

FREE DISTRIBUTION ONLY. NOT FOR SALE

Antique Pattern Library

For more information, please see our website at: <http://www.antiquepatternlibrary.org>

This is a scan of an antique book that is, to the best of our knowledge, in the public domain. The scan itself has been edited for readability, and is licensed under the **Creative Commons** Attribution-NonCommercial-ShareAlike License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/2.5/> or send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

You may share copies or printouts of this scan freely. You may not sell copies or printouts.

Antique Pattern Library is a project of New Media Arts, Inc. <http://www.newmediaarts.org>, a nonprofit organization tax exempt under IRC 501(c)(3). Donations may be tax deductible, depending on your tax status and tax jurisdiction.

Donated by

Scans donated by Sytske Wijnsma 2011, edited by Judith Adele 2015

GUSACK'S
BEACONED DRAWING

BY THE EDITOR OF THE

CUSACK'S
BLACKBOARD DRAWING.

BY

NOEL S. LYDON.

Price 3/6 Net.

London:

CITY OF LONDON BOOK DEPÔT,
WHITE ST. AND FINSBURY ST.,
MOORFIELDS, E.C.

—
1902.

LONDON.
STRAKER BROTHERS, LTD.,
44-47, BISHOPSGATE WITHOUT, E.C.

CONTENTS.

		PAGES.
INTRODUCTION	vii.— x.
LESSONS	I.—VI. Preliminary Exercises	2— 13
”	VII.—X. Elementary Freehand	14— 21
”	XI.—XIV. Elementary Design	22— 29
”	XV. Observation of Elementary Forms	30— 31
”	XVI. The Ellipse and the Oval	32— 33
”	XVII. The Cylinder and the Cone	34— 35
”	XVIII. Simple Common Objects	36— 37
”	XIX.—XXIII. Common Objects	38— 47
”	XXIV.—XXVI. Shell Forms	48— 53
”	XXVII.—XXIX. Leaf Forms	54— 59
”	XXX.—XXXII. Flowers and Leaves	60— 65
”	XXXIII. Leaves and Branches	66— 67
”	XXXIV. Common Grasses	68— 69
”	XXXV. Seeds and their Distribution	70— 71
”	XXXVI. Forms of Roots	72— 73
”	XXXVII. The Nasturtium	74— 75
”	XXXVIII. The Oak	76— 77
”	XXXIX. Spring Flowers	78— 79
”	XL.—XLI. Mass Drawing	80— 83
”	XLII. Feet and Beaks of Birds	84— 85
”	XLIII.—XLV. Birds	86— 91
”	XLVI. The Cat	92— 93
”	XLVII. The Lion and Tiger	94— 95
”	XLVIII. The Horse, the Cow, and the Sheep	96— 97
”	XLIX. The Elephant and the Giraffe	98— 99
”	L. Fishes	100—101
”	LI. Insects	102—103
”	LII.—LIII. Illustrations of History Lessons	104—107
”	LIV. Plans and Bird's-eye Views	108—109
”	LV. Geographical Terms	110—111
APPENDIX	112—117

