Chapter Four

PROPORTION

The principle of proportion is sometimes called the "law of relationships." There are three practical problems in proportion which confront us in everyday tasks. These are:

1. How to achieve arrangements which will hold the interest
2. How to make the best of given sizes and shapes
3. How to judge what sizes may successfully be grouped together.

There are definite means by which to solve these problems:

1. In order to achieve arrangements that will hold the interest one must know how to create beautiful space relationships.
2. In order to make the best of given sizes and shapes one must be able to produce a semblance of change in appearance, if it is desirable.
3. In order to judge what sizes may be grouped together successfully, it is necessary to grasp the underlying significance of scale.

INTEREST THROUGH SPACE RELATIONSHIPS

How long will a row of pickets in a fence or the ticking of a clock hold the interest? Obviously, only an instant. But introduce an element a little bit out of the ordinary, such as an unusual gate or the striking of a clock, and interest is immediately stimulated. If an arrangement is built on the plan of three squares, the mind will record those squares without a pause as it did the pickets on the fence, and the eye will not be arrested. But suppose two squares
Figure 61. The Greek oblong, which is a standard of good proportion. The sides are in the relation of two parts to three.

were used with an oblong, or two oblongs with a square, one would have to look an instant longer before that picture was recorded; and in that instant he would actually perceive that group more clearly than the one composed of three squares. Here, then, one is on the heels of an answer to the question of how to arouse the interest.

Every time two or more things are put together proportions are established, whether good or bad. Some people have an instinct for good proportion, and whatever combinations they plan are sure to please the eye, but most people have to acquire this trait. Fortunately it is one that can be acquired. The best method is to adopt a standard, and then, by comparing the results of experiments with that standard, one will soon arrive at the point of having a true "feeling" for fine space relationships.

The ancient Greeks, after centuries of striving for beauty, arrived at the point where nearly everything they made exhibited good spacing. The oblong which they used as the basis of their space divisions is sometimes called "the golden oblong" and is a recognized standard for space relationships. This Greek oblong measured approximately two units on the short side and three on the long (figure 61). Most people find this more beautiful than a square, because the equal sides make a square more obvious. The Greek oblong has more beauty than a very long, narrow oblong, in
which the breadth and the length vary so greatly that they do not seem to be related. A study of the Parthenon, which is the most perfectly proportioned building in the world, illustrates the highest achievement of the Greeks in planning space relationships (figure 62). Compare the oblong formed by the front of the building with that formed by the side, and note the height of the front in reference to its width. The same beautiful ratio is carried out in the smallest detail of the building. While the ratio of about 2:3 or 3:5 is the relationship used by the Greeks for their flat surfaces, their standard for solids is a ratio of about 5:7:11. The designer of today who goes to the Greeks for his inspiration is likely to gain beauty if he interprets their proportions in terms of his own problem, whereas, if he is intent only on copying their details, his building is likely to be merely a collection of historic fragments. The most modest house can have the essential character of Greek art without having a single

Figure 62. The Parthenon, Athens.

In the Parthenon all the proportions are based upon the principle that the relationship of about two parts to three (a relationship which is not too apparent), is beautiful, and that equal or mechanical sizes are uninteresting. (Courtesy of the University Prints.)
so-called "classical detail," if it is based on Greek ideals of simplicity, fitness, and fine proportions. A comparison of the small houses in figures 63 and 64 strengthens the conviction that as a rectangle ap-

Figure 64. A comparison of this house with the one in figure 63 shows that although the styles are similar in origin, this house is inferior in design. Its mass is based upon the square instead of the oblong. Its dormer is too large for the size of the house, and the chimney is too small. The sizes of all the parts are less beautiful than those of the other house.
approaches a square it becomes less pleasing, and that the best results depend on being able to approximate Greek proportions. The use of the Greek oblong and of Greek space divisions in the design of the fireplace in figure 224, page 350 has added beauty to a simple room. Because of its delightful spacing this fireplace will never cease to give pleasure to its owners.

Figure 65. Somewhere near A would be the most interesting point within this space to place an important object or to divide the space.

Perhaps no art problem occurs so often (even where one does not realize that a question of art is involved) as the one in which a space has to be divided into two or more parts: when a name is written on a card; when the division of a wall space or the parts of a garment are planned; or when a group of objects is arranged; or in countless other situations where the same principle is called into play. If the particular division is to be into two parts, the most satisfying result is achieved when the dividing line or object is placed at a point a little more than one-half and a little less than two-thirds the distance from one end or the other (figure 65). However, this point should not be located mechanically, and these proportions are only approximate. Any position within the limits is potentially pleasing, and there is no necessity for a stereotyped choice.

Dividing a space into more than two parts by means of lines or objects presents three possibilities:

1. All the spaces may differ. For example, in the diagram, figure 66A, and in the Danish plate illustrated in figure 67, all the stripes and the spaces between them are different. This gives the greatest variety obtainable. This type of spacing is excellent for relatively small areas or for a few spaces, but there is a possibility that the effect may appear confused and inharmonious if a great many of these divisions must be seen and compared at one time.

2. All the spaces may be alike. In figure 66B and in the black and white material in figure 68, every stripe is the same width, and
Figure 66. Interesting variety or monotony is gained through spacing. A shows variety throughout. There is no repetition in its lines or in the spaces between them. B shows monotony in its repetition because all the lines and spaces are alike. In C the spaces differ from the lines, while in D the spaces are different from the lines and from each other.

the spaces between them are the same width as the stripes. If carried too far, this kind of repetition makes for monotony. If such a plan is used, it would be well to introduce sufficient variation in the color or texture to supply the interest that is lacking in the spacing.

3. There may be a variation in some of the spaces and repetition in others. In figure 66C and in figure 66D, a stripe is repeated at intervals alternating with a space from which it differs in width. In figure 69, and in the collar, figure 70, the tucks, which are the mark of division in this example, are alike in width, and the spaces between them vary. The converse of this arrangement would be seen if tucks of varying width were interspersed with identical spaces. C and D achieve harmony through the repetition of the same unit, but without sacrificing the agreeable element of variation.

Additional examples of these types of space division are pictured in figures 71 to 73. In houses where two building materials are used, their distribution is important. One material should appear to predominate. For example, when brick and clapboarding are used in equal amounts, the impression of unity is destroyed (figure 71). This distracting effect can be relieved by painting the brick the color of the clapboarding. Brick and wood have been attractively combined in the house in figure 72, for they are used in varied propor-
Figure 67. The spacings used in the bands of this plate have given it distinction. The plan is similar to figure 66A, where neither the bands nor the spaces between them are of the same width.

Figure 68. As in the repeated lines and spaces illustrated in the diagram in figure 66B, the spacing in this design is lacking in interest and would become monotonous if it were over-used.
Figure 69. The raffia box represents a design in which a stripe is repeated at intervals with varied spaces between. There is an ingenious amount of variety in the spacings, yet the design is held together by the lines which are repeated. In plan this is similar to figure 66C.

Figure 70. Here the repetition of the tucks gives unity, while the difference in the spaces between lends variety. This is a typical application of the kind of spacing in figure 66D.

tions and painted the same color. Just as a house that is divided into two equal parts will lack interest, so will a garment similarly divided. The variety in the divisions of the dress in figure 73C contributes interest to the costume, while the equal proportions in the second dress, figure 73B, make it appear dull and unflattering to the figure. In the Parthenon, the columns will be found narrower than the spaces between them, producing a subtle effect of far greater beauty than if they were equal. Figure 73A recalls the columns of the
Parthenon in the arrangement of stripes and spaces, and the dress in figure 73C owes its interest to a similar use of repetition and variety.

