burnt Umber and turpentine. This tone covers the pure white canvas and makes it easier to compare all values, *lights* as well as darks. When this tone dries we sketch in the still life, cropping the photo slightly at the left and bottom to improve the design. We relate main areas of color as quickly as possible. The lights are warm, the shadows cool. Note that these first few colors suggest *form* of objects in light and shadow, in contrast to the flat diagram of local color above. Comparison is easiest if we put colors of background, bottle, drapes, etc., *next* to each other. Note different yellows in apple, lemon and banana.

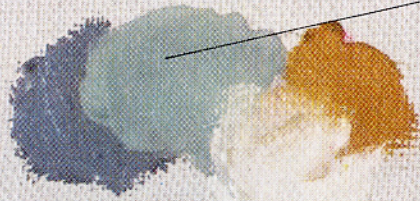


Alizarin Crimson and White



Viridian and Yellow Ochre

**Stage 2.** With the whole canvas laid in, we can compare colors accurately. See the definite differences in color between the light and shadow areas in the fruit, drape, and tablecloth. Note that all parts of the picture are equally unfinished. Don't waste time finishing up one section until you have compared it with all the other colors in the picture. If any colors need correcting, change them now.



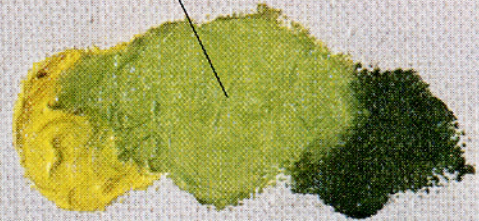
Cerulean Blue, Yellow Ochre and White



Alizarin Crimson and Cadmium Yellow



Alizarin Crimson, Cadmium Red and White



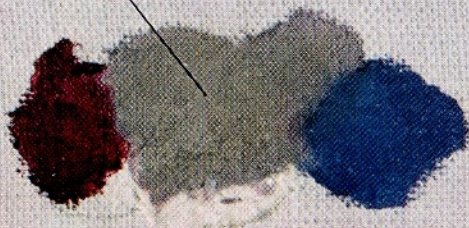
Cadmium Yellow and Viridian



**Stage 3.** The finished picture is simply a refinement of the second stage. The forms are painted more carefully, and necessary details, such as highlights, reflected lights and shadow accents, are added. The wall seems too warm, so we make it cooler and grayer to keep it in the background.



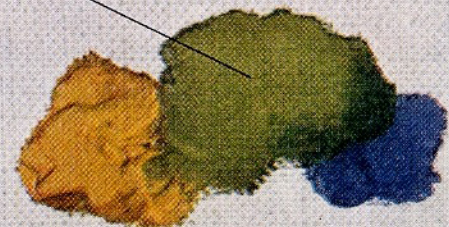
Ultramarine Blue and Viridian



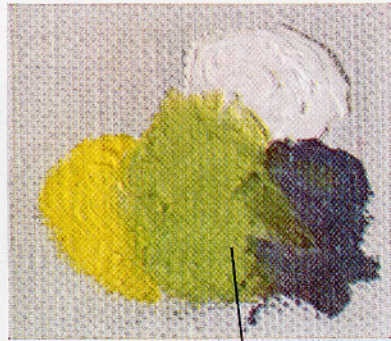
Alizarin Crimson, Cerulean Blue and White