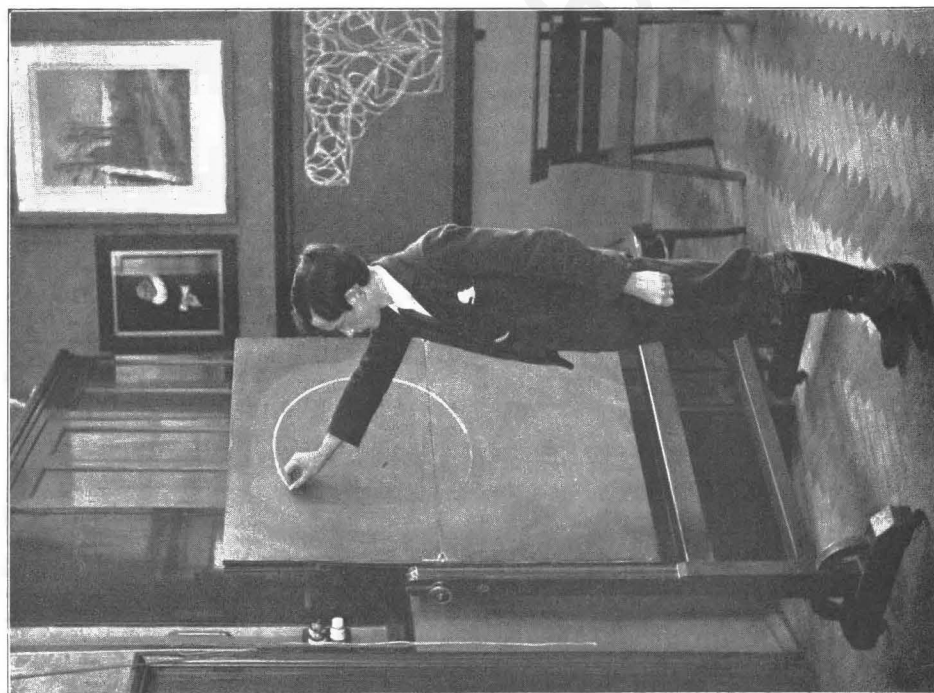


Fig. 1. Position good.



Fig. 2. Position bad.

INTRODUCTION.

IN the preparation of the following course of lessons in drawing upon the blackboard, the needs of elementary teachers have been primarily kept in view, and more especially that large section of them who, being far removed from effective oral tuition in the subject, have to depend for their instruction upon books or correspondence classes. It is hoped, however, that much will be found to stimulate and encourage all students of the subject, whatever their circumstances may be.

By the average teacher, skill in blackboard drawing has been commonly regarded as a natural gift; useful enough if he be fortunate enough to possess it, but by no means indispensable, or one of the things to be striven for. This erroneous view has been fostered by the practice of postponing serious study of the subject until comparatively late in the teacher's career, tacitly implying that the pupil teacher and the young assistant stand in no serious need of help in this direction.

When, however, it is remembered what an important part the blackboard may be made to play in nearly every lesson, it is much to be regretted that so large a proportion of otherwise efficient teachers remain permanently handicapped in their work from the want of a systematic training in blackboard drawing right from the very commencement of their teaching career.

The power to illustrate a lesson pictorially obviates much loss of time which would otherwise have to be devoted to verbal explanation and description; and not only so, but the points explained are more readily understood, and stand a far better chance of being remembered, for there is no readier or more effective channel to the mind than through the eye.

To the teacher who is skilful in blackboard drawing belongs a faculty which renders his occupation a source of entertainment both to himself and to the pupils under his care; additional variety and attractiveness are imparted to his lessons, and the blackboard illustrations remain as a pictorial summary of the points explained when the time arrives for the recapitulation of his lesson.

The ideal blackboard illustration is that which conveys the desired impression with the minimum of effort on the part of the teacher; it should, moreover, make its appearance on the blackboard at the moment when it is required, and not before. The practice of making highly finished studies on the blackboard before the lesson commences, and placing them before the class at the outset, where they act as a counter attraction to the matter in hand, shows an entire lack of appreciation of the scope and utility of blackboard illustration. The sketches should grow and accumulate on the blackboard as the lesson proceeds; otherwise they are deprived of half their effectiveness—their object being to illuminate the obscurities of the lesson as they occur.

It is a common practice for teachers who are preparing criticism lessons for His Majesty's Inspector, to expend much time and pains upon blackboard illustrations of utterly unsuitable subjects; such, for example, as a portrait of some historical personage. When the eventful day arrives, the blackboard (which has not been used for weeks lest harm befall it) is carried into the class room, and is accepted by the Inspector as adequate evidence of the teacher's power to illustrate a lesson.

This is the abuse of the blackboard. Any such elaborate illustration would be far better supplied by a good wall chart, or even by passing round the class copies of the text book from which the blackboard illustration has been drawn.

Where, however, no chart or text book is available for the purpose, and the drawing is original, it would be wiser to make it on stout paper or cardboard, so that it might be available for use on a future occasion. Such illustrations as a rule have little educational value, largely owing to the fact that they have lost their interest long before the time arrives to refer to them.

In deciding the character of any particular drawing to be made on the blackboard, the teacher should be guided by the purpose which it is intended to serve. If it be an explanatory diagram, he must never lose sight of the point to be explained, even, if necessary, exaggerating it with a view to emphasis. But if the drawing is intended primarily to give an idea of the appearance of some object, or to serve as a drawing copy, greater care must be taken to ensure accuracy of delineation. In the first case the *fact* is the essential point, in the second case the *form*.

If it be granted that blackboard illustration should proceed along with, and form part of, the lesson itself, it will at once be seen how essential it is to cultivate facility in the use of the chalk. It would be fatal to the control and discipline of the class, were the teacher to spend long periods with his back to the children while he elaborated his blackboard sketches.

