

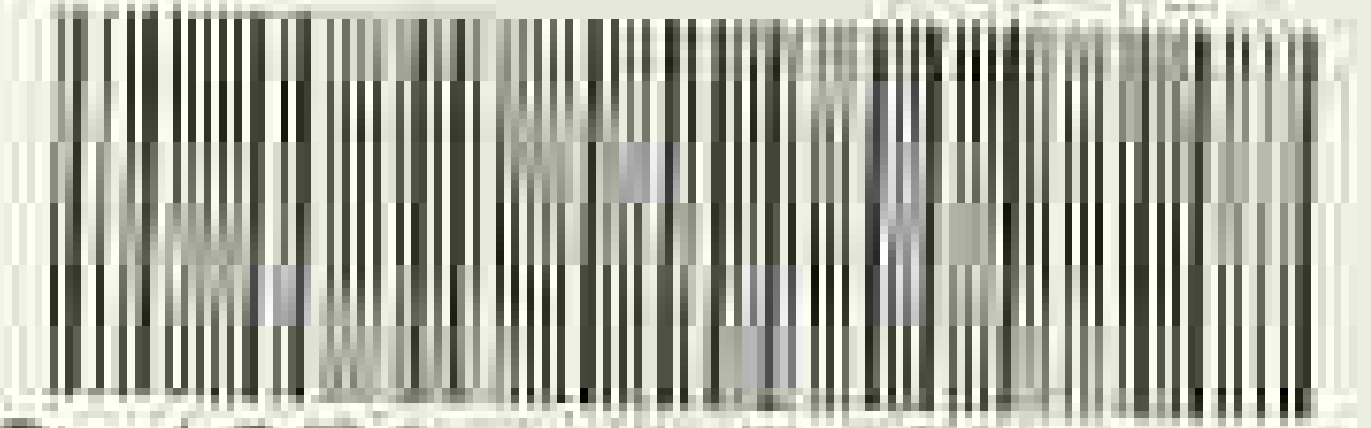


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CHITREK

# THEORY OF COLOURS

*Elementary principles of the theory of colours*

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## PIGMENTARY = PRIMARIES

The pigmentary = primaries are: BLUE (prussian blue)  
RED (crimson)  
YELLOW (gamboge tint)

These three colours are called pigmentary primaries because they are the fundamental tints from which by different mixtures all the colours used in painting can be obtained.

Of course practically the painter uses colours already prepared by the factories.

By mixing yellow, red and blue in equal parts we obtain a NEUTRAL tint: neutral is a tint whose colour cannot be defined.

## COMPLEMENTARIES OF PRIMARIES

To make the complementaries understandable it is necessary to explain its natural cause. The sun-light is composed of many rays of different colours which combined together form a perfect white. The principal colour of these rays are, red, orange, yellow, green, blue, violet.

Analyzing these six colours we observe that three of them are the primaries and the other three are composed of the mixture of the primaries and are called the complementaries.

Orange is composed of red and yellow colours.

Green is composed of blue and yellow colours.

Violet is composed of blue and red colours.

When the light shines over a coloured object, this shows its real tint because it REFLECTS the ray of the light of its own colour and in the meantime it ABSORBS other rays which are forming the complementary-colour. So each colour reflects and absorbs part or all the rays of the light; for instance, the white reflects all the rays while the black does not reflect any rays. Referring to the primaries we note that:—

Blue reflects the blue rays of the light and absorbs the red and yellow rays forming orange which is the complementary of blue.

Red reflects the red rays and absorbs the blue and yellow rays forming the green colour which is the complementary of red.

Yellow reflects the yellow rays and absorbs the red and blue forming the violet which is the complementary of yellow.

When looking at a certain colour we do not notice the absorbed rays (complementary) but in reality they affect our eyes much more than is apparent and this can be seen by the following experiment. Look steadily for some seconds at a small red disk placed over a grey paper and afterwards take off the disk and instead of the red one, we see a pale green disk. Repeat the experiment with a blue disk and you will see a pale orange one; again repeat with a yellow disk and you will see a pale violet one.

Each colour has its complementary and, as we shall see later, these complementaries have a great influence on the art of painting.

### **SPECTRUM PRIMARIES**

The spectrum primaries are: RED (vermillion) GREEN (emerald) VIOLET. With the intermingling of these light - rays, Nature forms all the colours that we see in the sky.

Because these three primaries are formed by the same colours of the pigmentary primaries so by mixing them together we obtain a neutral tint.

In Nature the yellow is obtained by the intermingling of the red and green rays, the predominance of the red will give orange while the predominance of the green will give a yellow-green, etc., etc.

The blue is obtained by the intermingling of Violet and Green rays, the predominance of the green will give blue-green, etc., etc.

Many painters in their works follow the intermingling of colours as in Nature but as the mixture of red and green, or violet and green would give a neutral tint so they paint with the method of small points or strokes of pure colours. This kind of painting is called POINTILLISM. In modern times pointillism is used either in pictures or decorations, but if wrongly used the result will be a neutralized tonality.

### NATURAL ORDER OF COLOURS (See fig. 1)

All the colours that we see in Natural things are governed by a perfect law of order and harmony and as the Man is part of Nature itself so the artist in his creative works is inspired and follows that law.

Fig. 1 is referred to as the Natural Order because the VALUES of the colours of the diagram correspond to the Values of the colours of the natural things (see flowers, leaves, plumage of birds, etc.) and because in the diagram there are 12 different colours so there are 12 different values of which, the yellow, is the lightest, and the violet is the darkest.

### VALUES

As fig. 2 shows, the values of a single colour corresponds exactly with the values of chiaroscuro because both are monochrome; again the values of chiaroscuro are strictly related to the values of different colours and this relation is the most important in the art of painting as we shall explain later.

When making some colour-scheme the student is inclined to use many colours, but this is a great mistake because the result is very unpleasant while he could obtain nice looking patterns by using one or two colours with their different Values as fig. 3 shows.

### SIMPLE HARMONIES (See fig. 4)

From chart no. 1 we note that 2, 3, 4, 5 or 6 adjacent colours are always HARMONIOUS and so if the student makes a colour-scheme by using 3, 4, 5 or 6 adjacent colours, he creates certainly something harmonious.

Simple harmonies do not allow more than six adjacent colours otherwise the seventh one would be a complementary (or true contrast) to one of the other six colours.

### TONES

Although 3, 4, 5 or 6 colours used as freely as a beginner may use will appear always harmonious, after some experiments the student should consider which tone is more appropriate to his painting.

The TONE of a painting may be WARM or COOL; it is a warm tone, when in the picture there is a preponderance of warm colours; it is cool tone

when in the picture there is a preponderance of cool colours.

The tones may be light-warm-tone, or dark-warm-tone, light-cool-tone or dark-cool-tone, according to the values of the colours used.

All the Greens, Blues, Greys and Blacks are the COOL TONE COLOURS,

All the Yellows, Reds, Browns are the WARM TONE COLOURS.

Take note of the fact that the use of cool or warm colours depends on the purpose of the work we intend to do. For instance, a cover of a book on scientific subject requires certainly almost always a cool tone while the average of the covers of books for children's stories are warm tones.

Again the illustration for a story relating to the sunshine requires certainly the most warm tone, while the illustration of a writing relating to a sad story must be painted in a cool tone.

#### HARMONIES OF DIFFERENT TONES (See fig. 5 and 6)

Let us take Scarlet, Yellow, Yellow-green and Green, four colours from a full harmony of six adjacent colours and let us paint two patterns of the same drawing but in different tones. If we use Scarlet and Yellow in a quantity of 70 or 80% of the total space of the drawing and 30 or 20% of yellow-green and green, the effect will be a WARM TONE. By reversing the quantity of colours, that is to say, by using 70 or 80% of Yellow-green and Green of the total space and 30 or 20% of scarlet and yellow, the result will be a COOL TONE. Thus we see that, to obtain a warm or cool tone it is not necessary to use warm or cool colours only, but merely to intermingle them together giving the predominance to those colours of the tone wanted. Of course, these colours may be used in a single or more values and the student should notice that the use of values gives a nicer effect to the painting.

#### COMPLEMENTARIES OR TRUE CONTRASTS

Every colour has its own complementary (or true contrast) and to ascertain that two colours are complementaries to each other, it is sufficient to mix them together and if the result is a NEUTRAL tint it shows that the two colours are complementaries because they are composed of the primaries in equal quantities.

Look at fig. no.1 and note that each colour in the circle has for its complementary the direct opposing colour and note too that each combination of two

opposing colours is always formed by three primaries.

Accordingly we see that:

Vermillion	has for its complementary	Blue (cobalt)
Orange	" " "	Blue (ultramarine)
Yellow	" " "	Violet
Yellow-green	" " "	Purple
Green	" " "	Crimson
Blue-green	" " "	Scarlet

(and vice versa)

We call the complementaries true contrasts in order not to confuse them with the ordinary contrasts due to different values; for instance, black and white, yellow and blue, or yellow and purple, etc., etc., contrast with each other on account of the great difference of value, but are not true contrasts.

True contrasts placed side by side do not change their appearance while ordinary contrasts affect each other by changing the appearance of their colours.

### USE OF THE TRUE CONTRASTS

1st. A harmony of colours without a touch of contrast may appear monotonous so it is good to break it with some complementary tint. But the use of contrasts is very difficult for a beginner because as we have said he has always the tendency to exaggerate the use of colours and so if he is not very careful the result will be quite different to the one wanted.

When we have a harmony of five or six colours and we want to give more life to the picture, it is not necessary to add to the five or six colours of the picture all their respective complementaries, but it is sufficient to add one or two colours which contrast **WITH THE TONE OF THE PICTURE** and not with any single colour.

To put in ciphers the quantity of contrast we would say that it must not exceed 10% of the total painted space.

2nd. In applied arts we frequently require the use of two true contrasts and for this the student must be careful to follow the undermentioned suggestions:—

- (A) Using two contrasting colours in the same quantity the effect will not be artistic so it is necessary to use one of the two colours in a

quantity of 80% and the other in a quantity of 20% of the total space. With such a proportion the picture will look nice.

- (B) Using the two contrasting colours in the same quantity but breaking one or two of them the effect will be satisfying.
- (C) By mixing a third colour in the two contrasting ones we obtain a nice effect too.
- (D) If the picture is composed of small masses as in the case of narrow stripes, small leaves, etc., the two contrasting colours may be used quite pure as they will appear always very fine.
- (E) Sometimes either we want or need to use two contrasts pure in great masses of space as in the case of stained glasses or posters, etc., in such cases we may lessen the crudity of the effect by marking the outline of the drawing with a dark and strong line.
- (F) the last method of using contrasts is that of breaking, or neutralizing, the colours.

N.B. Here and in other places of this pamphlet we refer to ciphers to make it clear to the student the most suitable quantity of colours to be used in his experiments, but these ciphers are only given as illustration because in reality art cannot be created by mere ciphers.

### **NEUTRALISED OR BROKEN COLOURS**

Each colour is neutralized by mixing in it, its own complementary. In works as mural paint-washing and in all other works which require great quantity of paints the colours are neutralized with the black, but in art we never use black for neutralizing because it spoils the colour and makes it dirty.

By adding to a colour more and more of its complementary we arrive at a certain point in which the quantity of the two colours are equal so we have a **NEUTRAL TINT**.