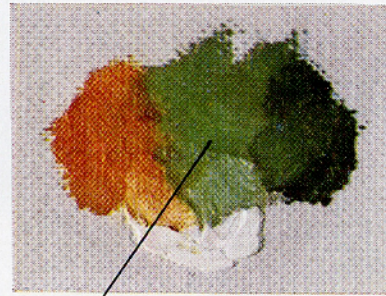
Cadmium Yellow and Cadmium Red



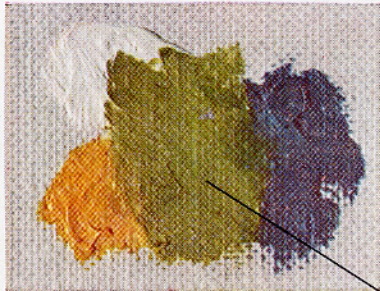
Yellow Ochre and Cerulean Blue



Cadmium Yellow (Light), White and Cerulean Blue



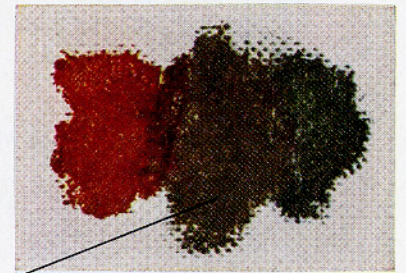
Yellow Ochre, White and Viridian Green



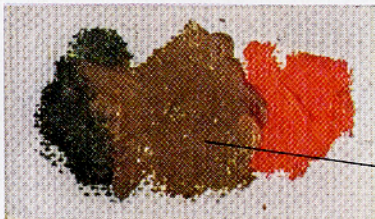
Cadmium Yellow (Deep), White and Cerulean Blue



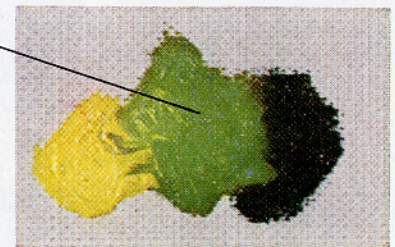
Courtesy Vermont Development Commission



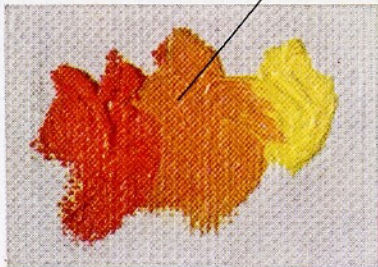
Burnt Sienna and Viridian Green



Viridian Green and Cadmium Orange



Cadmium Yellow (Light) and Viridian Green



Cadmium Orange and Cadmium Yellow (Pale)



Black and Cadmium Yellow (Deep)