And this brings us to the consideration of a few points in connection with the general principles which should govern blackboard illustration. It may fairly be presumed that the student of blackboard drawing already has some acquaintance with elementary drawing on paper; he therefore comes to his work with a knowledge of some, at least, of the general principles which should guide him. There are, however, specific differences of method, which apply to blackboard drawing as distinguished from drawing on paper; and these differences must be grasped if the student would be successful.

In the elementary freehand lessons, for example, he has learnt to depend almost equally upon pencil and rubber—a tradition, by the way, which can hardly be too strongly condemned. The unrestricted use of india-rubber is one of the most serious obstacles to the exercise of forethought and judgment; it tends to produce a method based upon guesswork and experiment, and does not bring into play the entire resourcefulness of the pupil. The beginner in blackboard drawing, influenced by previous training of this character, is apt to regard the duster as an essential instrument of his craft. With chalk in one hand and duster in the other, he patches up, rather than draws, his subject. The result is that he takes longer over the work, and, in the end, produces an example of slovenliness extremely demoralising to the class.

The duster should be reserved, then, for its legitimate use, which is to clean out entirely that which has served its purpose. By placing reliance upon such powers of draughtsmanship as he may possess, the student will take the first step towards the attainment of that confidence which is the primary essential of success in his work.

The training involved in a course of blackboard drawing is based upon a two-fold principle; it seeks to promote accuracy combined with rapidity. The hand and arm must be trained to move freely and rapidly; they must at the same time be brought under the perfect control of the mind.

It would be futile for the beginner to practise drawing curves rapidly unless they are just those curves which he predetermined in his mind. It is just as futile for him to produce laborious and studied forms unless they have been drawn with freedom and facility.

An accomplished blackboard artist will draw rapidly and accurately whatever form he may attempt; moreover, the accuracy of his drawing is due, not to chance, but to the mental control which he is able to exercise over his movements.

The posture of the body and the method of holding the chalk are points to which great attention should be paid in the early lessons. Let the student stand well away from the blackboard, so that he can just comfortably reach it with outstretched arm; the blackboard itself being vertical, or as nearly so as possible. The chalk should be held as shown in Fig. 1 (Frontispiece), and not as one would hold the pen in writing. The left arm should not be allowed to hold, or to rest on, the board, as in Fig. 2 on the Frontispiece. The right arm should be allowed to move freely from the shoulder, avoiding all stiffness at elbow or wrist.

The teacher need not wait until the completion of his course of study before beginning to make use of his skill in class. A few hints to such a one may be useful in preventing him from falling into error. He should make himself thoroughly familiar with the points he intends to illustrate, and the character of the illustration he proposes to make, before the lesson commences. He should, if necessary, practise them until he is quite independent of copies or illustrations to guide him in his sketching. Bearing in mind the necessity for speed in execution, he should eliminate all unnecessary lines; let him jealously guard against the desire to create an impression upon his pupils by pictorial effect, and strictly limit his sketch to the minimum of what will serve his purpose. Thus, in an illustration of a webbed foot, it is unnecessary to draw the entire bird; in an illustration of a mediæval hat or boot, it would be superfluous to draw the entire human figure; and not only are these additions to the sketch superfluous, but, by their superior interest, they are calculated to divert attention away from the very points to which it is desired to direct it.

We have already referred to the two main classes of blackboard illustrations, the pictorial and the diagrammatic. As a general rule the illustrations of principles or processes should be diagrammatic rather than pictorial. Thus in illustrating the principle of the pulley, the links in the chain or the strands in the rope would greatly add to the pictorial realism of the apparatus, but the principle may be explained equally well by reference to a diagram consisting merely of lines and circles; or, again, in illustrating the process of manufacturing sulphuric acid on a large scale, much time might be devoted to the drawing out of perspective elevations of the buildings and machinery, but the process admits of perfectly lucid explanation by reference to purely diagrammatic sketches.

The diagrams employed in the Euclid lesson may with advantage be drawn by hand; those, however, used in the practical geometry lesson should as a rule be drawn with instruments; for not only is absolute accuracy in this case a desideratum, but the teacher's use of the instruments furnishes the example which should guide his pupil. It will generally be found, moreover, that the greater the accuracy displayed by the teacher in his work on the blackboard, the greater will be that of his pupils, and *vice versa*.