### **WITH ONE COLOUR AND ITS COMPLEMENTARY WE MAY OBTAIN MANY DIFFERENT PATTERNS: (See fig. 7, 8, 9)**

Intelligently used two contrasting colours may give a very wide field in creating different patterns of the same drawing: a thing very useful in applied arts.



By neutralizing little or much both colours, by using one colour pure and the other broken, by using one colour dark the other light or both dark or both light, etc., we may obtain so many wonderful changes of colour appearance as to seem that in those patterns many different colours have been used.

## TONALITIES

For tonality of a picture or any colour-scheme an outstanding tint which dominates all the other is understood. This outstanding colour may be a single one which has been used in greater quantity than all the other tints together, or it may be the effect noticed from a certain distance and which is produced by the intermingling of two or more colours.

An instance of the tonality obtained by the predominance of a single colour may be seen in a garden where there are many masses of green, and although amongst the green foliage there may be many flowers and leaves of various tints, the tonality will always be green on account of the predominance of that colour over the others.

The tonality obtained by the intermingling of colours may be seen in a bunch of yellow and red flowers mixed together and which from a certain distance, gives an ORANGE-TONALITY.

In the art of painting the tonality must not be left to mere chance, but it must be decided by the artist before he starts to create a colour-scheme because, as we have already said when writing about the warm or cool tones, the tonality must correspond to the purpose for which the colour-scheme is made. Suffice it to say that the tonality for a children's playing room cannot be the same as the room for scientific-lectures; and again the tonality of a cloth for a girl's dress cannot be the same as that for an old woman. We could give hundreds of instances, but the two aforementioned will suffice to make the student understand the strict relation existing between the tonality and the purpose for which we create a colour-scheme.

## MONOCHROMES (See fig. 10)

Monochromes give an exact idea of the tonality because in the monochrome the tonality is always clearly defined.

But beware not to confuse between tonality and monochromes because in

the former we may use all the colours that we wish either pure or neutralized while in the latter we may use a single colour pure only, and the other two, three to five colours which we add to the original one, must be all neutralized: and again the two, three to five colours added to the original one must be chosen in an orderly manner either from the left or the right side of fig. 1 and not one from the left and another from the right side, that is to say that the group of two, three, or five colours must be adjacent to each other.

Monochromes have very fine effects because while they are not so violent as the schemes made with contrasting colours, they are not so tiresome as in the case of many harmonies.

If we want a green-monochrome it is not necessary to use throughout the pattern the many values of the green all of them pure, but it is sufficient to use pure green in some spots and fill in the others spaces with neutralized values of the same green adding neutralized colours (not more than five as we have already explained). So should we want to make a "yellow-monochrome" we should use yellow, as the original tint, in pure and neutralized values adding to it yellow-green, green, green-blue, blue and blue-violet, all neutralized. Here we have given an example of a monochrome in which we have added five colours but, in reality, to make a nice pattern, it is not necessary to use all the five colours. Two or three of them will be sufficient.

## DISCORD

When in painting we reverse the value of two colours, that is to say by making the value of violet lighter than that of yellow, the value of orange darker than that of green; blue lighter than yellow-green, etc., the result is discord.

Discord is to be found in natural things such as leaves, flowers, plumage of birds, etc., but it should be borne in mind that in all these examples the discording colour is limited to small spaces.

Discord is used as a means to counteract the richness of a colour-scheme as in the case of a picture or other coloured things in which plenty of warm colours have been used. In such cases, although the whole may appear nice, eventually the fullness of the warm colours may become tiresome, hence the necessity to add some spots of discord to abate the aforesaid richness.

When a colour-scheme is too harmonious on account of the use of yellow-

greens, greens, green-blues and blues without any contrasting colour we need to add to it a little of discord, which if well distributed will render the colour-scheme more lively.

In applied arts too, and especially in cloth-patterns discord is often used, but one should be careful to use it sparingly because to paint a space with two discording colours in the same quantity, the result would be unbearable. To give an example in cipher we would say that the discording colour should not exceed 10% of the whole coloured space.

In shining objects the high light is always a discord, thus the high light of browns and oranges is a very pale violet, while the high light of a green-leaf is a pale blue, etc.

Note that to obtain good results the discording colours must be used pure and of light value.

## INTENSITY

Any pure colour surrounded by dull tints will appear brighter than the same colour surrounded by other pure tints; for instance when at sunset we notice some very bright coloured clouds, that effect is intensity and those clouds look very bright because the sky has started to get dark. Of course the same clouds seen in the day time would look not so intense because the sky at that time is fully illumined. Accordingly, a colour will appear more and more intense according to the dullness of its background.

When a picture is too monotonous on account of its dullness of colour, such as a landscape may appear when painted at dusk, add a touch of intensity such as some streak of light in the sky, or some hint of fire or some light seen through the window of a building, etc., and note that this touch of intensity will render the whole picture more lively.

Also when we have to paint large spaces with a single colour, intensity is very useful; say that we want to paint a large room with a single colour but using it in different values so as to render the colour-scheme more interesting. If we paint all the values with pure colour the effect would be unbearable, and on the other hand if we break all the values the effect would be dull. Consequently, in these cases, we paint the various values with neutralized colours adding some small spots of pure bright colour. The result will be that these small spots of

pure tint will dominate all the other neutralized values on account of their intensity and thus these spots will give the real effect of that particular colour without jarring the eyes with a great mass of pure tint.

## COLOURS AFFECTED BY THE REACTION OF COMPLEMENTARY - COLOURS

OR

### *SIMULTANEOUS CONTRASTS (See fig. II)*

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All colours which are not true contrasts when placed side by side are affected by the reaction of the complementaries: this is called simultaneous contrast.

For example, if you look at a pattern where the larger space is green and the smaller space is a light yellow, this yellow will not appear the same as it was meant to appear, but it will look a light orange on account of the reaction of the complementary of the green, and because the complementary of green is red so the red affects the yellow making it appear a little orange.

For the same reason, if that yellow had been surrounded by a larger space of red colour, we would see the yellow getting a greenish tint on account of the complementary colour of the red which is green.

If the masses of the colours are very large the reaction will be noticed where the two tints meet together.

The reaction of the complementaries is so strong that the black is affected too.

Of course, the student in the beginning will not perceive neither the subtle and fine relation of colours nor how this fine relation may be spoilt by altering a little one of the colours of the painting, and so, almost certainly, the student will not notice the change of purity of a tint when a complementary affects it, but to an artist it may be as noticeable as a wrong note in music.

According to the finesse existing amongst colours it is necessary to work out a painting in all its parts and never finish a part of it while the others are still uncoloured. By doing piece by piece a painter will never succeed in making a perfect painting.

For instance, if you paint a portrait or a still-life picture leaving to the last moment to colour the background, you will notice that once the background is coloured all the other tints will be affected by the complementary of the colour of the background and consequently it will spoil the fine relation of the colours.

Therefore a painting must be considered simultaneously because all its parts are subordinated to a scheme which form the UNITY of the work and this unity cannot be left to the good or bad chance but must be the result of a FORE-THOUGHT.

Should you want to paint a portrait or any object having a greenish background, before starting to paint it find a cloth of the colour wanted for the background and put it in place, that is to say behind the object (far or near as you like.) After you start to paint and if you do not notice the reaction of the colour of the background it is certain that its complementary will affect all the other tints of the painting, but when you paint every part together you are sure that once the picture is finished the effect will be a harmonious unity.

Never paint the details before putting down all the masses of the colours.

To restore an effected colour to its original tint, it is sufficient to add to it a little of the colour which causes the reaction. For instance a crimson tint surrounded by yellow will appear more violet; by adding a little yellow into the crimson it will look the same as the original tint.

### SCINTILLATION OR VIBRATION

How to give more vibration in flat surfaces or shining objects.

Sometimes in painting work we may note a sense of flatness or lack of vibration, especially when in the picture some shining object is represented. This effect is due to the fact that a flat colour has the same value and the same brightness throughout its surface. Should we need to break up the evenness of the picture we may do it by means of painting over the surface small dots, or strokes, with the colours which are the components of the original tint and, if more vibration is wanted, add to these colours other dots of the complementary of the original colour. For instance, if we want to break up a vermilion surface we paint over it dots of yellow and crimson which are the component-colours of vermilion, and should we like a stronger scintillation we add to the components colours the complementary of vermilion too, that is to say "cobalt," so that we

have a vermilion surface dotted with small points of yellow, crimson and cobalt which combined together will give a real scintillation effect. As for vermilion so it is for all the other colours.

Naturally these dots must be of a pure colour because if they are mixed together the result is a neutral tint instead of scintillation; for this reason scintillation may be obtained in oil and tempera colours and pastels, but not in water colour paintings.

To make vibration it is necessary to know the components tints of each colour which are:—

<u>COLOUR</u>	<u>COMPONENTS</u>	<u>COMPLEMENTARY</u>
Vermillion .....	Yellow & Crimson .....	Cobalt
Orange .....	.. & .. .....	Ultramarine
Yellow .....	Vermillion & Emerald .....	Violet
Yellow-green .....	Yellow & Blue .....	Purple
Green .....	.. & .. .....	Crimson
Green-blue .....	.. & .. .....	Scarlet
Blue .....	Emerald & Violet .....	Vermillion
Blue-Violet .....	Blue & Crimson .....	Orange
Violet .....	.. & .. .....	Yellow
Purple .....	.. & .. .....	Yellow-green
Crimson .....	Scarlet & Violet .....	Green
Scarlet .....	Crimson & Yellow .....	Green-blue

#### COLOURS AFFECTED BY CONTRASTING VALUES (See fig. 12 and 13)

As we have already said, the dark colours reflect very few (or none) of the day-light-rays, while the light colours reflect many (or all) of them. It is for this reason that a dark object over a light ground will look always smaller than its real size, while for the opposite cause a light object will look larger on a dark ground.

Therefore, in order to have the required effect of the size of anything of dark value painted on a light ground it is necessary to enlarge it a little, especially when dealing with narrow lines which otherwise from a certain distance would certainly disappear.

A light value placed side by side with a darker one will look lighter than its real value while the dark value will look still darker.

For this cause a row of flat degrading values (from dark to light, or vice versa) will look as concave as a fluted doric column.

Accordingly if we paint some small spots whose value is darker than the value of the ground their colour will look darker than the real one and in order to obtain a tint corresponding to the one wanted we must paint those spots with a lighter value which from far will appear the same tint as the one wanted.

### **DISTRIBUTION AND INTERMINGLING**

When we paint as students or for pure art it is not necessary to bother about the economy of the number of colours used in our painting, but in preparing patterns for applied arts, as in the case of ceramics, clothes, printings, etc., to spare the use of a colour may be equal to spare half money in the fabric expenses so it is necessary to know how to obtain the most varied effects with the least material.

When speaking about neutralized colours we said that by mixing a colour with its complementary and varying this mixture we may obtain many different looking patterns, and we said too that such a method was very useful in dealing with works of applied arts.

Distribution and intermingling have the same purpose, that is to say to make varied patterns with the same graphic drawing and the same number of colours.

Look at fig. no. 14 and note that with yellow and blue we have obtained two different colour patterns by reversing the distribution of the colour. In one pattern we have used 80% of yellow and 20% of blue and in the other we have reversed the distribution. Naturally we could change the distribution and obtain other different effects.

As fig. no. 15 shows the intermingling is almost the same as distribution because here too we obtained different looking patterns by the means of changing the quantity of colours. Intermingling is very useful in textile works.