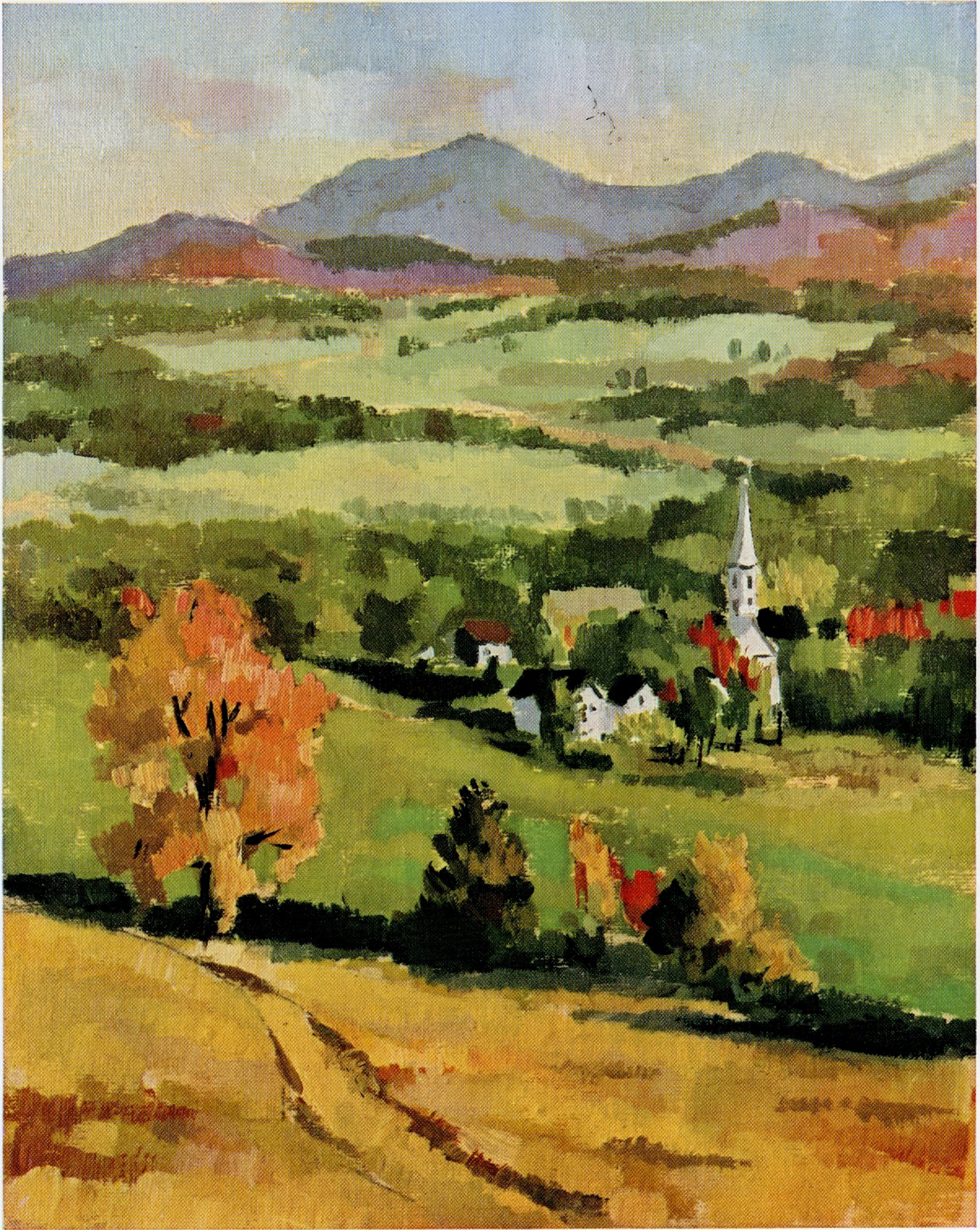
### Color in a landscape

The photo above provides an excellent opportunity for comparison of colors in a landscape. The key to making a successful painting of this scene is *careful comparison of color*. Note the variety of warm oranges and yellows in the foreground, the greens in the middleground, and the various gray-blues and violets in the distance.

Before painting, study the scene carefully. Know where the strongest yellows and oranges are. Be aware of the variations of

green, and know how these colors relate to those in the distant hills and mountains.

Paint the scene in your mind's eye before you pick up your brush. With experience you will learn and remember what combinations of pigments to use in creating the colors you see before you. Then you will be able to look at a scene like this, mix up colors similar to those in the swatches, and use them to paint a picture like the one on the facing page.



This painting of the scene on the opposite page is the result of: (1) careful comparison of the colors in the landscape; (2) knowledge (gained largely through practice) of what pigments to mix for each color; and, (3) constant comparison and adjustment of the colors while painting. Like any good painting, this picture is not an exact copy of the photo. The artist has simplified and adjusted wherever he felt such changes would improve his picture.