Drawings intended to teach the form of objects may be made additionally useful by comparison with other forms. A curve brings out the peculiarity of a straight line; one rectilinear figure may serve to emphasise the shape of another; the foot of a perching bird will help to bring out the peculiarities of the foot of a climber or wader, and so on.

CUSACK'S BLACKBOARD DRAWING.

Exaggeration, if kept within due limits, may often be employed with advantage. In the model drawing lesson, it is sometimes necessary still further to distort the inaccurate drawings of the class, in order to leave no doubt that the mistake illustrated has been thoroughly appreciated. Thus, in illustrating the rule for the convergence of receding parallel lines, an exaggerated example of the breach of the rule may be necessary before the pupils can understand wherein lies the mistake. Such inaccurate drawings should, however, be obliterated immediately after they have served their purpose, as there is otherwise a risk that an inattentive pupil may misunderstand them at a later period of the lesson.

In the teaching of freehand drawing far greater use might be made of the blackboard than is usually the case. The teacher should draw the copy step by step on the blackboard, and endeavour to carry his pupils along with him. By this means he will be able to control, not only the amount of work done, but also the method by which it is done, and his pupils will at the same time be led unconsciously to imbibe correct methods of work.

In the teaching of memory drawing the blackboard is an indispensable adjunct. If a completed copy be placed before the class, and after a period of study the children be asked to draw the example from memory, the results in the majority of cases will be found to be very unsatisfactory. If, however, the copy be built up before them in the way suggested for Fig. 1 on Plate XIV., the pupils gain an insight into the nature of the exercise which enables them to reproduce it intelligently, even if not quite accurately. This insight into the underlying principles of the drawing copy should be stimulated on all occasions, for by it alone can the dry, abstract example be made interesting to the child, and his thoughts kept from wandering away from his work.

Drawings on the blackboard should be sufficiently distinct to be clearly visible to the entire class. The timidity of the beginner often leads him to draw faint lines, which for practical purposes are almost entirely valueless; this method of drawing is one phase of the "patching-up" process already referred to, and although less slovenly is equally unworkmanlike.

THE FOLLOWING IS THE
SYLLABUS OF THE ART EXAMINATION
IN
DRAWING ON THE BLACKBOARD,

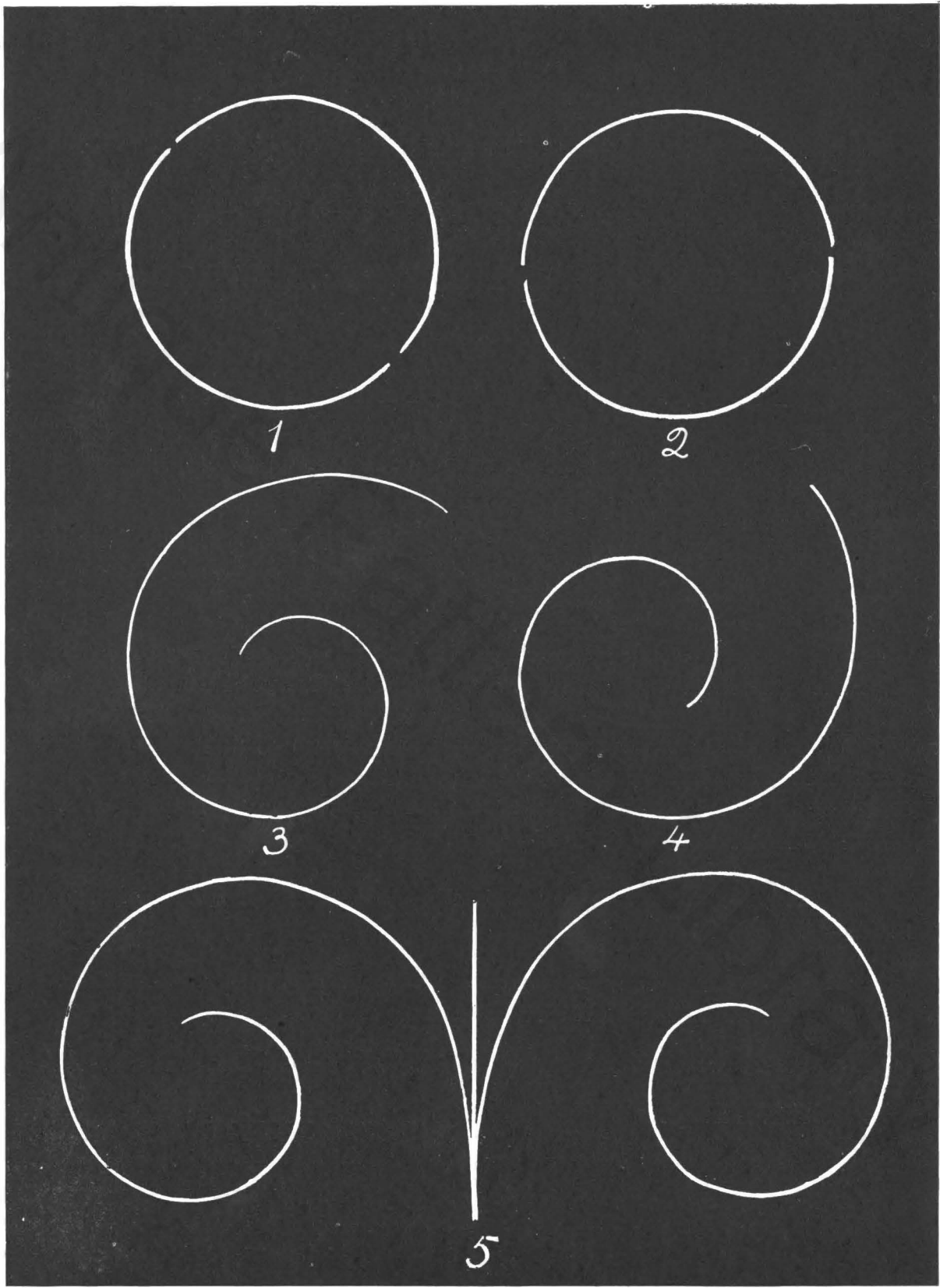
As prescribed by the Board of Education.