### **CHANGING COLOURS OF THE OUTLINES OF THE GRAPHIC DESIGN (See fig. no. 16)**

Another useful method in applied arts to obtain different looking colour patterns by simple methods is that of changing the colour of the outline of the

graphic design. If the student carries out this method diligently, he will see striking results, but to have good results it is necessary :

1<sup>st</sup>..... to paint the outlines with a pure and light colour (any colour will do but they must not be of dark value.)

2<sup>nd</sup>..... the colours of the ground and the decoration must not be too dark otherwise the colour of the outlines cannot affect the colour-scheme.

3<sup>rd</sup>..... the design of the decoration must be of small masses and distributed equally all over the space because if the mass of the design is too large, its outline is too little to affect the other colours and if the design is not equally distributed the change will be limited in a single spot of the pattern and not all over it.

A dark outline of the design has a great influence over the colour-scheme because it gives to the other colours a greater intensity, but the whole loses a little of its purity.

White outline gives a brighter effect but they must be used sparingly otherwise the reflection of the white will cause a little confusion all over the colour-scheme.

#### **CHIAROSCURO AND ITS CLOSE RELATION WITH COLOURS (See fig. 17)**

When looking at a photography or a monochrome drawing we note an endless number of values which from the lightest are going increasingly to the darkest one.

In looking at a nice view of a far distant mountain, island, group of trees, etc., the beauty observed is not due to the effect of colours but to the effect of chiaroscuro only. As we approach that mountain, island, group of trees, etc., we notice that the values of chiaroscuro get clearer and clearer their own colours till when we are very near all the colours will appear in their full brightness, but their values will remain the same as the values of chiaroscuro noted from a far distance.

From this example, we may understand the importance of the chiaroscuro-correctness because on it depends the success of a picture.

It is good to remember that Old Masters of Painting, before painting a picture used to draw a full size cartoon of it with all its values of chiaroscuro and so carefully that in taking the photography of the cartoon and that of the painted picture the effect is just the same.

In doing colour-schemes it is advisable to try to find a fine effect of



chiaroscuro before putting down the colours and by this method the student may overcome many difficulties and get a finer result than by trying to find it by means of colours only.

### SHADOWS OF THE COLOURED OBJECTS

Either indoor or outdoor the shadow of a coloured object is always a neutralized tint which, according to the intensity of the light the object receives, may be from the adjacent tint of the colour of the object as far as its complementary.

In saying that the tint of the shadow is going from the original colour towards its complementary, we mean that the tint of the shadow is moving in a clockwise direction as far as the complementary of the colour of the object according to more or less light it receives.

So the more light an object receives the nearer to the complementary of the colour of the object the shadow will be:

Example : Take an object coloured in Yellow and put it under a subdued light and note that the shadow is a neutralized greenish tint; take the object in the open space and note that the shadow is a neutralized bluish tint, while under the sun-rays the shadow will be a neutralized violet.

From this example, we see that the colour of the shadow of the yellow is going towards the complementary of yellow in a clockwise direction; the shadows of Yellow-green, Green, Green-blue, Blue, Blue-violet are going in a clockwise direction too, while the shadows of Orange, Vermillion, Scarlet, Crimson, Purple and Violet are moving in a counter-direction. Accordingly, the shadow of an object coloured in Vermillion will be scarlet in a subdued light; it will be violet in a middle light and it will be cobalt under the sun-rays.

Remember that the shadows are all neutralized with their own complementaries.

The shadows of the shining objects do not follow the above mentioned theory inasmuch the iridescent effect of the shining surface causes the colour of the shadow to go simultaneously both ways towards the complementary of the colour of the object, that is to say, in clockwise and counter-clockwise direction. And again, as every shining object receives and reflects like a mirror the colours of its surroundings and of the atmosphere, so it is not possible to state

the colour of the shadows of any shining objects.

### **PERSPECTIVE OF SHADOWS AND OF THE ILLUMINATED PARTS OF THE OBJECTS (See fig. 18)**

When an object is in a near-distance its shadows are very dark while the illumined parts are very light.

The same object in a middle-distance will have the shadows lighter and the illumined parts darker than what appeared in the near-distance.

In the far-distance that object will have the shadows still lighter and the illumined parts still darker, so much so that the value of the shadows and the illumined parts will be both the same and the object will appear FLAT.

Accordingly the further an object is the flatter it will appear.

### **PERSPECTIVE OF COLOURS (See fig. 19)**

(A) The farther a coloured object is the more neutralized will appear its colour.

(B) The farther a coloured object is the lighter will be its value.

(C) Consequently, because the farther the colour is the more neutralized it appears so from a very far distance that colour will become a neutral tint and its value will be very light. Besides, if the coloured object has volumes, the value of its shadows and the light of the illumined parts will follow the aforementioned theory, that is to say, the shadows will be lighter and the illumined parts darker according to the receding distance.

(D) The farther an object is the nearer to the colour of the object the shadow will be:

Look for instance, at a yellow-green mountain in the foreground and note that under the fullday-light, its shadow is a purplish colour. The colour of the shadow of the same mountain seen from a middle distance will appear a bluish colour, while from a far distance that shadow will appear a greenish tint.

From this example we note that the colours of the shadows, which may be the very complementary of the colour of the object, are going nearer and nearer to the tint of the object according to the receding distance of the object itself.

### **OUTDOOR, ALL THE COLOURS PARTAKE THE TINT OF THE ATMOSPHERE**

The colours of mountains, trees, rocks and everything situated outdoor,

seen from a certain distance is slightly veiled by the hue of the atmosphere, and the farther the object is the more influenced it will be by the atmosphere.

It is not possible to state the hue of the atmosphere because it depends on times, seasons, weather and localities, but generally speaking we may state that:-  
In the morning it will be a white-bluish tint.

At noon it will be a blue-violetish tint.

In the afternoon a crescent violetish tint.

### COLOURS FOR INTERIORS IN DARK AND IN LIGHT SITUATION

Before starting to do a colour-scheme for the interior it is necessary to know the light-situation of that interior because the colour-scheme will be more or less bright according to less or more day-light that the interior receives. The principal difference between a dark and a light situation is that the former requires purer, brighter and stronger colours while the latter requires delicate and neutralized tints.

In fact, dark or broken colours in a dark room would not certainly help the room to be more lively, and on the contrary, should we use bright colours in a very illumined room the effect would be unbearable.

Looking at the Egyptian or Pompeian pictures we may note a certain crudeness of the tints but their brightness was purposely made because those pictures were intended for dark situations. Should the Egyptian or Pompeian artists have used neutralized colours the effect would have been very dull.

In a few words the student may easily understand that the darkness of an interior acts as a neutralizing medium; it is the same as putting some black into the other tints.

On the contrary, in a well illumined interior the colour-scheme needs to be harmonious because the light situation does not change it at all.

The theory of a dark and a light situation does not refer to interiors built for temporary use as in the case of festivals or fairs; in such cases any striking colour can be used freely because as the people who assemble at those festivals or fairs will stay there for a short period only so they have no time to get tired by the brightness of the colours. On the contrary, this brightness acts psychologically over the people in stimulating their joy.

### OUTDOOR COLOUR SCHEMES

For some outdoor colour-scheme the theory is reversed from that of indoor. In fact all the Eastern Countries use for outdoor decoration, and particularly for drapery, bright colours which look very nice; the reason being that under the strong light of the sun every colour loses its strength and becomes quite bearable, while a broken or too delicate colour would disappear under the sun-light. Besides, as the sun-rays are yellowish they act as a harmonizing medium over all contrasting colours.

For the opposite reason, in Northern Countries any bright colour would be unpleasant because in the North the sun-light is not as strong as in the East and so there is missing that warm atmosphere which softens any strong colour. Consequently, in Northern Countries neutralized tints are used.

With reference to the colour of the building we shall speak later in the chapter concerning the exterior decoration.

### COLOURS AFFECTED BY ARTIFICIAL LIGHT

Under artificial light a colour may become more intense, lighter, darker, neutral or disappear completely.

To avoid unpleasant effects or disappointments, before making colour-schemes for interiors which are to be seen at night-time only, and of course under artificial light, it is necessary to know with what kind of light the interior (or it may be exterior) is illumined and colour the sketch accordingly. When this is done, try it under that artificial-light and see whether the work is correct or not. A very good method of doing colour-schemes to be seen under artificial light is that of making them directly under that particular light and in this manner one is sure not to incur any disappointments.

Therefore it is easy to understand the strict relation existing between light and colours and consequently the artist cannot leave the important part of choosing the colour of the illumination to other person than himself. Should the electric-installation be already made the artist must subordinate his scheme to the existing light.

It is not possible to state the changes of the colours under the influence of the artificial light, but if it is the common electric light we may say that :

The reds become more brilliant, a dark red becomes almost vermillion,

purples and violets look more reddish. Ultramarine-blue may become violet. The cobalt becomes grayish. To have a real blue it should be a green blue. Dark blue becomes black. The green keeps its tint. Yellow becomes slightly more orange, but if it is too light, it disappears completely.

The changing of colours under the common electric light should be well understood by those artists who have to do with scenes for theatres.

## COLOURS FOR INTERIOR AND EXTERIOR DECORATION

### Psychology of the colours.

Generally, the colours have a strong influence over the human psyche and this influence is felt in about the same way by every human being.

All the reds and yellows excite our senses while all greens and blues calm our senses down. Thus we may easily understand that according to this psychological influence, any colour-scheme for decoration is strictly related to the purpose of the decoration itself.

The undermentioned colours have the following peculiarity :

DARK CRIMSON ..... gives a sense of richness and fullness.

REDS ..... excites.

ROSE TINT ..... gives a sense of delicacy.

YELLOW-GREEN ..... sense of youthfulness and freshness.

GREEN AND BLUE ..... sense of calmness.

GREEN ..... in some spots only may give a sense of discordance.

DARK-GREEN COMBINED WITH GRAYS ..... give a sense of sadness and oldness.

MIDDLE-GRAYS ..... stillness.

BLACK AND WHITE TOGETHER ..... sense of depression.

WHITE ..... sense of purity and freshness.

In dealing with decoration, especially exterior decoration, it is necessary to know that the reds seen from a certain distance look as coming outwards, the light and middle blues as receding backwards, while the greens neither recede nor advance. This is very important because a wrong colour may destroy altogether the effect of architectural plans and volumes.

## EXTERIOR DECORATION

1. As for the interior so for the exterior the colours have to be in accordance with the purpose of the building.

2. As much as possible the colour of a building should be in harmony with the colour of the neighbouring buildings.

3. The larger a building is, the more moderate must be its colouring and it is good if this colour is inspired by some real noble material, such as bricks, stones and marbles for architectural structure, and although cement is not a noble material but because of its neutral tint, it is far better than certain delicate colours which are more suitable for clothes than anything else and spoil altogether the imposing architectural masses.

4. The colour of a small building may be lighter and brighter than that of a large one, but if the building is situated in a street we must reckon to make it as harmonious with the other surrounding buildings as possible.

5. If the house is situated in the middle of a garden then its colour may be still brighter and lighter as the artist desires.

6. Any very bright, strong, or light colours, may be used in a small bungalow surrounded by trees; here the fantasy of the decorator may work as freely as he likes because amongst the green foliage the striking colours of the bungalow look like a great mass of flowers.

7. Except for small bungalows do not paint any large or medium sized building with light blues or light green-blues because as these tints appear to recede so the mass of the architecture would completely disappear.