Figures 71 and 72. When two kinds of building material are used in nearly equal proportions, they tend to cut a house into two parts. This is especially true when the materials are as different as the dark brick and white paint in figure 71. There is an impression of unity in figure 72 because the brick in the lower part of the house is painted like the clapboarding and is used in a varied amount, and the roof is plain.
Figure 73A, B, and C. Costumes of, A, Second Empire; B, 1929; C, Fourteenth Century. A and C show the charm that can be given to a costume when the designer is aware of the inherent interest in subtle space divisions. (B) A garment that is divided into two equal parts appears commonplace.
Figure 74A. This arrangement is monotonous because the proportions are poor. The objects are so placed that they divide the background into equal spaces and the heights are too much alike.

When arranging objects on a shelf one should attempt to secure interest in their heights and in the spaces between them. For instance, figure 74A is commonplace because of the equal spaces between the ends of the cabinet and the objects and between the units themselves. Moreover, all three are too nearly the same height. Substituting the larger basket and moving the objects has introduced variety both in the heights and the spaces (figure 74B).

Frequently one has to arrange groups of objects within a larger group. Perhaps it is desired to assemble several pictures so that they will harmonize with a particular wall space. One may wish to group rows of braid or tucks within a given space; to place buttons on a dress; or it may be that an embroiderer wishes to repeat an interesting unit at unequal intervals on a band or a collar. Whatever the nature of the problem, it is generally true that if single units or
Figure 74B. This is more interesting than A because the heights of the objects and the spaces between them show more varied proportions.

objects in a group are to be viewed as units, they may be separated by spaces wider than the unit measure; but if objects are to be seen as a group, the spaces between them should be smaller than the size of the objects. If this group is to be related to another near it, the space between the two should be smaller than the space occupied by either. This plan, shown in figure 75, has been followed in arranging the objects on the dressing table in figure 104, on page 103, and in grouping the pictures above the table in figure 241, on page 366.

Odd numbers are more interesting than even numbers, and three objects grouped with three, or two objects with three, are likely to make a more satisfying arrangement than two and two, or two and four, or any combination involving even numbers. The arrangement of the tucks in the collar in figure 70 follows this plan of two units used with a group of three, and a study of this example will show how easy it is to augment interest through this method of grouping.
Figure 75. This shows a plan which may be followed in arranging objects so that they will group well. Think of each one of these blocks as a picture, a button, or a bolt of fabric—in fact, anything you wish to arrange in a group. Each group is seen as a unit because there is less space between the objects than the width of the object. The two groups are easily seen together because there is less space between them than the area of each group. Note that all spaces follow Greek proportions. See an application in the arrangement of pictures in figure 241 on page 366.

PRODUCING A CHANGE OF APPEARANCE

Lines which apparently alter proportions

Figure 76 shows two rectangles of exactly the same size. In one a horizontal line has been drawn, and in the other a vertical line. Where the eye is carried across the rectangle it looks shorter and wider, and where it is carried up and down the effect is that of apparently increasing the height and decreasing the width. It is often said that horizontal lines add width and vertical lines add height. While this is true, a second effect may be produced which must also be taken into account. Vertical lines can be so arranged that they will carry the eye from one line to the next, and while they still add height to an object they will also add width. Let us however confine ourselves to the statement that a vertical movement makes an object look taller and more slender, and a horizontal movement has the opposite effect. An illustration of this principle is seen in the buildings in figures 77A and B. Although the proportions of the Palais de Justice and the Palazzo Isolani are practically the same, the Palais de Justice appears to be the higher building. This is because all the lines draw the eye upward, while the lines and the repetition of arches in the other building carry the eye horizontally.

Thus it is seen that if, for the sake of economy, one plans a house that approaches a square, it is possible in a measure to overcome the
Proportion

Figure 76. Two oblongs of the same size showing that when the eye is carried up and down the height seems increased and the width decreased, while carrying the eye across tends to add width and decrease height.

disadvantages of this plan by the shape and the arrangement of the openings. (See figures 78 and 79.) In figure 79, where the windows and porch are themselves nearly squares, monotony results from the emphasis laid upon this aspect of the house. Compare with this figure 78 where a more interesting effect has been obtained by the use of shutters on the windows, and variety achieved through the treatment of the doorway. Although a one-story house is less likely to appear as square as a house with two stories, both types should be studied carefully so as to relate them to the landscape. The house in figure 81 shows the application of some architectural devices that will make a small one-story house appear horizontal in effect. The unbroken roof line, the wide overhang that casts a shadow line, and windows designed in bands all carry the eye horizontally. The use of one material for the front of the house, the garage, and the fence also creates a horizontal movement and ties the house to the lot. The house in figure 80 is on a small lot, yet it could have been made to appear larger than it is and more beautifully proportioned. The wide light stucco band separates the house from the ground and breaks the continuity of a horizontal movement. Painting the ventilator a contrasting color emphasizes the break in the roof line. The
Figure 77A. The Palais de Justice, Rouen.

Figure 77B. The Palazzo Isolani, Bologna. These two buildings have approximately the same proportions in their silhouettes, but the lines of A carry the eye upward and make the building appear higher than B, where the leading lines carry the eye across.
Figure 78. This house, based somewhat upon the plan of the square, is made to appear less square because the foundation and roof are low, and the windows and doors are interesting in proportion and are so spaced as to create a horizontal effect.

unrelated window shapes call attention to each as a separate unit and do not carry the eye smoothly across the front of the house. This lack of unity in the windows is made more conspicuous by the use of the strongly contrasting color trim. A better plan for the design of the windows and the color scheme would have improved greatly the appearance of this house.

Figure 79. A house which appears to be made up of several squares is uninteresting.
Figure 80. The appearance of this house would have been improved if the sizes and shapes of the windows were related to the wall spaces, and a less contrasting color had been used at the base of the house and on the ventilator on the roof.

Figure 81. This house is well proportioned and its lines are related to the lot. It appears larger than it is because a horizontal effect has been given to the design through an unbroken roof line; the windows, which are good in shape and size, carry the eye across the house, and there is a unified color relationship between the side wall and the wood used for the front of the house, the garage, and the fence. (Kenbo Corporation.)
When it is understood that the correct use of lines may thus apparently alter proportions, countless puzzling problems will be solved. The room that is too low may have a ceiling lighter than the walls or a suggestion of vertical stripe in the paper. Rooms in which a part of the ceiling is slanting are made to appear lower when the ceiling color is brought down to the wall, but seem higher when the color of the wall is used on the slanting surface and a lighter color on the ceiling. Windows that are too short may have long, narrow draperies and no valance, and the chair that is too low may have a vertically striped cover (but remember not to choose stripes that will carry the eye across rather than up and down.) The placing of pictures and accessories may be used to emphasize height or width in a room. For example, a vertical hanging will produce an impression of height. A high room can be made to seem lower by carrying the color of the ceiling down to the tops of the windows, or having the ceiling darker than the walls; by the use of low bookcases and furniture; and by the suggestion of a horizontal movement in the design of the fireplace and the arrangement of all the furnishings in the room (figure 102). A room that is unusually long can seem shortened by placing important groups of furniture at the central axis. The use of more than one rug also appears to decrease the size of the room. To increase the apparent width of a room a valance or cornice board may be used across a group of windows, and rugs may be so placed that their lines will carry the eye across the room.