Photograph by Andre de Dienes

### Color in a portrait

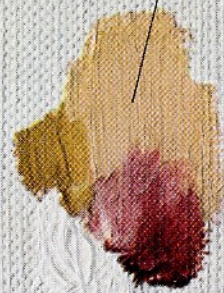
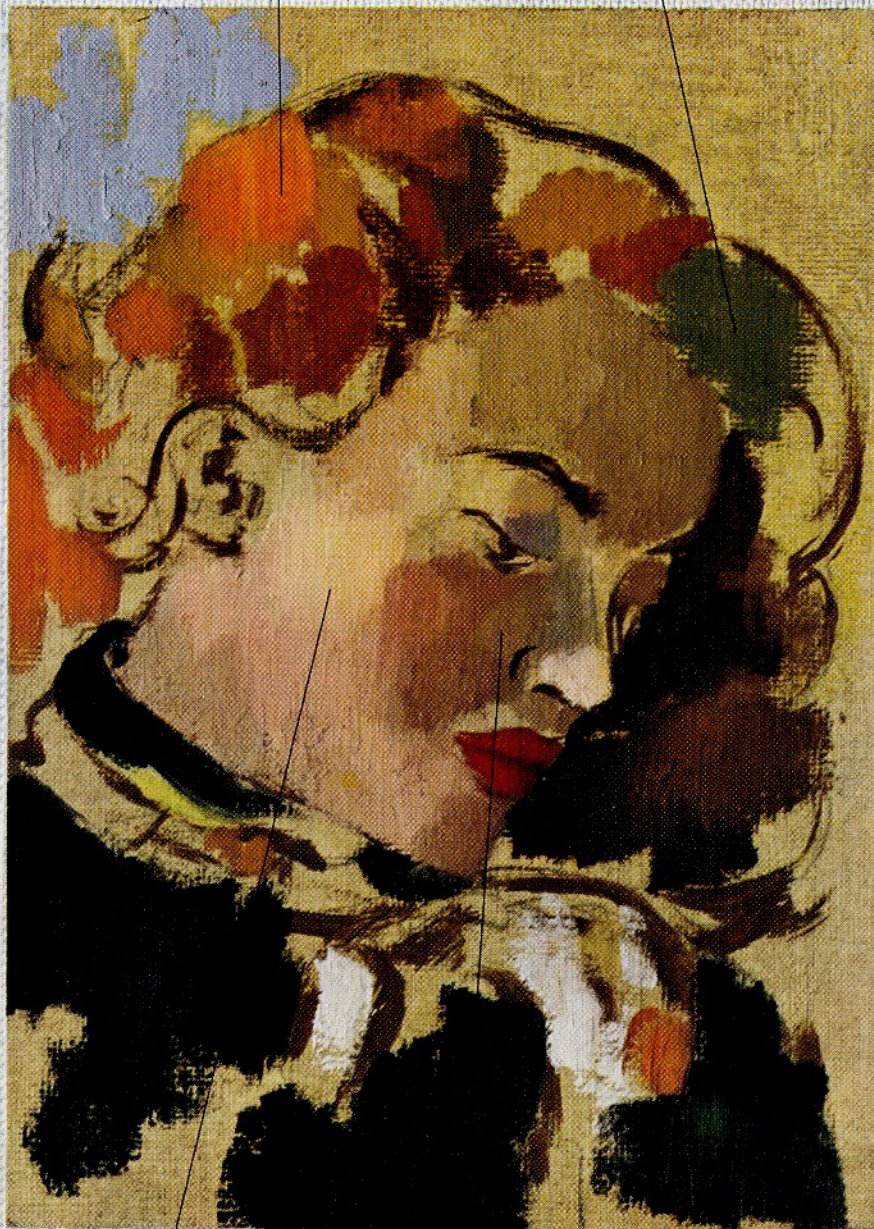
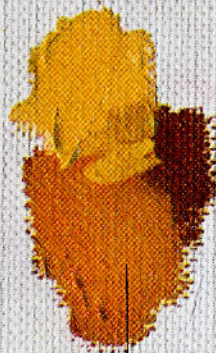
The use of color in a portrait should be approached in the same way as color in a still life or landscape. Look at your subject in terms of areas of color that vary with the light, halftone, and shadow planes. Remember that a head is just as *solid* a form as the apple in the still life, or the church in the landscape. *Always paint it as a form.*

Beginning painters often have difficulty because they paint as if they do not believe what they see. Instead of looking for, and comparing, the different colors in areas of light and shadow they try to mix up a "skin color," and apply it like make-up to the entire face. Naturally, this flattens out the head and destroys any illusion of form. They may add black to the shadows and white to the lights to create form, but the lights are chalky and the shadows muddy.