8. The decorator may be called upon to arrange artistically a garden and for this he may find very useful the various colours of the foliage of the trees; there are, for instance, trees bearing yellow-green foliage, others bright green and others dark green ones and by an intelligent arrangement of the different masses, the artist may break up the monotonous effect of an even green. Of course masses of different coloured flowers may help to create with natural elements as real colour-schemes as one may create by using colours. To have a finer effect the arrangement of the flowers should be in large masses of the same kind of flowers.

9. Colours for window-shop-decorations are relatively free from any bandage with the neighbouring colours, because the size of the window-shop in relation to that of the building is so small that any colour-scheme can do.

Nevertheless, it is not advisable to use too much striking tints in large masses because even if they look nice the first time we see them, the passer-by gets bored very soon and so the result is contrary to the one wanted. In large masses, vermilion, bright green, light blue and middle violet, are colours which should be avoided in work to be seen for a long period. Remember that nowadays in poster-works too we do not use anymore too violent colours, but on the contrary modern posters have in many instances very fine and delicate effects. The theory that in a poster it is necessary to use striking colours became obsolete more than twenty years ago.

### COLOUR FOR INTERIORS

We cannot speak about the colours for interiors without suggesting to the student something that may be very useful when he is practising his art. We have already spoken of the psychology of colours and how they may affect our senses. But of course the influence they have over our spirits is not felt by every one in the same manner because there are people who have a sympathy for a colour and a dislike for another. This may be the effect of various causes, as for instance, a man who was impressed by a fire and since that time he cannot bear anymore the vermilion colour; another may have a preference for a colour which recalls to him some nice remembrance of his childhood or of his love, etc., but in all cases each one of us has a preference for some tonality of colour. Consequently when an artist is asked to paint some interior he cannot disregard the taste of the owner of the house because the house is meant for the owner and not for the artist himself. For this reason the artist must combine, at the utmost, the preference of his client with the exigency of his art.

To know which colour a certain person prefers it is sufficient to submit to that person many colour-schemes and note which one he likes best, in this way you will be sure that the preferred schemes are always related in their tonality.

Of course the interior decoration is not limited to private houses only and so in all other cases, the artist is free to choose tonalities, tones, values, etc., as he likes, but he has ALWAYS to consider his scheme in relation to the purpose of every interior, because it may be easily understood that the colour suited for a dancing hall cannot be the same as that of a conference room, etc.

In present days the colours of the interior are fine and light, very pleasing and thus they give a real rest to modern man who, owing to his dynamic activity, can no longer be surrounded by dark or too serious colours which were

appreciated some forty years ago. Modern life is spent in the open space, full of speed in all its activities and so modern man dislikes colours apt to be dreamy as it was in the time of romanticism.

When we enter inside a modern structure with its great openings which illumine fully the fine colouring of the wall, we feel a sense of joy and aesthetic pleasure. But the simplicity of the colours of modern interiors is a thing which requires a great deal of taste and skill and so besides a natural gift for decoration, the artist must have a long experience in colouring before to obtain fine results.

Of course the student may easily understand that the choosing of colours for interiors may differ according to the scope for which the interior is intended, so here we give some hints of these differences.

**CONFERENCES & MUSIC HALLS:** These required very sober colours because any bright ones would distract the audience from a full concentration of mind; any striking colour in these interiors, be it in a hanging, in a picture or in anything else, has the contrary effect to the one needed.

**CINEMAS & THEATRES:** The colours for cinemas and theatres may be as strong or bright as the artists like because during the performance the light of the hall is put off and so the colours of the hall itself do not interfere with the performance. On the contrary, it is advisable to use very pleasant and rather striking colours in these interiors in order to raise up in the audience that good disposition of spirit which serves as an important complementary factor to the success of the performance. Of course the illumination of these interiors should be as bright as possible.

**CAFES, TEA-ROOMS, ETC.:** For cafés, tea-rooms, etc., where the people are just spending some leisure time, the colour-scheme should be warm and pleasant adding may be some touch of gold here and there to give a richer effect. Do not misunderstand cafés, tea-rooms, etc., where light music may be played, with concert-halls; the former are just pastime places while the latter are meant for intellectual and aesthetic pleasure.

**HOSPITALS & RECOVERING HEALTH ESTABLISHMENTS:** Here the colouring should be very quiet, but not dull, preferably cool tones, because as the warm tones excite more or less our spirit so they would be contrary to the need of a hospital. The values of the colours should be light otherwise the dark tints would depress the morale of the patients.

If the hospital is for children, we may use the same colours as for the grown up people but to cheer up these small folk we should paint some hangings



or mural paintings with amusing figures and bright colours, (but these bright colours should be limited to small spaces.)

**DANCING HALLS:** The colouring of a dancing hall depends on the taste of the artist only because it is the result of a fine fantasy; what we can say about dancing halls is that its colouring and electric illumination are so strictly related to that they form a single colour-scheme and thus anyone who starts to do such a scheme cannot disregard this important factor.

In dancing-hall colour-schemes we have to take into consideration the fact that these halls are frequented almost always by the same people and so the colour-scheme should possibly periodically be changed in order to attract more people or at least not to make the frequenters bored by the same colouring.

Consequently, the artist who makes the decoration for these interiors has to obtain the finest effect with the cheapest expense in order to change it often.

**LIVEABLE ROOMS & BED-ROOMS:** The colour of bed rooms may be different according to the sex and age of the occupants, but generally they must be quiet and not too dark in value.

Monochromes are very advisable because by using a colour and some of its values and adding some other adjacent tints, which although neutralized play an important part in the colour-scheme, we may obtain fine results.

Using a colour and its complementary in a more or less degree of neutralization we have fine results too. Take for instance, a purple and paint the walls with two or three light values of this colour, add to these a more or less neutralized yellow-green on the carpets, hangings, etc., and note that the effect is very fine and very suitable for woman's bed room. But do not use two contrasting colours pure, and be careful to use the darker colours on the floor; dark ceilings and light floors give a misgiving effect which should be avoided.

The colours of a bed-room for elderly women should be darker in value than those for young women, and the colours of the bed-rooms for men should be more serious and more neutralized than those of the women in general.

**LIVING ROOMS:** Living rooms where we spend most of our time, permit stronger colours than those of the bed-rooms, but, as in general, we get very soon tired of strong or bright colours, so it is always advisable to use moderate tints and if we feel that the room is too monotonous we may easily liven it up with bright colours limited to some hangings, pictures, or vases of flowers, etc. Remember that a small spot of brightness is sufficient to render the whole interior more lively as we have seen in dealing with intensity, discord and monochromes.

**DRAWING ROOMS:** Because drawing rooms are meant to receive guests and to spend in their company some leisurely hours so the colours should be such as to act over our spirit joyfully and for this purpose warm colours are the best. However, one should not exaggerate in charging violent tints otherwise the colour-scheme is vulgar.

For instance, a fine colour-scheme for a drawing room could be formed by light values of orange (always slightly neutralized) for the walls, neutralized ultramarine for the carpet of the floor, dark orange for the furnitures and some small objects painted in vermillion. The whole would be distinct and pleasing.

Of course, the number of the colour-schemes for drawing rooms and all other interiors is endless.

**CHILDREN'S PLAYING ROOMS:** Just as we have noticed, the colour-schemes for interiors used as a pastime for grown up people are conceived in warm tonalities, so, accordingly, the colours for children's playing rooms must be still more joyful and purer to give to the children a very good disposition of temperament. In these rooms we may use freely pure contrasting colours, but of course, not to fall in vulgarity one of the two contrasting tints must be used in greater quantity than the other (a thing we have already explained when dealing with "true contrasts.")

Because children are nearer to nature than grown up people so the colouring and drawing of their rooms should be inspired from the things of the open space such as the sky, the sea, the flowers and plants, the sun, animals, etc., etc.

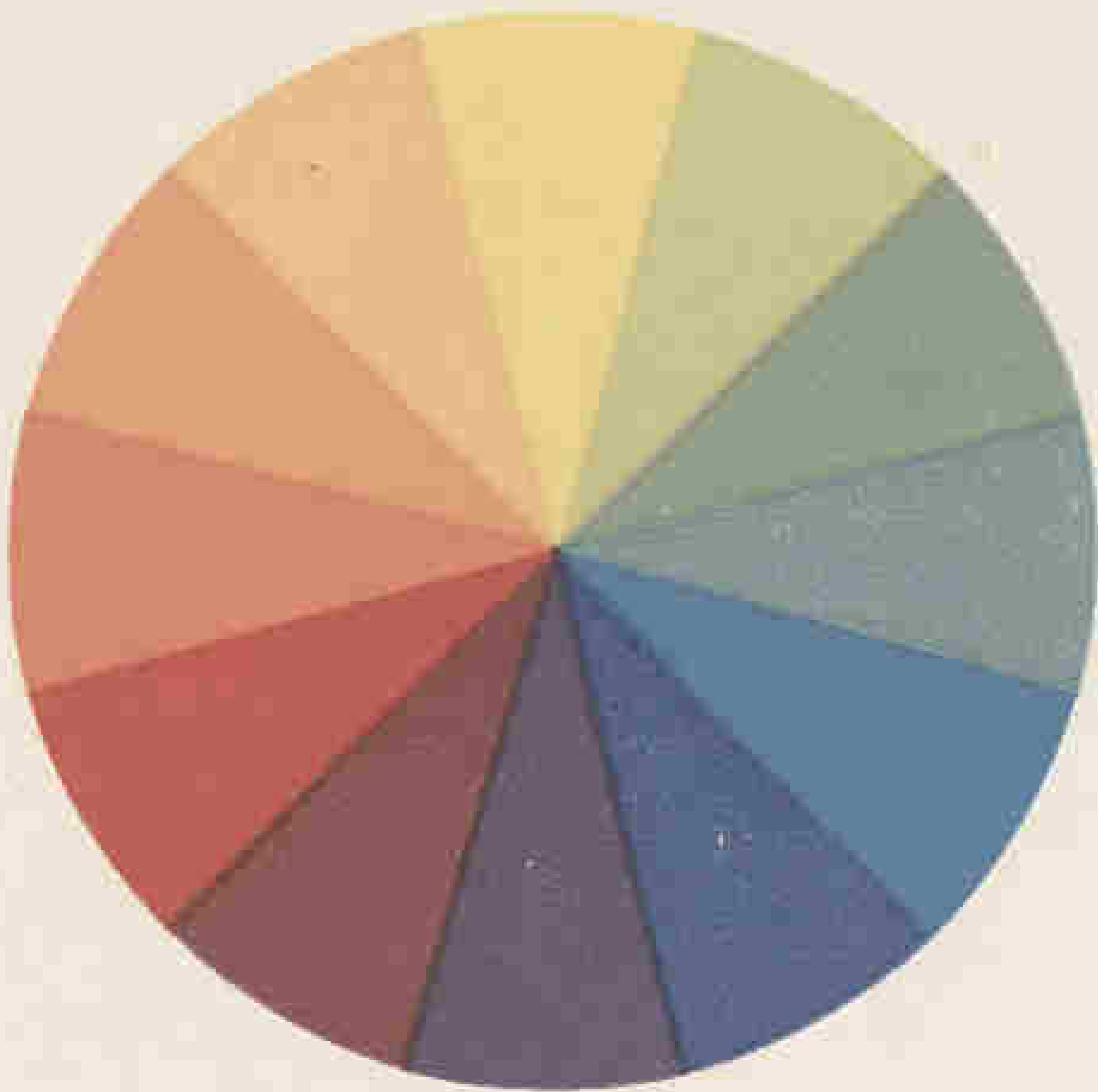
**BATH ROOMS:** The colours for bath rooms may be inspired by the fine shades noticed in the sea, or water-falls or rivers, etc. These shades vary from the delicate white of the foam and the light green-blue to the very deep-blue-green or blue-ultramarine, or they may be those brownish tints that we see in the rocky recesses of the sea, which united to greenish tints are suitable for bath rooms colour-schemes.