No one wants to appear too different from the fashionable figure of the time. In some countries of the world a woman’s beauty is measured in terms of bulk, and people there naturally dress to give the illusion of weight. Here, where slenderness is the standard of beauty, the opposite illusion is sought. If a person understands how to use lines effectively, she can make herself approach more nearly whatever standards she has set. In figure 82 the women’s figures are the same height, but the vertical direction of the lines of the dress in B makes that woman look taller and more slender, while the horizontal movement in A decreases the apparent height and adds width. It is amazing to see the transformations that can be brought
Figure 82A and B. Costume of, A, 1830; B, Thirteenth Century. A, Horizontal effects are charming on a slender, well-proportioned person but would make a large woman look very broad and short. B, striking emphasis down the center front of a costume adds immeasurably to the effect of height and slenderness. This is an excellent device for a stout woman, but should be shunned by one who is too tall and thin. Notice that these figures are the same height, and the difference in their appearance is due to the direction of the movement of the lines.

About through illusions created by an intelligent use of lines. In Chapter XV there is a table of suggestions that summarizes the best lines for various types of face and figure. In order to associate the basic principle with these recommendations, we shall list some typical suggestions concerning the use of lines that apparently alter proportions. A tall thin person should choose dominant lines that carry the eye across the figure, because horizontal and curved lines
add width. From among the offerings in current fashion, the tall, thin man should choose the nearest approach to broad padded shoulders; wide lapels; coats with deep yokes and fullness belted at the waistline; the wider and fuller trousers; light coat with dark trousers; and the broader hat brims with the lower crowns. Women who wish to look shorter should select such lines as may be gained from suits with contrasting jackets; dresses with contrasting blouses or bodice tops; shorter, wider skirts; peplums and flared tunics; broad belts; broadened shoulders; bloused bodices; and the lower hats with brims. All of these lines that look so well on the too-tall, too-slender person should be avoided by those who are short or stout. This group should avoid a horizontal movement in the lines of hats and garments, and should seek to direct the eye up and down the center of the figure, rather than across it.

A person, any of whose proportions vary from the normal, may select clothing with lines designed to direct the eye away from the unusual feature. For example, a woman who has too large a bust should not compress the waist for then attention would be called to the unusual size. Rather, she should build out the waist slightly, and, if she is short, she could also employ lines that carry the eye up and down the center of the figure. If the hips are conspicuous, an accented line might be used down the center of the skirt. If the shoulders are too square, it is unwise to accentuate them with yokes or square collars. In making such adjustments, the entire figure should be studied so that the whole effect may not suffer for the sake of a detail.

**SCALE**

The third aspect of the principle of proportion is called “scale.” An intelligent critic may say, “This building is excellent. All its parts are in scale.” Or, “How well scaled this table is.” Scale, in this sense, means (1) that the sizes of all the elements making up the structure have a consistent, pleasing relationship to the structure and to each other; and (2) that the size of the structure is in good proportion to the different objects combined with it. A very small
Figure 83. All of the architectural details in this small house are well scaled to each other and to the size of the house.

Figure 84. The dormers are strikingly out of scale with this small house. Other changes that would have improved the house are: a lower foundation, a plainer roof, the elimination of the dark bricks in the chimney, and the use of two instead of three windows at the right of the entrance.

Object never looks so small as when it is placed near a very large one. That is because the two sizes are not consistent. They accentuate each other by contrast, and would be said to be “out of scale.” By following a consistent scale, it is possible to create illusions that cause astonishment when the actual sizes of objects are realized. An illustration was experienced in witnessing a well-staged puppet play. The puppeteer, whose stage properties were in perfect scale
Figures 85 and 86. The bulky chair and sofa in figure 85 are out of scale with the room. Compare them with the well-designed furniture in figure 86 which is intermediate in scale and suited to a room of average size. (Figure 86, courtesy of MGM Studios.)

with the puppets, gave his audience the ever-increasing impression of watching normal people and objects. He gave a dramatic illustration of the way scale will deceive the eye when, at the end of the performance, he stood near the stage, and looked like a giant.

It is very largely because all parts of the house in figure 83 are in scale that it is so successful. Compare it with figure 84, and it will be seen that when the scale is bad a house is not a unit but a jumble of parts. Whenever a dormer, a window, or a porch is too large or too small it will attract undue attention and destroy the
effect of unity in the house. In this case the dormers are out of scale with the size of the house, and the group of three windows at the right is too large for the wall space. In figure 83 the dormers are small enough to take their proper place in the whole design and, because they are shingled like the roof, an appearance of unity is attained. All of the other architectural details—the chimney, windows, doorway, and the overhang of the roof—are in scale with the size of the house. Two other examples of good and poor scale in exterior design are compared in figures 63 and 64.

The person who would select and arrange things to look well together must develop a feeling for scale. He must know, for example, that bulky-looking furniture will seem to crowd a room of average size, which would hold a number of smaller pieces quite satisfactorily (figure 85). If large pieces must be used in a small room, there should be as few as possible, upholstered in an inconspicuous color and pattern. On the other hand, if the furniture seems too small for the room, it should be arranged in groups, so that the size of the group, and not the size of each piece, may become the unit for comparison. The maximum appearance of size may be given to a room through the use of furnishings comparatively small in scale.

Scale is judged not only by the size of the whole mass of an object, but also by the relationship of each part to every other part, and to the whole mass. Two chairs of the same outside dimensions will appear different in scale if the arms and legs of one are very heavy, and of the other very light.

There is a mistaken idea that furniture, to be comfortable, must be huge. This is unfortunate, because it has led many people who live in average-sized rooms to crowd them with bulky pieces. If they knew that comfort is more a matter of the design and construction of the piece than of its size, and that equal comfort can be obtained with smaller pieces, our small houses and apartments would show much better scale and would be more attractive. The chair, sofa, and table in figure 85 illustrate this common mistake. Unusually large pieces of furniture call more attention to themselves than to the room as a whole. It should be noted that the heavy curves of the sofa and the angular effect of the chair have little in common. Now
study figure 86. Here the furnishings are intermediate in scale—
neither very fine nor unusually heavy. The two chairs and sofa are
large enough for comfort, but not so large as to dominate the room.
With the floor space gained, it is possible to use additional pieces of
furniture to make a room more enjoyable. The furniture in this
room makes an interesting comparison with that in figure 85. Here,
there is a sense of grace in the slender lines of the chairs and sofa
which does not in any way interfere with the feeling of strength.
Although the chairs are large enough to be comfortable, they have
the advantage of being light enough to be moved about easily to
form any other grouping that is desired in the room. A glance
back at figure 56 shows a more social type of room in which furni-
ture and textures of a finer, lighter scale are used well. Fabrics, too,
have scale. Under the topic of “Harmony in Textures” fabrics were
grouped in three classes: coarse materials, which suggest large scale;
fine textures, which suggest small scale; and third, an intermediate
group, which may be used with either of the first two groups as
well as with objects of an intermediate scale. Fabrics show scale in
pattern as well as texture. Large figures are suitable for large pieces
of furniture to be used in large rooms, and small patterns are con-
sistent with small pieces of furniture for use in small or average
rooms.

Scale in dress can be used to make one look larger or smaller as
well as to give the impression of a delightful consistency between
a costume and its wearer. Violation of scale in dress results in un-
related effects and often culminates in the ridiculous. For example,
who has not seen the tall, stout woman who makes herself look
larger by wearing a very small hat with a dainty flower or tiny
feather for its trimming note; or whose dresses are trimmed with a
few very small buttons or narrow lines of contrasting color, and
who invariably carries a diminutive handbag? Of course there is
danger that, on being shown her error, this woman might select
patterns and accessories that are too large and thus increase her
appearance of size by the opposite exttreme. Similarly, the small
woman should avoid large designs because they would be “out of
scale” with her size and would make her look smaller.
Chapter Five

BALANCE

"Everybody who comes in here wants to re-arrange the furniture," was the complaint of an irritated attendant in a demonstration room. The reason was only too apparent. With too many of the heavy pieces of furniture at one end of the room, the room seemed to tip, and the visitors had an unconscious impulse to correct the fault. Balance in design is so natural that one is not even aware of it when it is present, but when it is violated there is a sense of discomfort or annoyance.