PRACTICE in this exercise should be directed to the acquirement, by Students, of freedom and skill in using chalk, or brush with tempera, on the blackboard, for the purpose of making drawings or diagrams in outline, and in the mass on a large scale, and of illustrating various lessons to a class.

With this aim Students should study many kinds of common objects, plants, and other examples, and cultivate a free and accurate style of drawing. The representation of these subjects should show that their structure has been well studied, understood, and expressed, all unimportant details being omitted.

In testing the Student's ability to draw on the blackboard, the Examiner will call upon the Student—

1. To make a drawing from memory of one or two objects, natural forms, ornamental forms, or subjects such as would be useful for illustrating a lesson to a class ;
2. To sketch on a large scale an object, or group of objects, placed before him ; and
3. To make an enlargement from a simple example, selected by the Examiner for the purpose.



LESSON I.

PRELIMINARY EXERCISES.

The exercises prescribed in the first six lessons may seem to be somewhat lacking in interest, but they must by no means be neglected on that account. They bear the same relation to the subsequent examples as do scales and five-finger exercises to piano playing. The student must therefore constantly return to them for practice, even when he has made considerable progress towards completing the entire course.

The student should stand as directed in the Introduction, and the drawings should be made in such a position on the board that the centre of the drawing is directly opposite his shoulder.

Figs. 1 and 2 deal with the circle. In Plate I. it will be observed that the circles are drawn each in two parts; this is to indicate that the student should first attempt to draw them in two strokes, although he need not on that account leave spaces between the arcs. When he has had more practice he will attempt to draw the circle in a single stroke.

The student should begin by drawing the upper arc of Fig. 1 from left to right, and then complete the circle by drawing the lower arc, also from left to right.