Briefly, the colours for the bath rooms must be refreshing and preferably, having cool tones, so use neither too much neutralized tints nor dark colour-schemes, because they would be too dull for bath rooms.

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*The purpose of the aforementioned suggestions for the colours of interiors is to impress upon the minds of students the fact that the colours have a strong influence over our psyche, they may excite, calm down, give an aesthetic pleasure or depress our senses. Thus the choice of colour for an interior depends exclusively on what use that interior is meant for.*

*By Prof. C. Feroci.*



ပုံစံ ၁  
Fig. 1

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рисунок 2

Fig. 2

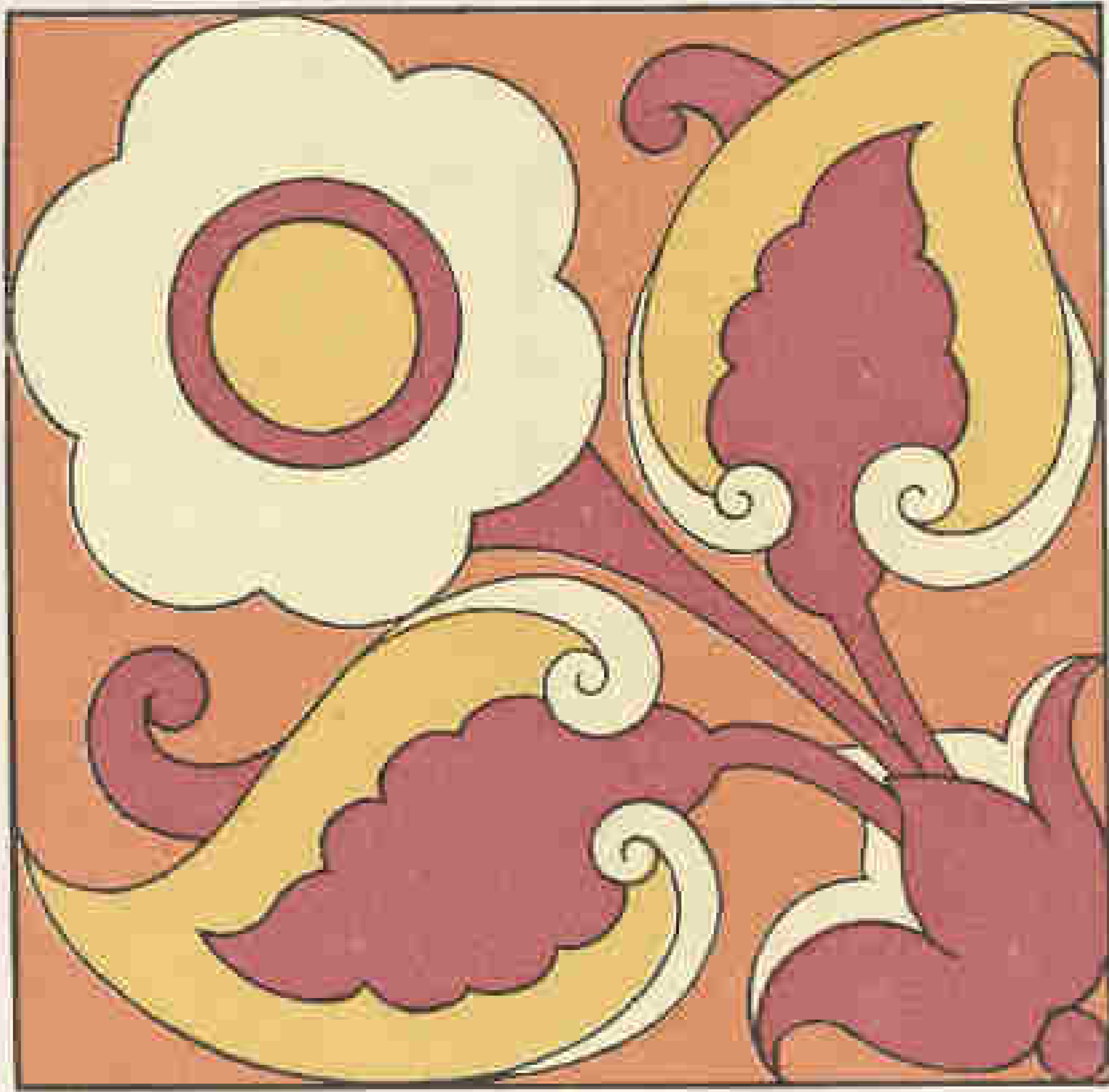
*The values of monochromes correspond  
of the values of colours*