Stated briefly, Balance is rest or repose. This restful effect is obtained by grouping shapes and colors around a center in such a way that there are equal attractions on each side of that center.

The youngest schoolboy can balance objects if he is told that balance works on the same principle as the seesaw. Equal weights will balance when they are the same distance from the center. If unequal, the heavier weight must be moved toward the center and the lighter weight away from it before balance is obtained. (See figures 87A, B, and C.) Balance in art can be explained quite as simply as balance in weights. The only difference is that it is not so much a question of how much the object weighs as of how much attention it attracts. If one boy wore a brown sweater and another wore red, in balancing them against a background one would follow the same principle as for balancing unequal weights, and would place the boy in red nearer the center of the wall, while the less conspicuous boy would be moved farther away. The brighter the red sweater the nearer it would have to come toward the center line, and the duller the brown sweater the farther off it should go.
FORMAL AND INFORMAL BALANCE

It has been seen that the center of the space under consideration is the point around which all attractions must be adjusted. If objects are alike or are equally forceful in appearance, they will attract the same amount of attention, and therefore should be equidistant.

Figure 87A, B, and C. The principle of the seesaw applied to balance in art. A, identical weights or equal attractions balance each other at the same distance from the center. This kind of balance in art is called formal balance and may be bisymmetrical or obvious in type. B, unequal weights or attractions balance each other at different distances from the center. The greater attraction must be placed toward the center and the weaker one farther away. If one object is half as big or half as attractive as the other it will be placed twice as far from the center. This is called informal, asymmetric, or occult balance. C. Another method of balancing large objects with smaller objects, besides the one shown in B, where both are placed upon the same horizontal line, is illustrated in C. Here the large object comes toward the foreground, and is balanced by placing the smaller one in the background. In other words, it gives the effect of being seen in perspective. This method of balancing is used especially in pictorial composition, in designing store windows, and in arranging stage settings.
Figure 88. Formal balance. "Music" by Pinturicchio.
When a painter desires a stately, dignified effect in his picture he is apt
to use formal balance, or the principle of figure 87A, where equal attractions
appear on each side of the center. (Courtesy of Anderson, Rome.)

from the center. (See figures 103 and 104.) This kind of balance is
known as formal balance. Formal balance is called bisymmetrical
balance when the objects on each side of the center are identical,
and obvious balance when the objects are not alike but are equal in
their power of attraction. Formal balance is quiet, dignified, and
gives a sense of precision.
Figure 89. Informal balance. "Southern France," by Derain, 1880–
Here is a subtle balance of large and small masses which are unequal in
their power to attract the attention. The larger tree and vertical dark trees
behind it at the right, were placed close to the center of the composition and
balanced by the smaller light tree much farther from the center as in figure
87B. Notice how the eye is satisfied and the sense of balance is completed
by the introduction of the church steeple in the distance, placed as the small
boy is in figure 87C. (Courtesy of the Phillips Memorial Gallery)

If, however, objects do not attract the same amount of attention,
they must be placed at different distances from the center (figure
105). This second type of balance is called informal, or occult, or
asymmetric balance. Informal balance is more subtle than formal
balance and affords greater opportunity for variety in arrangements.
Its success depends upon training the eye to recognize a restful
composition.

Pinturicchio's "Music" (figure 88) is an illustration of a formal
arrangement in which the figures on either side of the center line

Balance in pictorial composition
Figure 90. This bisymmetric design adapted by the Persians from the pomegranate is dignified and formal.

Figure 91. (Stencil by Maxine Downie Nelson.) In contrast to the design above, this bisymmetrically designed hanging for a child’s room expresses a spirit of play.

are so nearly alike that they attract the same amount of attention. The lights and darks are in practically the same relative positions, and the figures have been balanced so skillfully that, even though both sides are not identical, one has the impression of symmetry.
In Derain's landscape "Southern France" (figure 89), there is a delicate adjustment of forces that differ greatly. Through the sensitive placement of each form we receive a distinct impression of balance of the informal type. If we care to analyze the manner in which the picture is composed, we see that the larger light tree at the right, with the group of dark trees behind it, is balanced comfortably by the small tree placed farther from the center line. The steeple of the church off in the distance takes its place in the balancing of the picture just as the small boy takes his position for balance out on the long end of the board in figure 87C.

Many of the early periods produced formal expressions in their art, and numerous examples of bisymmetric balance are found in their designs. The pomegranate design which is shown in figure 90 is attributed to the Persians, and this motif has been adapted to formal design in many periods. Because of its stateliness it was often used in the rich fabrics that upholstered the chairs of the Renaissance. Much of the impressiveness of this design is due to symmetry. However, bisymmetrically balanced designs are not always stately.
The gaily colored stencil in figure 91 was made for a hanging in a child's room and shows a playful mood.

The characteristic designs of the classical period are formal, whereas the art of Japan is informal. Japanese artists understood the art of occult balance, and they acquired such expertness that their painting, prints, and stencils are remarkable for their subtlety and spontaneity. One of their typical designs is seen in the stencil pattern in figure 92. Here is a perfect adjustment of unequal spots on either side of the center line. The exquisite grace of the lines combined with the subtle balance of forms stimulate the imagination of anyone who looks at it. The embroidery in figure 93 shows a ship, bird, and flower design that is characteristic of the islands of Greece. The distribution of the motifs gives this design a mobile quality which is typical of occult balance.

Figure 93. An informally balanced design seems especially suited to this entertaining embroidery from one of the islands of Greece. Here the birds are longer than the width of a sail and flower stalks are as tall as masts.
Figure 9.4. Palazzo Sagredo, Venice.

A suggestion of the romantic character of the life of the Venetians is expressed in the informally balanced design of this Gothic palace. The openings in this building have been placed with such a sensitive feeling for equilibrium that one has the impression that nothing could be removed from the design without disturbing its balance.

Just as the painter arranges his composition on canvas, so the architect has to balance doors and windows, porches and dormers around the central axis of a building. Whether he uses formal or informal balance depends largely upon the following conditions:

1. The spirit of the age in which he lives
2. The use to which the building is to be put
3. The type of people for whom the building is planned
4. His own personality.

In glancing back over history, one sees that in the periods that were filled with a spirit of romance, everything done was expressive of that spirit. In the golden days of Venice, the bright fantasy of
Figure 95. Palazzo Bartolini, Florence.

Bisymmetric balance seems particularly appropriate as a setting for the social and political life of the Florentines during the Renaissance period. (Courtesy of University Prints.)

the times was echoed in the graceful, occult designs of many of the Venetian palaces (figure 94). In Florence, art found a very different
expression; the seriousness of the Florentines in the early Renaissance period, so vividly reflected in the work of Michelangelo, is seen in their stately, unadorned, bisymmetric palaces—the natural outcome of their lives and thoughts (figure 95). In the same way the spirit of Puritanism led to restrained, formal designs in the buildings erected in the American Colonial times; in their large public buildings and in their small dwellings as well, the Colonists put their own personalities into their work.

Two houses are shown here to illustrate how formal and informal balance appear in a building. In comparing them, notice their
Figure 97. This house is balanced informally. The dark doorway is placed near the center, and the light gables grouped with it form a mass which is balanced at the left by the windows, the dormer, and the light chimney, each placed at varied distances from the center.

difference in spirit as well as the means by which the effect was secured. If a line were drawn through the center of the house in figure 96, it would be found that everything on one side is repeated on the other side, and so this house is bisymmetrical, or formally balanced. The house in figure 97 is informally balanced, and the architect obtained a feeling of restfulness by carrying out the principle illustrated by the large and small boys on the seesaw. In figure 97 the dark doorway is near the center of the house, and the mass formed by the dark door and the light gables is balanced by adjusting the windows, the dormer, and the light chimney at different distances from the center.