This demonstration is designed to show you how important it is to: (1) think of the head as a solid form, with planes of light, halftone and shadow; (2) see these planes as areas of warm and cool color; (3) recognize *subtle variations* of color within these areas.

Cadmium Yellow Medium  
Burnt Sienna

Yellow Ochre  
Cerulean Blue



Yellow Ochre  
White  
Alizarin Crimson

White  
Yellow Ochre  
Cerulean Blue

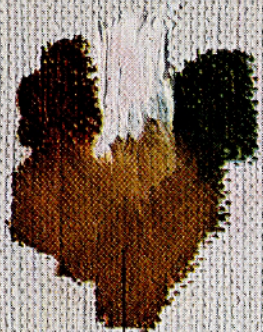
Viridian Green  
Alizarin Crimson

**Stage 1.** First, we tone the canvas and establish our basic drawing. The light planes are warm, and the shadows cool. With a few brush strokes we paint in the dark areas of the hair, flesh and sweater. Next, the light areas. Note that colors are put down as areas of light and shadow, not just single colors for the flesh, hair, and sweater. See how this difference of light and dark begins immediately to create the illusion of a solid head.

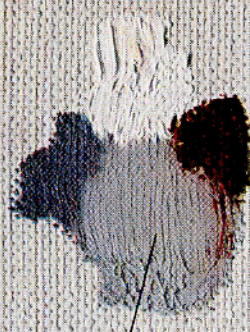
White  
Cadmium Orange  
Cerulean Blue



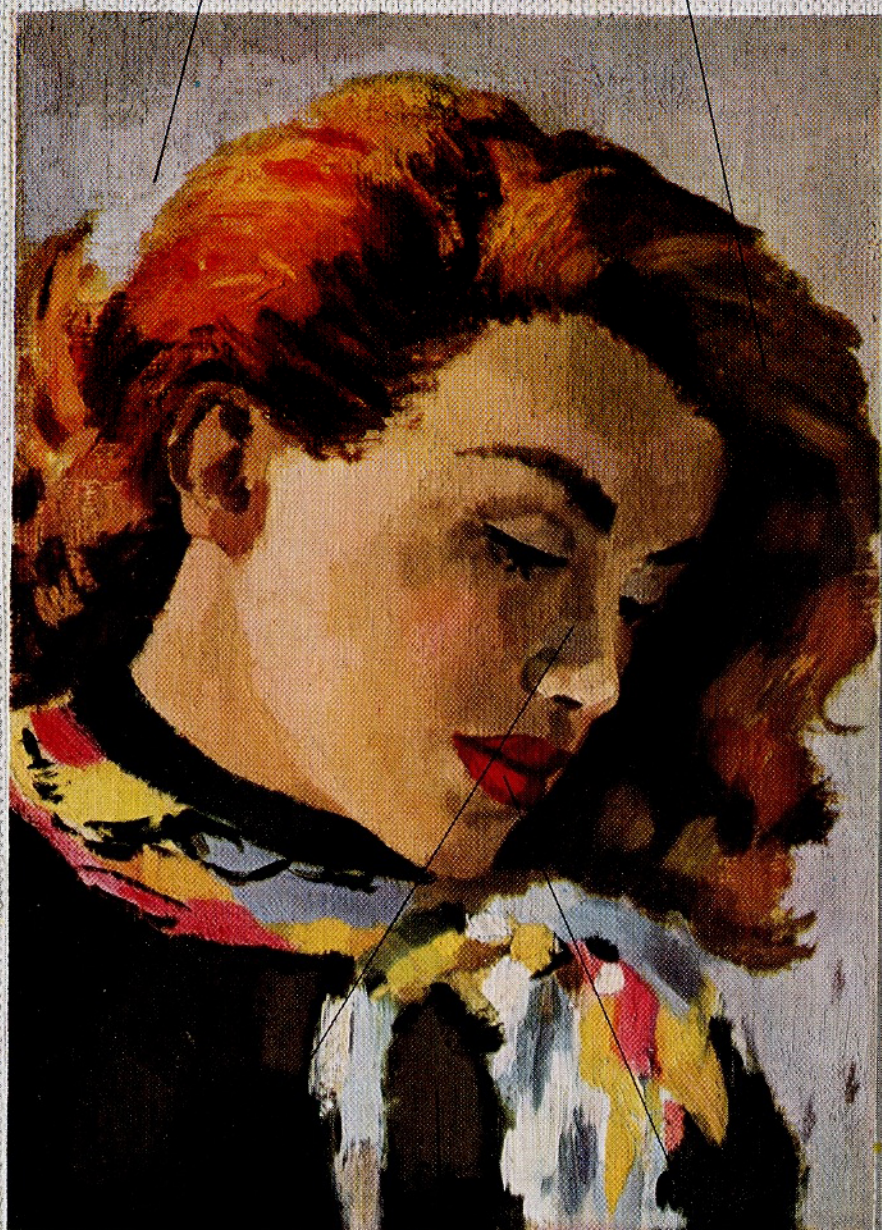
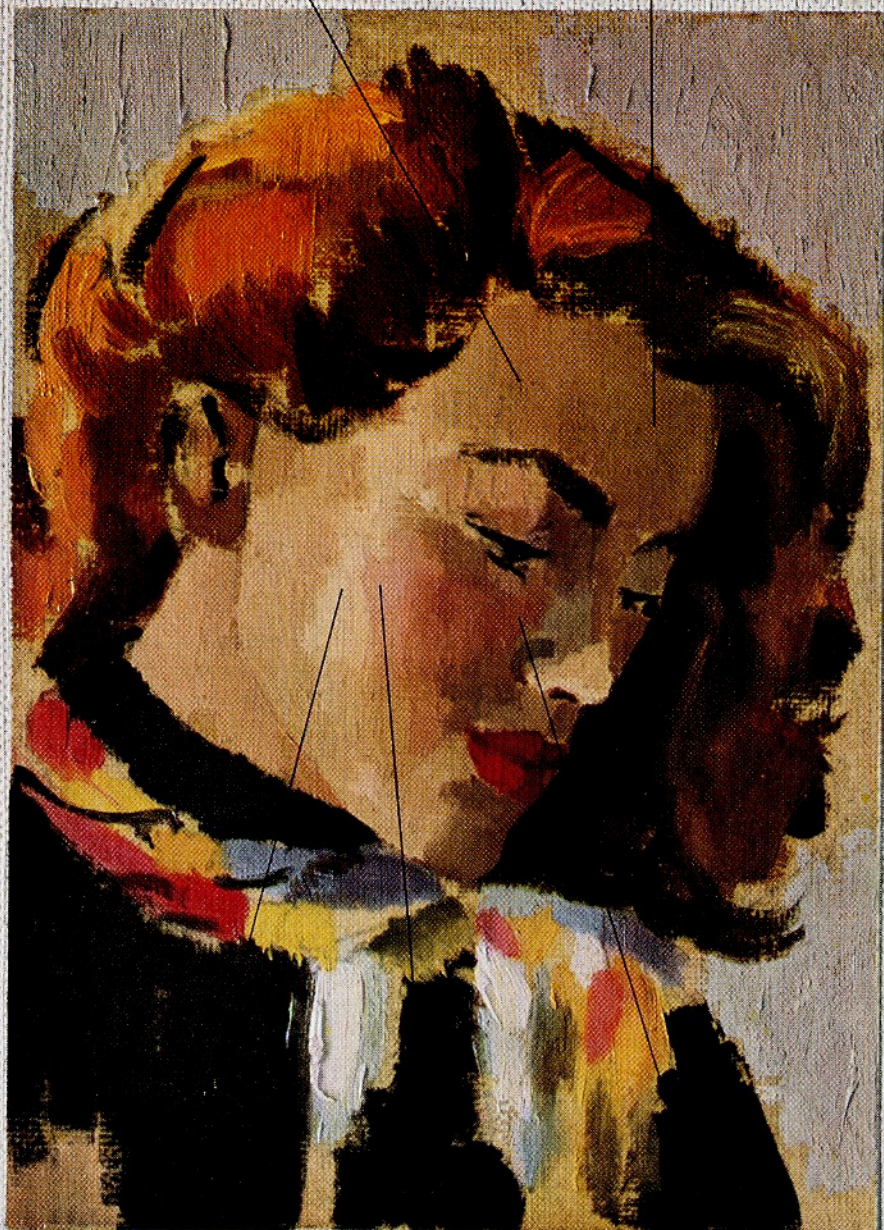
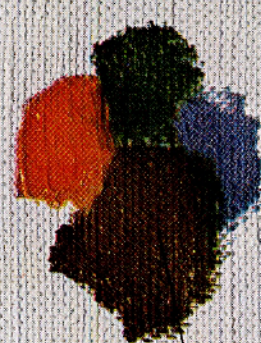
Burnt Umber  
White  
Viridian Green