рисунок 3

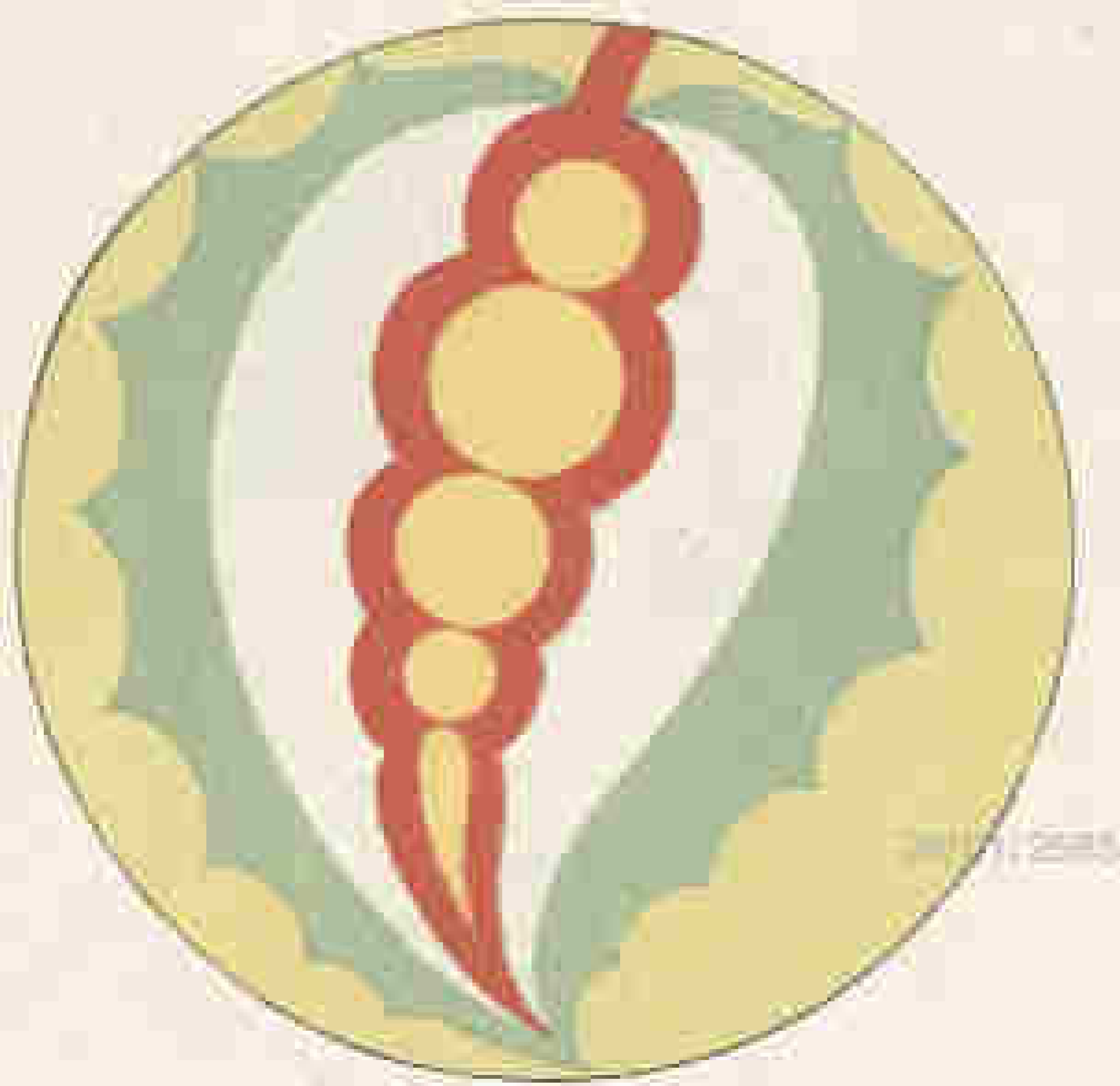
Fig. 3

*Colour-scheme obtained by values of  
two colours*



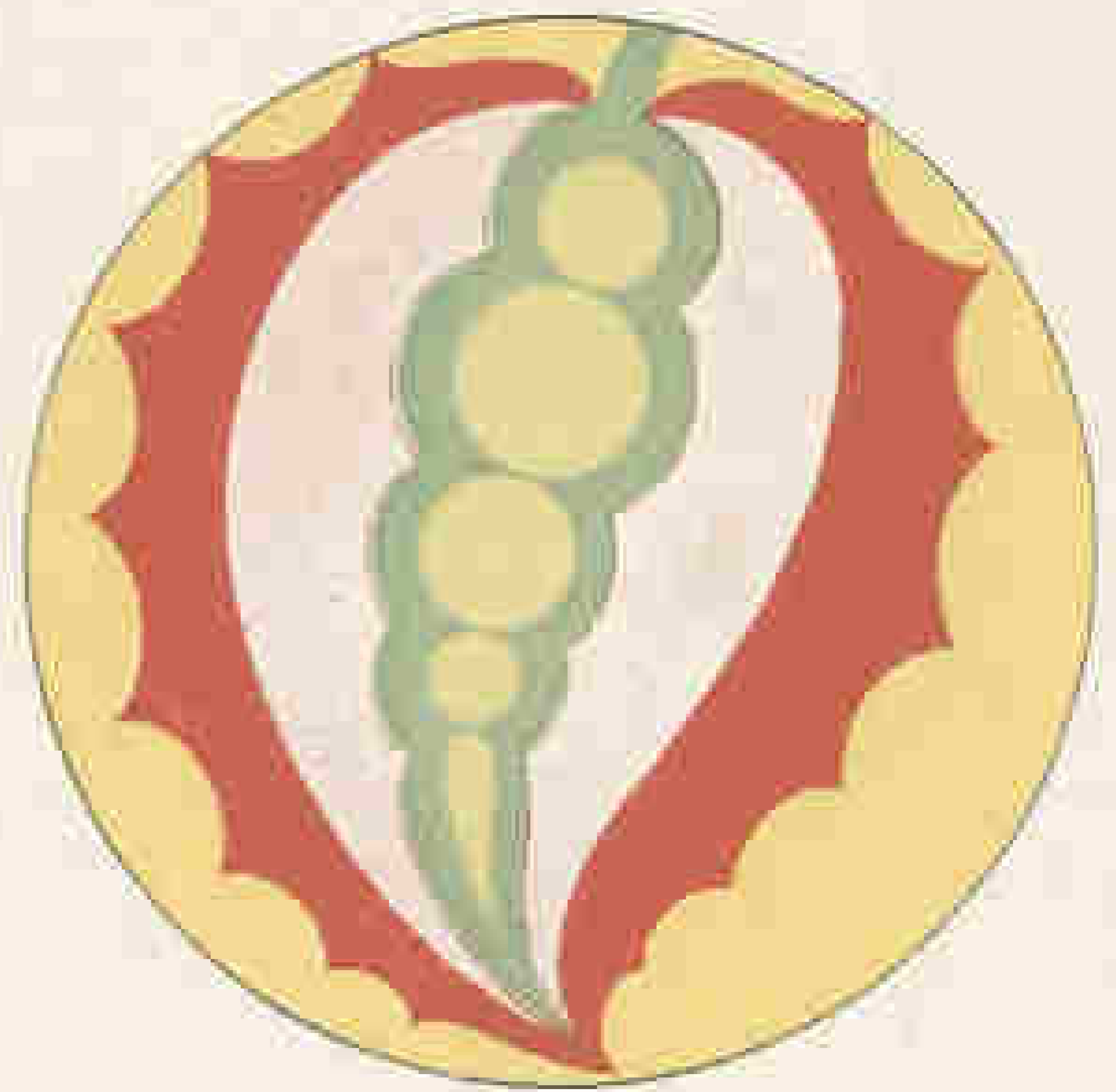
រូប ៤  
Fig. 4

*Harmony obtained with 4 colours*



រូប ៥  
Fig. 5

*Cool-Tone*



រូប ៦  
Fig. 6

*Warm-Tone*



รูปที่ 7  
Fig. 7



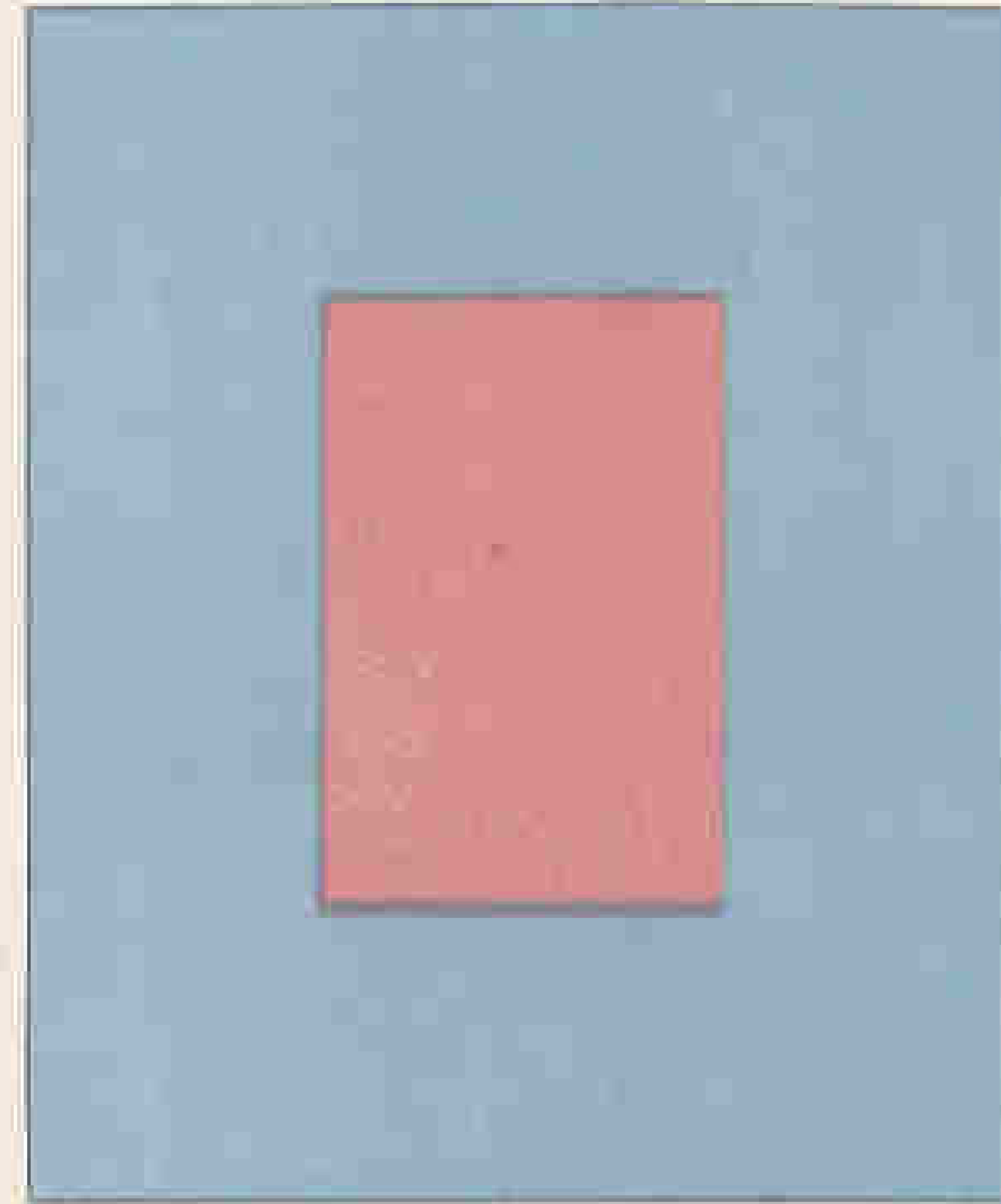
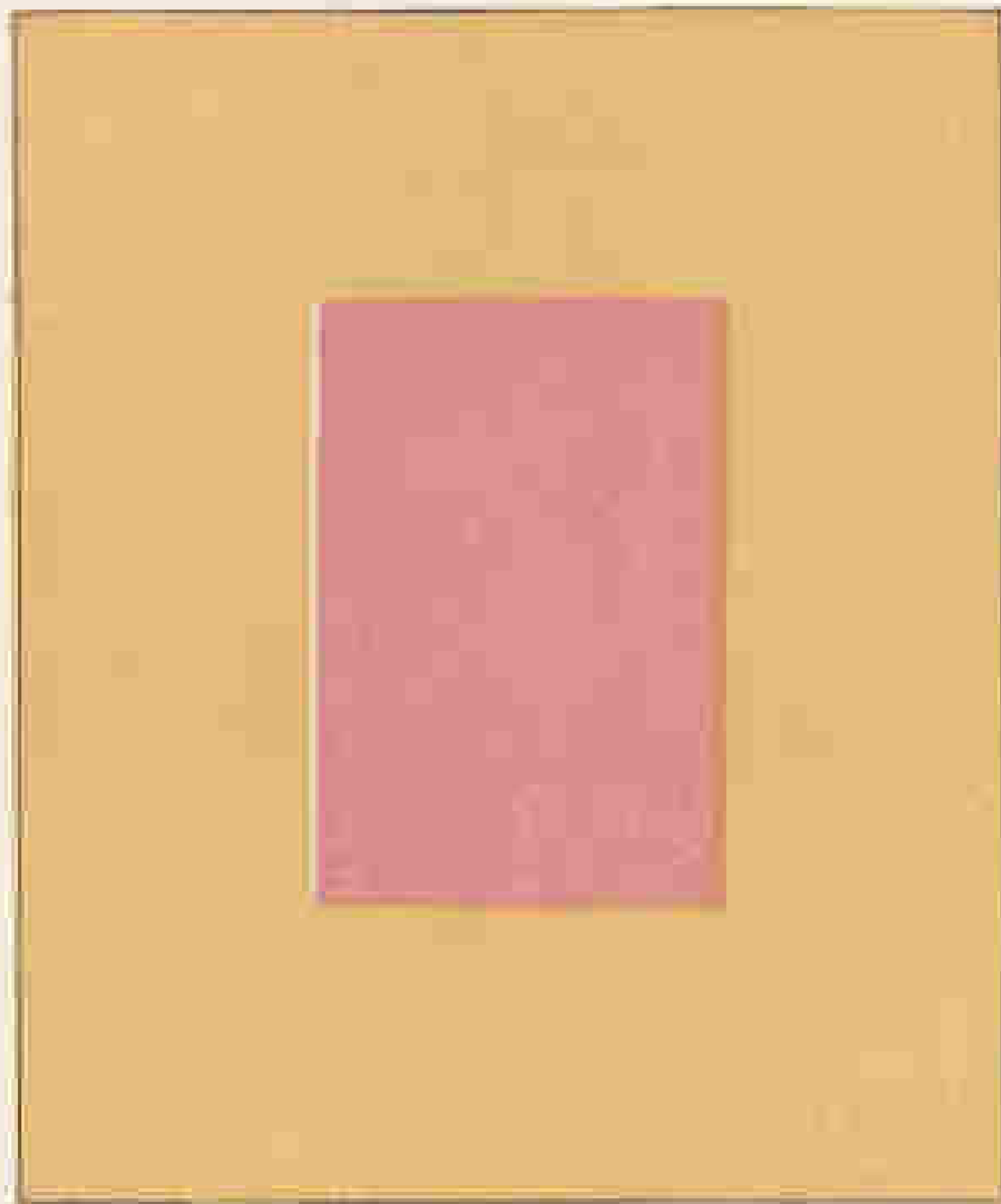
รูปที่ 8  
Fig. 8