In the advertisements in papers and magazines, the principle of equal and unequal weights as related to balance is all-important. Except that here one is working with cuts or drawings, blocks of type, and white margins, the procedure does not differ much from any other art problem involving balance. Figure 98 shows the method employed in making layouts for advertisements. The weight
Figure 98. An artist’s layout for an advertisement. The sketch shows the manner in which the objects to be illustrated and the copy are studied as masses to be balanced around a center.

of the illustrations and the weight of the type are carefully adjusted, and the amount of margin left is an additional factor to be considered in the balancing of the whole layout. Whether formal or informal balance is used may depend upon the mood suggested by the material being advertised, or if specific cuts are to be included rather than drawings which can be any size or weight, the cuts may determine the manner of their placement. When a layout is balanced, it will give the impression that it would remain in a horizontal position if it were suspended from the center by an imaginary string.

In the two sketches for cards in figures 99A and B, the severity of formal balance has been chosen for the school supply advertise-
Figure 99A and B. In advertising materials that are distinctly practical, the exactness of formal balance seems appropriate, while the freedom of occult balance is well suited to objects that suggest delicacy.

Figure 100. Formal balance. A window that impels and holds your interest. The small articles are grouped into identical patterns at each end of the composition and placed bisymmetrically. The circles of soap and the bubbles in the center panel are less rigidly arranged, following the obvious type of formal balance. (Bloomingdale’s. Photograph by Worsinger.)
Figure 101. Informal balance. Placing the masks and large card near the center draws attention to the accessories grouped with them and gives the accented motif for this window display. The larger group is balanced by the smaller articles placed farther out. (J. and J. Slater. Photograph by Virginia Roehl, Inc.)

ment, while the grace and subtlety inherent in informal balance seemed better suited to the idea of perfumes.

The attention value of a display is one of its major considerations from the point of view of the store, and skillful balance is one of the vital elements in those windows which hold the eye. The problem of the display man differs from that of the advertiser in that the third dimension—depth—is an important factor. A window resembles a stage much more than it does a poster or an advertisement. Two diagrams are shown in the chapter on Emphasis that suggest a very easy way to secure a balanced window when objects or groups of objects of unequal sizes or attractions are to be used (figures 155 and 156 on pages 167 and 168). This method would be useful whether one is arranging floor plans or elevations. The in-
formally balanced window in figure 101 resembles the diagram in figure 155, for the rectangular floor plan of the window contains a display that creates a similar triangular floor plan within the rectangle. In making informally balanced arrangements, one would place the principal feature of the display near the center of the window and would then balance smaller objects around the main center in much the same manner as seen in the diagram or described in Derain’s landscape in figure 89. Informally balanced groups often seem more varied than formally balanced arrangements, and they may hold the interest a little longer because they are not quite so quickly grasped and passed over by the mind.

In the window in figure 100, the two kinds of formal balance are clearly seen. Bisymmetric balance is carried throughout the window except in the central panel of the background where obvious balance is employed, for the large circle is on the center line and the other forms are distributed so that equal weights are placed on each side of the line. In balancing objects one will make some interesting discoveries. For example, it will be found that an empty space is often more emphatic than a full one, just as a sudden silence in the midst of a long loud piece of music seems even more striking than the music. A large space left around an object will lend it so much more emphasis that it will be as important an attraction as a much larger one. By moving the articles forward and back, and to the right and left, one will soon discover just how much empty space a small unit needs between it and a larger one in order to secure balance. An object that is very striking or peculiar in shape or color will have the same power of attraction as a larger one that is simple and inconspicuous; two such objects then would balance each other at equal distances from the center, even though there is a great difference in their appearance. Until a worker has trained his eye so that balance becomes instinctive, he should remember always to judge the whole display rather than to concentrate his attention on any of its parts.

In placing the furnishings of a room, the architectural openings must be taken into consideration. Very often balance is secured by having a large piece of furniture on one wall of a room as a balance
to an opening on an opposite wall. The large pieces of furniture should be placed first, with regard to balancing centers of interest in the room. The smaller movable objects would then be arranged so that they will make convenient groups as well as balanced units. After the furniture has been arranged the attention is turned to the balance within each group. A well-balanced wall will have the same amount of attraction on both sides of its center line. A well-balanced room will have approximately the same amount of attraction on opposite walls and, although the two side walls may be somewhat heavier than the end walls, there should be the feeling that the attractions are about equally distributed around the room.

Figure 102 illustrates a balanced arrangement of furnishings in a living room. From any position the eye rests upon a balanced composition, yet the adjustment of the forms and the light and

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*Figure 102. (Richard J. Neutra, Architect.) There is a sense of repose in this room. While the effect seems unstudied, actually the furnishings have been placed with a careful regard to balance.*
Figure 103. (Photograph by Mattie Edwards Hewitt.) The quaint details in the decorative objects suggested the precision of a formal grouping. (Courtesy of the Architect's Small House Service Bureau.)

dark masses seems so natural that the method used in balancing the room is not at once apparent.

Anyone interested in the meaning of designs will find that the kind of balance used in the arrangement of furniture and decorative objects helps to give an individual quality to a group. It also influences the character of the room. Bisymmetrical arrangements convey a feeling of formality, but it can be formality with the simplicity and charm of colonial days, as in figure 103. However, if formal balance is carried to an extreme it may result in effects that are cold or stertotyped.

An arrangement which illustrates the second type of formal
balance—obvious balance—is shown in figure 104. This is a symmetrical arrangement in which the balancing masses are not alike, yet they have the same amount of force. The large mirror and small hand mirror attracted the same amount of attention as the two small boxes and Chinese figure grouped with the lamp, and so the masses were placed at equal distances from the center. This type of balance gives to a room an effect halfway between the precision of bisymmetrical balance and the variety of the occult.

There is more intimacy in informal arrangements than in formal, and a sort of chatty, conversational quality is likely to characterize a room where informal balance prevails. If one compares the informal arrangements of figure 105 with the bisymmetrical one in figure 103, he will notice that the effects are essentially different. There are freedom and variation in the uneven groupings, and while the other arrangement is quaint, it is more reserved.

It is not necessary that all the parts of a room should agree in
being either formal or informal in arrangement. For example, one might use a formal arrangement on the desk, an informal grouping on the bookcase, and a combination of formal and informal balance on the fireplace, as is seen in figure 106. This type of balance makes an impression which lies between the formal and the informal. There is more variety than if the same objects were repeated.
throughout, yet a certain dignity comes from the repetition of some of the objects.

In working for a balanced room, one should continually test both halves to see that one half does not present much greater attraction to the eye than the other. In arranging the room the four walls, with everything seen against them, must balance. If one side seems too heavy, it is necessary to add a brighter color, a more striking shape, or simply more material to the weaker side, and to keep adjusting the attractions until the whole room looks restful.

Objects seen in an upright position have a tendency to appear to be dropping in space. It is therefore agreeable to the eye to have the center of attraction come slightly above the mechanical center of the object. Thus it will be seen that a figure appears to be balanced even though the weight is somewhat greater in the upper half of the body. When this effect is exaggerated, however, the figure appears unstable. There are times when one must look carefully in order to avoid violation of balance in an ensemble. The fashions of some seasons make a woman look as if she would topple over from the sheer weight of her hat and furs. The woman of taste avoids exaggeration in dress, and so she finds herself choosing the more conservative fashions which will not make her look gro-

Figure 106. A combination of formal and informal balance gives to an arrangement a feeling of stability with variety.
Figura 107. Costume of the French Revolution. A distinctive design based on formal balance gives a smartly tailored appearance to an ensemble.

tesque. In her choice of hats she should consider not only the balance in the hat itself (in order to select one that will look as if it would stay firmly on her head) but also the balance of the hat with her height, the width of her hips and shoulders, and the length and width of her skirt. Many women try on hats when seated and are able only to judge the effect on the face and shoulders; as a result they are frequently surprised when they see the entire figure reflected in a mirror.