Cerulean Blue  
White  
Alizarin Crimson



Cadmium Orange  
Viridian Green  
Cerulean Blue



Yellow Ochre  
White  
Cadmium Red



White  
Yellow Ochre  
Alizarin Crimson



Burnt Sienna  
White  
Cerulean Blue



Yellow Ochre  
Alizarin Crimson  
White  
Cerulean Blue



Cadmium Red  
White  
Cerulean Blue



Alizarin Crimson  
White  
Cadmium Red

**Stage 2.** Next we turn our attention to the color in the *halftones*. These halftone areas must be studied very carefully. Their subtle color is not obviously warm or cool, but rather neutral, since the tones form the transition between the warm lights and cool shadows. However, you cannot create halftones by simply brushing lights into darks. They are colored grays that call for close observation. Note how neutral even the strongest flesh colors are compared to the scarf.

With the lay-in completed you can compare and adjust any colors that do not relate properly.

**Stage 3.** To complete the portrait there are no radical changes in the final stage, just refinements. For example, the background is made cooler, and cool reflected lights are added around the eyes and nose. We add highlights along the top of the hair, on the lower lip, and scarf. Notice that the lightest part of the face is much darker than pure white paint. It seems light only because of the dark tones around it.



This entire picture was painted in black and white tones.



In this one only two colors were used. They are brown and blue, plus white.

### Limited palette

One of the easiest ways to learn how to control color is through the use of a *limited palette*. This palette usually consists of two or three colors, plus black and white, as opposed to a fuller palette. In addition to black and white, a limited palette might contain just Cerulean Blue and Yellow Ochre, which would give you a warm and a cool color. Or you might use yellow and green, or green and violet, or any other combination you wish.

Because it requires considerable experience and practice to use a full palette of colors with the proper restraint, many students will find it helpful to see first what can be done with just two or three colors. If you restrict yourself to these few colors you will quickly learn how to achieve interest by simply using a variety of *values* and *intensities*. You will be surprised at the large range of color effects you can create by fully exploiting these two color dimensions.

The pictures at the right demonstrate this point. They also show us that color contributes far less to the success of a picture than drawing, design and value pattern. The first picture in black and white compares favorably with the colored ones below it.

For many beginners such restraint as we show here is difficult. They want to use their reds, yellows and blues throughout the picture, and often at full strength. If you encounter this same problem, try a limited palette to improve your control of color.



In this painting there are three colors, brown, blue, and yellow, plus white.



This is a full color painting which contains blue, yellow, brown, red, and white.