รูปที่ 9  
Fig. 9



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**Fig. 10**  
*Monochrome*



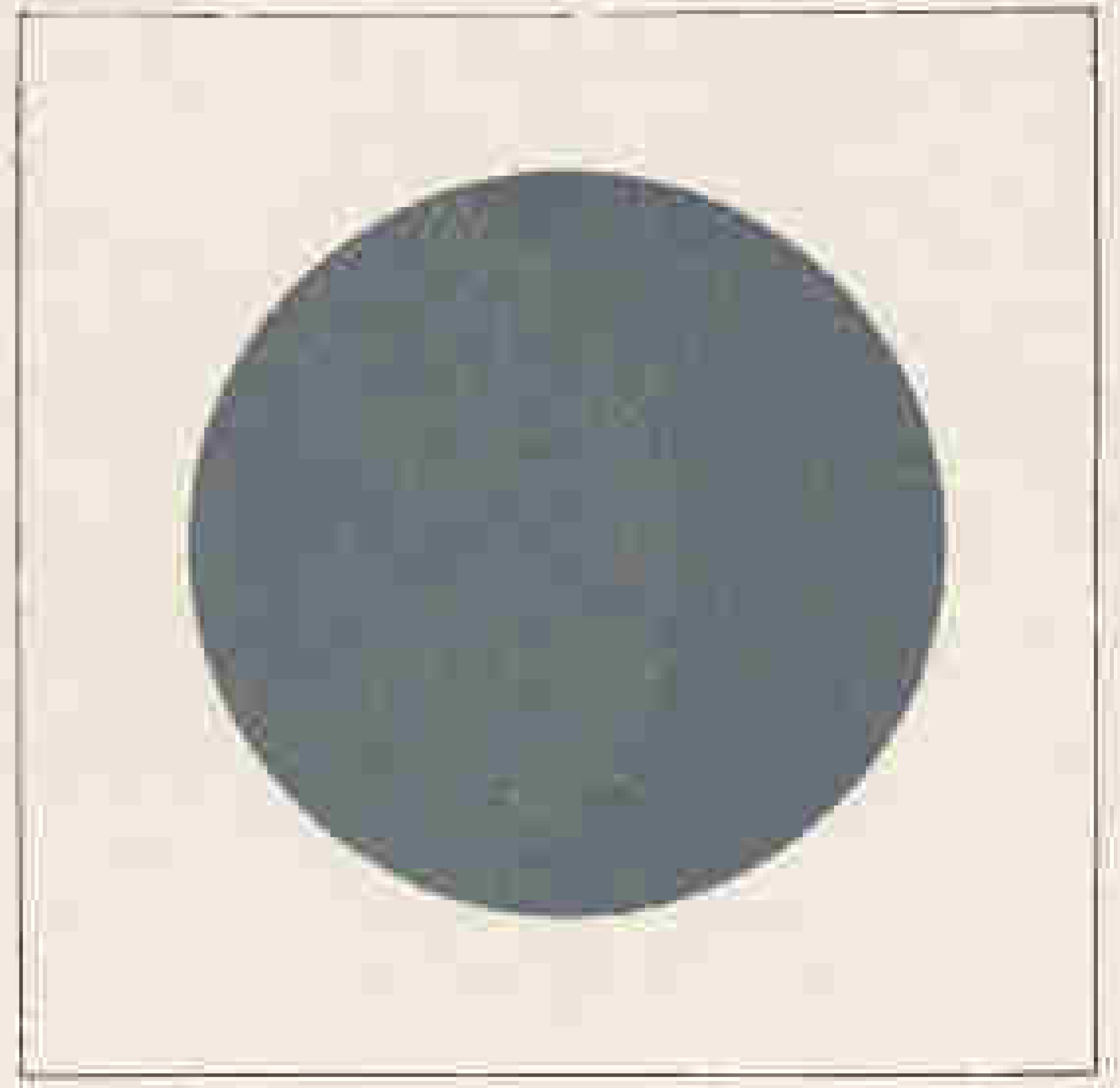
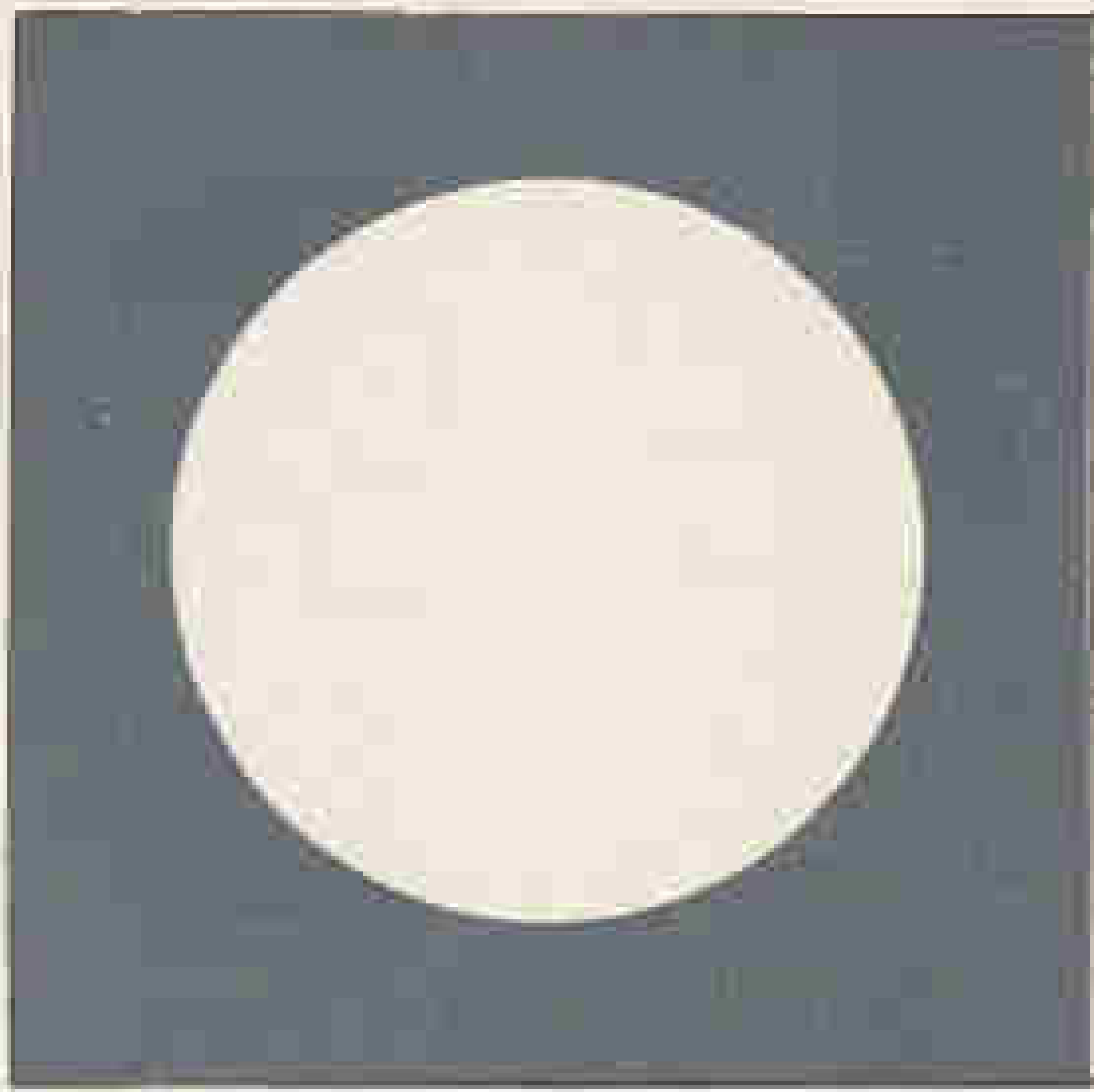
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रूप 11

Fig. 11

*Colours affected by the complementaries*

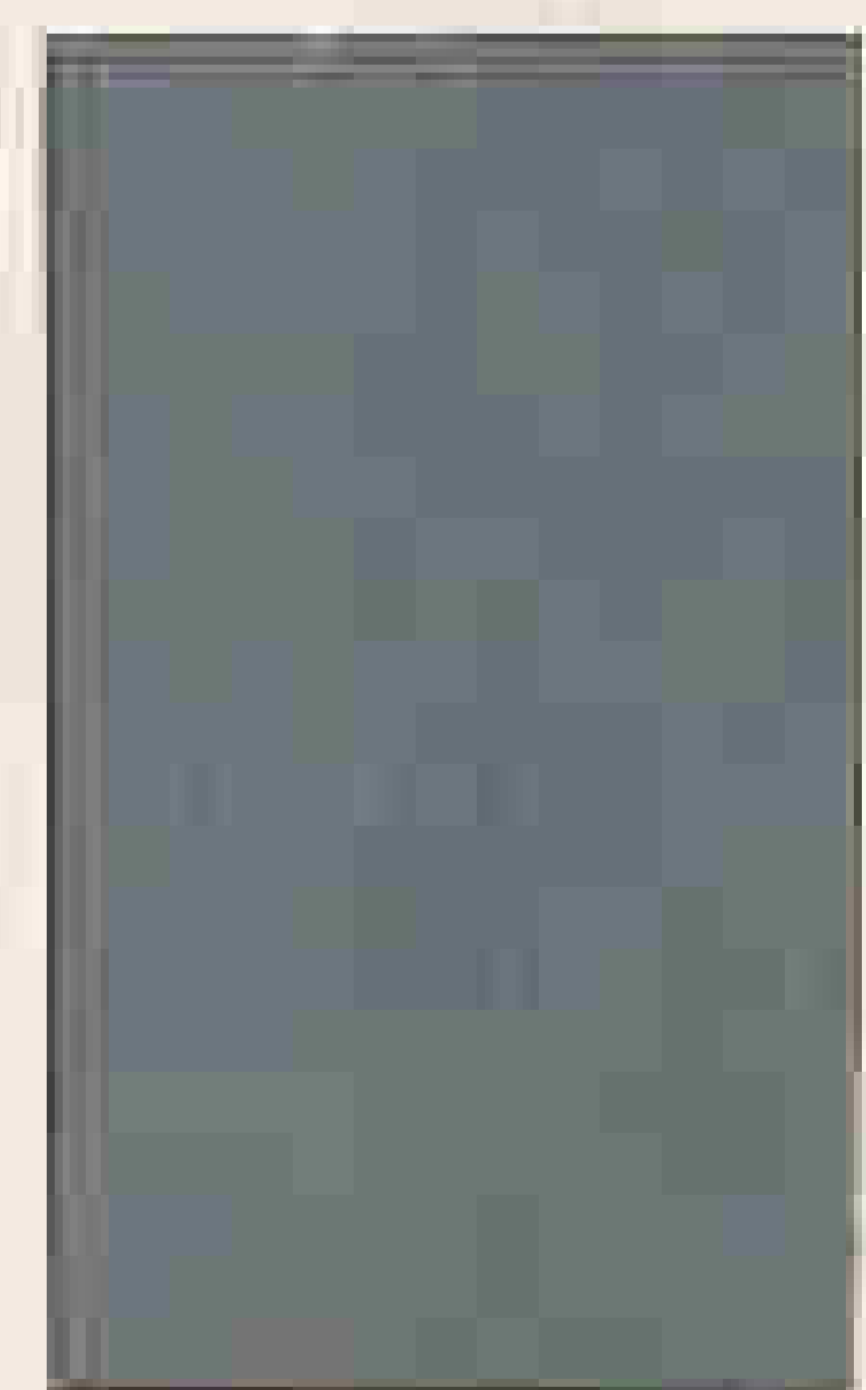
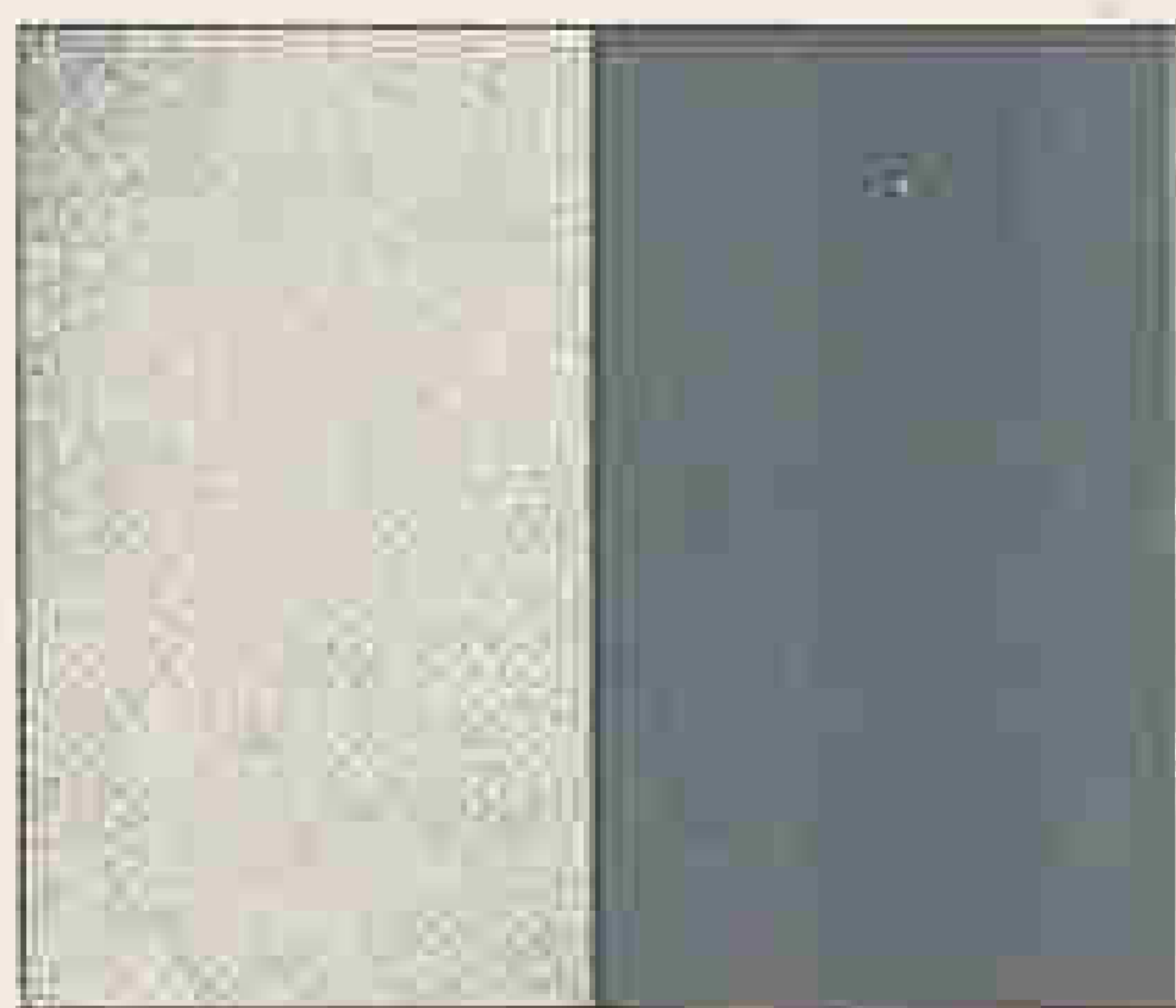