Whether the dress and hat shall show formal or informal balance is a matter of personal preference, for they may be equally attractive. Formal balance is likely to suggest a trim and tailored effect especially suited to clothes for business, street, and school wear. When introduced into an afternoon or evening dress, it gives an air of reserve (figure 107). The informal balance may show more subtlety and variety; it suggests grace, and is particularly suited to soft ma-
Figure 108. This costume of the period of the Restoration shows that informal balance in dress, when successfully carried out, gives variety, charm, and grace. This type of balance is especially adapted to afternoon and evening clothes and to negligees.

materials (figure 108). If a striking band or other decorative note is to be used only on one side of a dress, it should not be placed too far from the center line. If it is placed far out at the boundary of the figure, the dress will appear unbalanced, unless something is placed on the other side to balance it.

(Note. Balance in color is discussed in the chapter on Color, pages 197 to 199).
Chapter Six

RHYTHM

Ask any group of persons what rhythm means to them and classify their answers. It will be interesting to see how much agreement will be found in the fundamental idea expressed, even though the individuals will have widely differing definitions. To one, the first thought of rhythm may suggest something that is graceful or sinuous. To another, the first reaction would lead toward a feeling of something that is spontaneous, energetic, or primitive. The action of a dance, the whorl of a shell, the recurring patterns on the water where a pebble has been dropped, a sonorous poem, a lilting song, the beat of martial music, a primitive negro mask—all of these varied patterns have in common the quality of movement organized in the direction of beauty.

While rhythm may be defined as a form of movement, it must be recognized that not all movement in design is rhythmic. Sometimes movement is distracting. In art, rhythm means an easy, connected path along which the eye may travel in any arrangement of lines, forms, or colors. Rhythm, then, is related movement. In a perfectly plain space there is no movement; there is simply a resting place, and the eye remains quiet at any point where it happens to fall. The moment that pattern is placed upon that plain space, or an object is placed against it, the eye will begin to travel along lines suggested by the object or the pattern, and at that moment movement is created. This movement may be organized and easy, and thus rhythmic; or it may be very restless, distracting, and lacking in rhythm.
There are three outstanding methods of obtaining rhythmic movement:

1. Through the repetition of shapes
2. Through a progression of sizes
3. Through an easily connected, or a continuous line movement.

**Rhythm Through Repetition**

The principle of rhythm as it is gained through repetition is recognized when one is conscious of the swing of the beautifully spaced, regularly repeated columns of the Parthenon, which may in a way be likened to the strokes of a perfectly trained crew of oarsmen. When a shape is regularly repeated at proper intervals, a movement is created which carries the eye from one unit to the next in such a way that one is not conscious of separate units, but of a rhythmic advancement making it easy for the eye to pass along the entire length of the space. The greatest enjoyment of rhythmic
sequence is to be found in nature forms. The shell of the paper-nautilus pictured in figure 109 shows the beauty that can be gained when repetition is carried along in such rhythmic measures. Our enjoyment of this shell is spontaneous, and at first it does not occur to us to analyze it; but if we do, we find that it is the subtle variation in the spacing which causes us to welcome the repetition of the shapes. In addition, the sequences in the contour of the shell give its form a progressive movement that delights the eye. In the lace design in figure 110, there is a rhythm which seems almost to have melody. The regularity in the repetition of the leaves forming the edge of the lace sets off the more varied repetition of the upper units. In securing rhythm through repetition, one must be careful to avoid monotony in spacing, for good proportion is a necessary ac-

Figure 110. The lace designs in figures 110, 111, and 114 show the various ways in which rhythm may be gained. This is an example of rhythm achieved through the repetition of the motifs in the border.
Rhythm

companiment to repetition if beauty is to result. Moreover, when intervals are too far apart the movement will lack rhythm.

There are any number of practical applications of this principle of rhythmic repetition. Combined with good spacing it makes for pleasing effects when one is, for example, stitching rows of braid or tucks on a dress; placing groups of buttons; repeating dots, squares, or any shape of spot in embroidery; or putting out rows of objects in a store display. It is interesting to remember that repeating a shape a number of times gives an effect of repose; and sometimes a shape which, alone, is difficult to use as a single unit in design, will be successful when it is repeated at close intervals. This was illustrated in Chapter III when triangles and diamond shapes, which are unrelated to most forms, were used successfully in borders where they were placed close together. A rhythmic effect is achieved in a costume when a suggestion of the tucks or braid on the skirt is repeated in the waist or a note of color is carried from one part of an ensemble to another.

RHYTHM THROUGH A PROGRESSION OF SIZES

The second way of obtaining rhythm is through a progression of sizes. The lace pattern in figure 111 shows how the eye is carried along an easy route by this method. While a regular progression of sizes may be satisfying enough for scallops on lace and embroidery,

Figure 111. The design in this lace illustrates rhythm gained through a progression of sizes.
A masterly use of rhythmic arrangements in line and color and light and dark masses is found in some of the old Japanese prints. Observe how the eye can enter this picture at any point and travel with ease over the entire composition.

one enjoys a more varied progression when large objects are involved. Progressing sizes create a rapid movement of the eye, and they are often badly used. An example of this misuse is seen in the arrangement of pictures or other objects against a wall in a series of steps that carry the eye up toward the ceiling, and hence away from the part of the room around which one would like to have the interest centered. While a series of steps is undesirable because
Rhythm

Figure 113. (Photograph by Wilbur M. Nelson, A.R.P.S.) In the world of nature there are many small objects which we pass over with never an appreciative glance at the beauty contained within them. A striking example of this is found in the rhythmic sequences revealed in this enlargement of the whorl of a shell.

it leads the eye to the wrong place in the room, a group of objects in which there is no variation in height may be monotonous. In order to avoid both extremes, one should use a series of varied heights such as are shown in the objects on the mantel in figure 123. If a low box had been substituted for the picture as the central object in this group, the progression would have been too abrupt.

RHYTHM THROUGH A CONTINUOUS LINE MOVEMENT

Compositions that show rhythm through continued line are likely to be made up very largely of curves. While all of the forms of rhythmic movement were seen in the natural pattern of the shell of the paper-nautilus, the rhythm to be found in the continued
Figure 114. The eye is led easily along this design by the continuous line movement.

Figure 115. The lines of this pattern go in such discordant directions that the design lacks rhythm, and the eye becomes fatigued in the attempt to follow them.

Figure 116. The three types of rhythmic movement are seen here. There is rhythm through the continuous line in the center of the bottom border, and repetition in the row of dots above this line, while the wavelike lines in the open space above show rhythm through progression.
movement of a line is plainly shown in figure 113. This enlargement of the spiral of a shell brings out the beauty in the sequence of its line movement and in the rhythmical gradations of its spaces. One finds many fine examples of this type of rhythm in Greek sculpture and in Japanese prints. Just such an impression of continuous line is illustrated in the print in figure 112. There is a swinging movement throughout the entire picture, and no matter where the eye enters, it is carried along by the suggestion of an easy, flowing arrangement of the lines, lights and darks, and colors, so that the gaze travels over the whole picture without the least sensation of hindrance. The rhythm in this composition is so striking that it produces much the same sensation as does a graceful dance.

The same type of rhythm seen in the Japanese print characterizes the pattern of the lace in figure 114. Here the free swing of the wide, undulating line is echoed and reëchoed in the other parts of the design. Compare the rhythm of this pattern with the lace shown in figure 115. In this case every line seems to be defying every other line, resulting in just as marked a lack of rhythm as there would be if two dancers were out of step with each other, and out of time with the music. If lines similar to these were repeated over a large area, as on a wall, they would create a very restless atmosphere in the entire room.

Frequently one finds an arrangement in which all three kinds of rhythmic movement are used. This is very apt to be the case in large schemes, such as room arrangements, but designs for lace and embroidery and other handicrafts sometimes show this combination. Figure 116 is an illustration of the variety to be secured, through using the simplest elements—the dot and the line—and combining them in these three ways. Upon looking at the band at the lower edge we find that the rise and fall of the line through the center creates rhythm by means of the continuous line; above that the dot is repeated rhythmically. Note that the spaces between the dots have an interesting proportion when compared with size of the dots. There is rhythm through progression of sizes in the wavelike line running through the wider open band of the lace, and it is interesting to see how this swift motion has been related to the
Figure 117. A rhythmic effect in this gable-roof style of architecture is achieved when the pitch of the roof lines of the body of the house, the gables, and the dormers are based upon angles of about the same degree.

Borders and given more of the appearance of a band by the repetition of the small flowerlike unit in each open space.

The principle of rhythmic line movement comes into frequent use in the design of a house. Perhaps it can be recognized more easily if one starts from a point where there is no apparent movement. In the outline of a square house the horizontal and vertical lines are of equal force, and so they balance each other. Compare with a square house a house made up of eills and gables. It is easily seen that there is a great deal of movement in the lines of this type of house, and if it is to be pleasing to the eye, the movement should be rhythmic. This irregular, rhythmic type of house design was very popular in England during the Tudor period, and many of our Colonial houses show a similar form of rhythm in the gabled roofs and the angles of the dormers. In figure 117, one is aware of rhythm in the lines of this modern adaptation of an English house. When many gables are used, the architect is careful to have the angles of these gables, their placing, and the variation of their sizes similar
enough so that the eye will feel an easy relationship as it is led from one to the other.

Perhaps the one place in house design where lack of rhythm is most frequently seen is in the arrangement of door and windows on the side of the house. In working out a house plan, one usually begins with the arrangement of the rooms and then places the doors and windows in order to secure the best light and air and wall space for the furniture. Unfortunately these openings do not always look well in relation to each other after the house is built. A glance at
figure 119 will show the result of not having thought through the problem of door and window arrangement to the point of foreseeing how they would look in the finished house. It is not difficult to balance doors and windows symmetrically as in the typical Colonial house. In this style the stairway usually comes in the center of the house, the windows of each floor come on the same straight line, and no unusual line movement is created. But the problem becomes more complicated when there is a side stairway which needs light, a basement door on the level of the street, and windows to be placed in the first, second, and even the third floors. In figure 118 these openings have been so adjusted that there is a sense of order in the arrangement, while in figure 119 one recognizes that they have been considered only from the point of view of the interior plan. The result in the latter is the formation of an un-rhythmical diagonal line which is unrelated to the lines of the house.

Passing from the exterior of the house to the interior, one must determine how much movement will be enjoyed in the design of a house over a long period of time, and where rhythmic patterns and arrangements will be most pleasing.

It should be remembered that movement involves degree as well as kind, and in order to attain rhythm without producing uneasy, wasteful movement it is desirable at times to have complete absence of movement, such as is found in plain surfaces in wall paper and carpets. It is very easy to imagine a wall paper or rug pattern with a bold, swinging, rhythmic line which may be very agreeable when seen in a small piece, but, repeated over so large an area as the whole wall or floor, it will show too much action and will detract from the objects in the room. In other words, the coverings of walls, and floors as well, should either be plain or have a very quiet design in order to create the effect of their being backgrounds for the many furnishings which will be placed against them. One can enjoy more emphatic rhythmic movement in small areas, such as curtain materials, or in pictures, than in wall papers and rugs.

The ideal background against which pictures and other objects are to be placed is one that has a suggestion of texture, but not too
Figure 120A. Diagonal lines in wallpaper have nothing in common with the lines of a room, and when they are as conspicuous as these, they create too much distracting movement to make a good background.

Figure 120B. The movement in a diagonal pattern becomes less noticeable as the contrast between the lights and darks decreases. This paper would take its proper place as a background.

Figure 120C. The type of diagonal line design that makes the quietest background is one in which the repeat is small and the pattern shows very little contrast in its light and dark values.
definite line movement. For this reason, stippling and sand-finished plaster make excellent walls. Next to these in desirability is paper with a pattern that shows just a vibration of light and dark and pattern, but not too noticeable a movement.

Such conspicuous diagonal lines as are seen in figure 120A make the poorest kind of background, because they create very rapid action in opposite directions. When there is as little contrast between the lights and darks of the pattern and the background as there is in the paper shown in figure 120B, the diagonal movement is very much less noticeable. Such a paper would make a background against which one could enjoy the people and the objects in the room. The third paper, figure 120C, has a very conservative diagonal pattern. Here the cream-colored lines are so nearly like the yellow background, and the diamond shapes are so small that the pattern becomes very unobtrusive. This type of paper makes an attractive wall in a room where one wishes to have merely a suggestion of pattern. In striped paper the lines are closely related to the structural lines of the room, and if the lights and darks of the stripes show an easy transition from one to the other there will be an agreeable amount of movement not inconsistent for a background. As the contrast between the lights and darks in the stripes increases, it will be found that the movement will quicken correspondingly, and the paper will become less desirable for use as a background.

If one wishes to have the floors form a quiet base for the room, the same good judgment should be used in the selection of the designs for the floor coverings as for the walls. A comparison of the two rugs in figures 121A and B will demonstrate that the eye travels along lines suggested by a design. Where these lines are conspicuously diagonal, contradicting the structural lines of the room and contrasting with the background in their light and dark values, they become very annoying (figure 121B). On the other hand, where the lines of the design are more transitional and the values are similar, the resulting movement is agreeable (figure 121A). As with the wall covering, the most useful carpet designs are those which show merely a vibration of pattern and color.

When the amount of desirable movement for walls and carpets
Figure 121A. This is a good type of figured rug because the design is flat in effect, it covers the surface compactly, and there is little contrast in light and dark.

Figure 121B. When crossing diagonal lines are repeated over a large surface the pattern is apt to become very distracting. These designs are especially confusing for wall and floor coverings if there is a strong contrast of light and dark.

has been decided, one is ready to think of the design of the furnishings. The first requirement of a good design is that it be suitable for its purpose, and this must be considered before the type of design is selected. In a room with quiet walls the figured pattern of a drapery material may display a greater degree of movement than would be pleasant for walls and rugs. Here the area is comparatively small, and the material hangs in folds, breaking up the definiteness of the movement of the design.

When a person selects furniture he prefers to have it suggest stability rather than movement, and so he chooses either straight lines or restrained curves. Too much straight line will result in monotony, and this becomes more noticeable if many straight line pieces are used together. The period of Mission furniture showed how tire-
some the straight line may become when it is unrelieved by curves. Curved lines give movement, but if they are exaggerated, or are used in too many pieces of furniture, the room will look restless. The ideal design for furniture is one in which there is enough of the straight line to give dignity and stability, and enough of the rhythmic curve to relieve the severity of the design. (See figure 2, following page 2.) The chair in figure 122, designed by Thomas Chippendale, is a beautiful example of rhythm gained through repetition as seen in the ladder back, and of the rhythm attained through the rhythmic progression in the sizes of the carved motifs in the cross pieces. This
Figure 123. The fireplace in this room has been made more important by the way in which the furniture has been arranged. Note that the lines of the furniture lead the eye easily to this center of interest. There is an agreeable variety in the progression of the sizes of the objects on the mantel and a pleasant proportion in the spaces between the objects.