รูปที่ 12

Fig. 12

*A dark object over a light ground appears smaller than its real size*



26/01/2015

รูปที่ 13

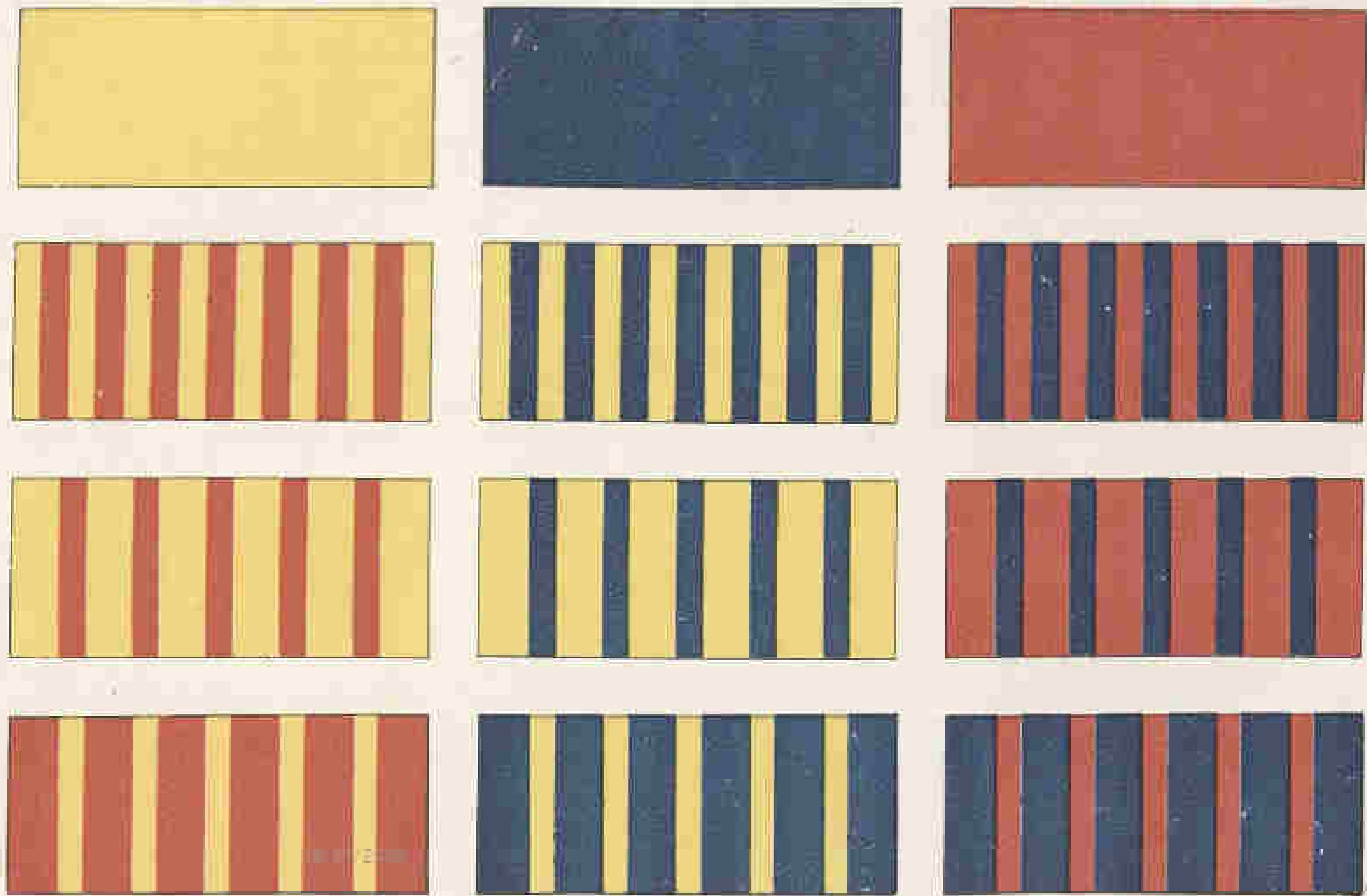
Fig. 13

*A light value placed side by side with a darker one will appear lighter than its original one, while the darker value will look still darker*



รูปที่ 14  
Fig. 14  
*Distribution*





រូប ១៥  
Fig. 15  
*Intermingling.*



चित्र 16

Fig. 16

*Changing the colour of the outline of the ornament  
the colour-scheme will look different.*

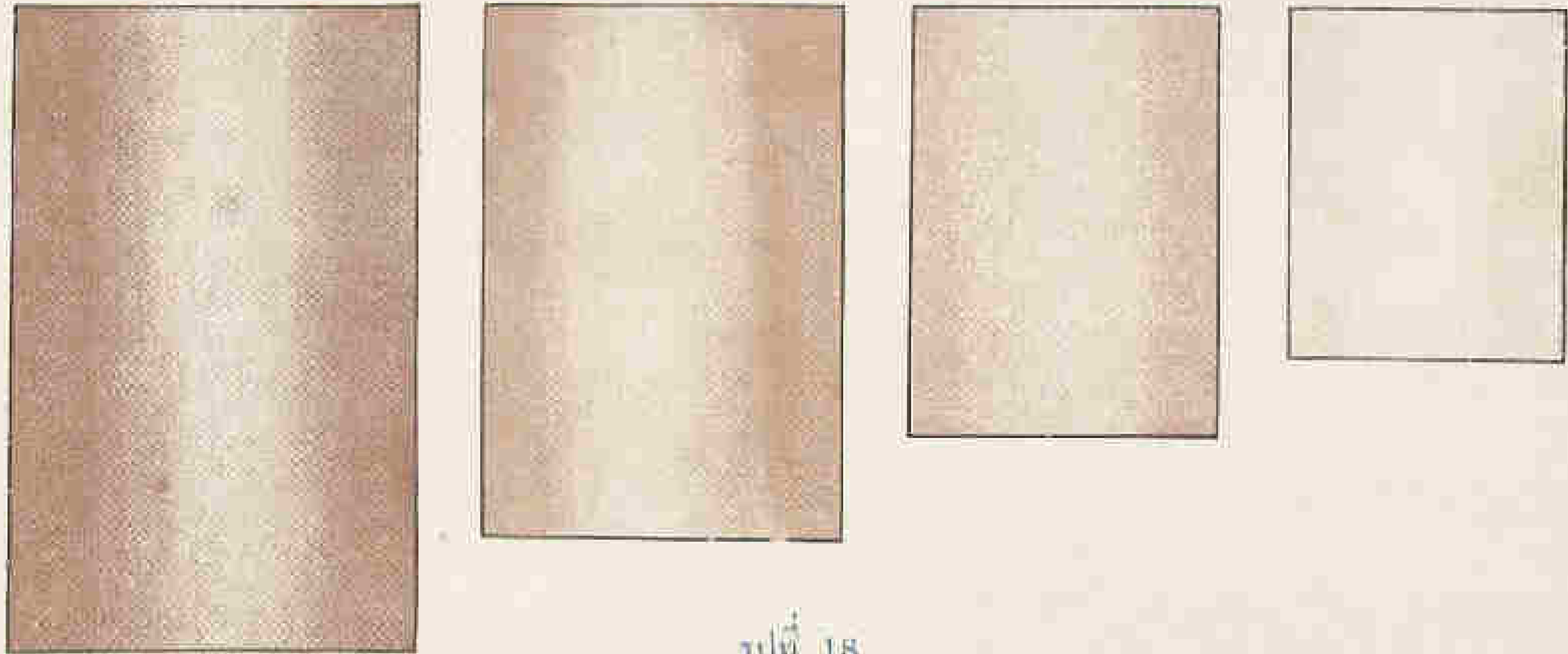


चित्र 17

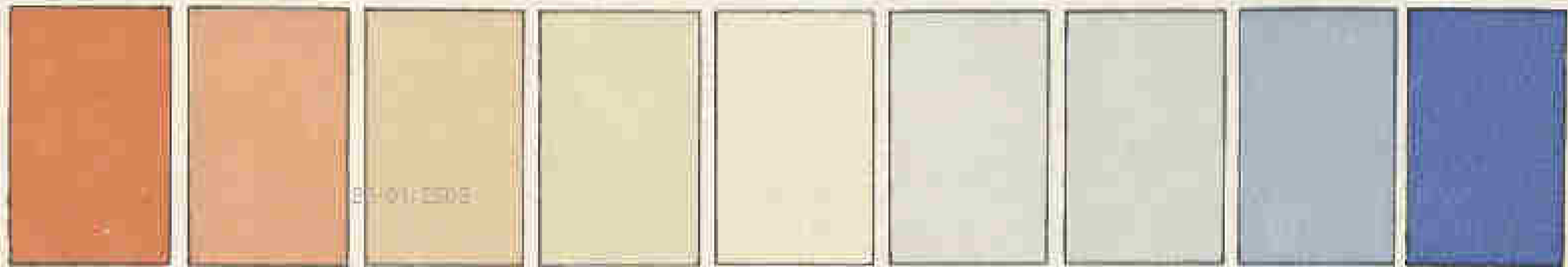
Fig. 17

28/01/2025

*The values of Chitrasturo and those of colours correspond exactly each other*



रूप 18  
Fig. 18



रूप 19  
Fig. 19

*Perspective of colours*

พิมพ์ที่โรงพิมพ์พระจันทร์ ท่าพระจันทร์ พระนคร

นายสนั่น บุณยศิริพันธ์

เจ้าขอ: ผู้พิมพ์ ผู้โฆษณา 4/1/2487