Chair has refinement and grace of line, combined with beauty of proportions.

When one has learned to recognize rhythm, he will discover that its use in arranging the furnishings in a room goes far toward conveying an impression of livableness. On the other hand, there is a scattered, unsociable effect in a room where the furnishings are placed without regard to line movement. One of the fundamental principles in the arrangement of furniture is that it be grouped according to its use. A knowledge of shape harmony will lead one to place the main lines of each group so that they will conform to the lines of the room, but one needs to know how to control the movement of the eye if the effect is to be perfectly successful. The furniture and decorative objects should be so arranged in the room as to carry the eye toward the centers of interest where it should remain at rest for a while. Any point in the room that is considered interesting or important may easily be emphasized by the arrangement of
Figure 124A. The movement of the lines in the portraits keeps the eye within the group and unifies the arrangement.

Figure 124B. Movement directed away from a group destroys the unity of an arrangement.
the furnishings. If there is a fireplace, the strongest movement made by the lines of the furnishings may direct the eye to it. This is illustrated in the living room in figure 123, where the comfortable furniture has been grouped around the fireplace for the sake of sociability, and the lines of each piece carry the gaze directly to the point the family regarded as of greatest interest. If a view from a group of windows is enjoyed, the eye may be led there. Or if a bookcase is the most attractive spot in the room, the leading lines may be so placed that the eye will go there first of all. In a well-balanced room there will be a center of interest on each wall. If these are cleverly planned, there will be some line or color in each unit to lead the eye from that wall to the next, connecting them and unifying the room.

It is not enough to use the rhythmic movement gained through grouping the large pieces of furniture; each separate object in the room should be examined for its line movement before it is placed. It would be interesting and profitable for decorators and advertisers to watch the audiences attending a series of talks in a certain lecture room. In this room two portraits hang just above the speaker's desk. A profile portrait of Washington at the left faces out to the left, and a profile portrait of Lincoln at the right faces toward the right. This creates a movement on both sides of the desk which carries the gaze away from the speaker. Even the ablest lecturer is handicapped in that room, and an average speaker finds it very difficult to hold the attention of his audience because the unrhythmic movement caused by the placing of the pictures carries the eye away from the speaker so forcefully as soon to become a positive annoyance to anyone sensitive to line. Reversing the positions of the portraits would actually help a speaker to retain the attention of his audience. A glance at figures 124A and B emphasizes this point. The window is the focal point on this wall, and it is clear that the arrangement of the pictures in A is correct because their lines carry the eye toward, rather than away from, the center of interest. Since most objects as well as pictures direct the eye in some definite direction, it is well to know how to make the best use of this movement.

Rhythmic line movement does much to make a woman's costume beautiful. Curved lines have more relationship to the human figure than
Figure 125A and B. In the Victorian costume (A) the exaggerated design is erratic. The angular lines at the neck, the point on the tunic, and the horizontal direction of the band below it create directions that make the costume tiresome and confusing. In the costume of the Empire period (B) the movement is entirely consistent and related.

than angles, and for that reason a series of subtle curves is more pleasing than a series of angles in dress (figure 125B). Knowledge of the effect of line movement in giving the appearance of altering proportions will make the designer select either a dominant horizontal or a vertical movement for the person who is to wear the costume. If the curved line has been chosen for the waist, as in a yoke or jacket, the lines of the skirt will be simple—either a slight suggestion of curve, or a straight line. When the neckline shows angles, the tunic is pointed, and the skirt has a horizontal band, there is bound to be lack of rhythm (figure 125A). Periodically the course of the
mode brings such fashions as the erratic one seen in this Victorian dress. But it must be noted that even in a fashion which produced so many overloaded costumes, there were some that had a certain quaintness and charm. At such times an appreciation of the elements of beauty makes it possible for a woman to enjoy the stimulation of the new mode and yet express it in the most attractive way to be found in the current fashion.

Just as furniture may be arranged to lead toward the important centers in a room, so may a dress be planned to make the most of the wearer’s good points. It is possible for a costume to have lines that will carry the eye directly toward any feature the designer may wish to emphasize, and away from anything to which it is not desired to call attention. Lines leading rhythmically to the face may be secured by the use of bands of trimming near the face or by the outline of collars and necklaces. All these seem to form a frame that holds the eye near the face and centers the attention there.

Figure 126. In the window below, the central group attracts the eye, and attention is kept within the display by the use of rhythmic patterns of dark and light forms throughout the arrangement.
Figure 127. A, the position of the component parts of the advertisement at the left carries the attention gradually but steadily toward the company's name. B, somebody else is getting the benefit of the stationery advertisement because the line of the envelopes leads the eye to the advertisement below.

Of all the people who are working out arrangements, the window designer and the advertiser have the greatest responsibility for knowing how to control the movements of the eyes. A designer whose display carries the eye away from something important is actually wasting his firm's money. In every display there are major and minor attractions as well as rather unimportant objects used merely to fill in. In some displays there is such lack of organization that the eye is not led to any particular point and utter confusion results. If the
designer had known how to handle line, these objects could have been so placed as to lead the attention to the major attractions, and yet every separate entity could have been seen more easily.

It has been shown that when a group of lines or objects is placed against a background, the gaze has a tendency to move along them. If the eye finds an easy and connected path to travel, the arrangement is said to be rhythmic, and this is the most effective as well as the most economical kind of movement (figure 126). On the other hand, if a group suggests a jerky, restless, or disconnected movement, it lacks rhythm, and such arrangements do not hold the attention.

The application of this principle of rhythm to advertising is very obvious. A glance at figure 127A will show the efficiency that results from the ability to control line movement as compared with the unsuccessful use of line in figure 127B, where the position of the envelopes directs the attention to the advertisement below. These examples show that lines and colors should be so arranged that the eye will go more or less rapidly to the point where attention should be focussed. They also show that it is possible to use rapid movement very effectively if it is understood and controlled.

RADIATION

A brief discussion of radiation is included in this chapter since it, as well as rhythm, is a method of obtaining organized movement. Radiation is the type of movement that grows out of a central point or axis. It may be observed in the diverging lines which form the pattern of snow crystals and some leaves. Radiation is used very commonly in designs for store displays and by the person who makes designs for embroidery, since it is the plan for many geometric patterns. Three illustrations of radiation are given in figures 128, 129, and 109. In the rose window the straight lines lead abruptly toward and away from the center; therefore the designer found it necessary to restrain this rapid action by means of a heavy band around the outside of these radiating lines. In the brass dish, the curved lines of the motif in the center lead the eye around its circumference as well as toward
Figure 128. S. Chiara, Assisi.
Radiation is apparent in the plan of this rose window. Here the straight radiating lines are held in, and the effect of the circle is strengthened by the decorated borders and the band around the edge.

Figure 129. Brass dish, Italian, XV Century. The embossed design in the center of this dish shows the kind of movement known as "radiation." Note that the curves of these radiating lines help to unify the design. (Courtesy of the Minneapolis Institute of Arts.)
the center, and this movement helps to suggest the circle. Because the structure of the circle is inferred by the design itself, these lines do not have to be held in so securely at the outside boundary as when the radiating lines are straight. The lines of the shell of the paper-nautilus in figure 109 show both rhythm and radiation. Here the radiating lines bear a close resemblance to the lines of the brass dish in figure 129. The design in the center of the dish is an example of radiation and repetition, whereas the shell has lines and spaces of varied measures and so combines radiation and rhythmic progression or sequence. A fourth illustration of radiation is seen in the lines of the muntins in the fanlight transom over the door in figure 37.