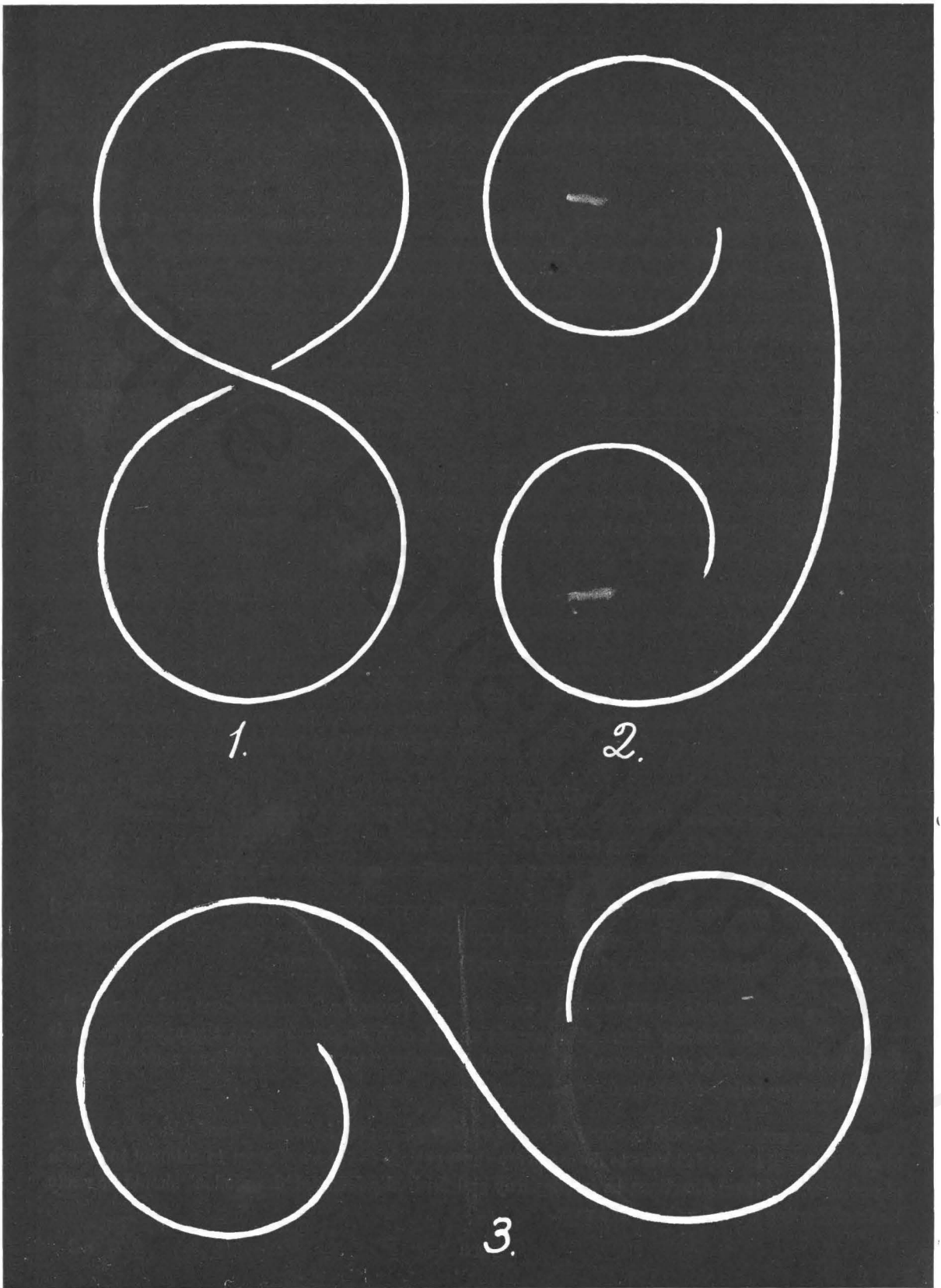
He should then proceed in a similar manner with Fig. 2, and when he is proficient in these two exercises he may vary them by drawing them in the reverse order and direction. He may then begin at other points in the circumference and so extemporise variations of the exercise. The circle should be drawn in this way in various sizes from about 15 in. to 21 in. diameter.

Having mastered the circle the student should turn next to the spiral in Fig. 3, and begin by drawing from the outside towards the centre, as though writing a figure 6; then reversing the process, taking care that each effort consists of a single stroke. Fig. 4 is to be treated in a similar manner; then the student may proceed to the more difficult exercise shown in Fig. 5.

In this case care must be bestowed upon the symmetry of the two sides; the vertical middle line is to be drawn first, next the spiral on the left, working from the middle line outwards, and lastly the spiral on the right, also drawn from the middle line outwards.

The same example should now be drawn again by reversing these directions and drawing the spirals towards the middle line. The spirals should each be drawn about the same size as is prescribed for the circle, and the student will find it an advantage to adopt this as a standard size for all drawings unless otherwise directed.

These examples should be practised each for a few minutes at frequent intervals during the week, bearing in mind that it is better to devote many short periods to the work than to attempt too much at one time. If these directions be intelligently and faithfully followed the student should be ready by the following week for the next lesson.



1.

2.

3.

LESSON II.

PRELIMINARY EXERCISES.—*Continued.*

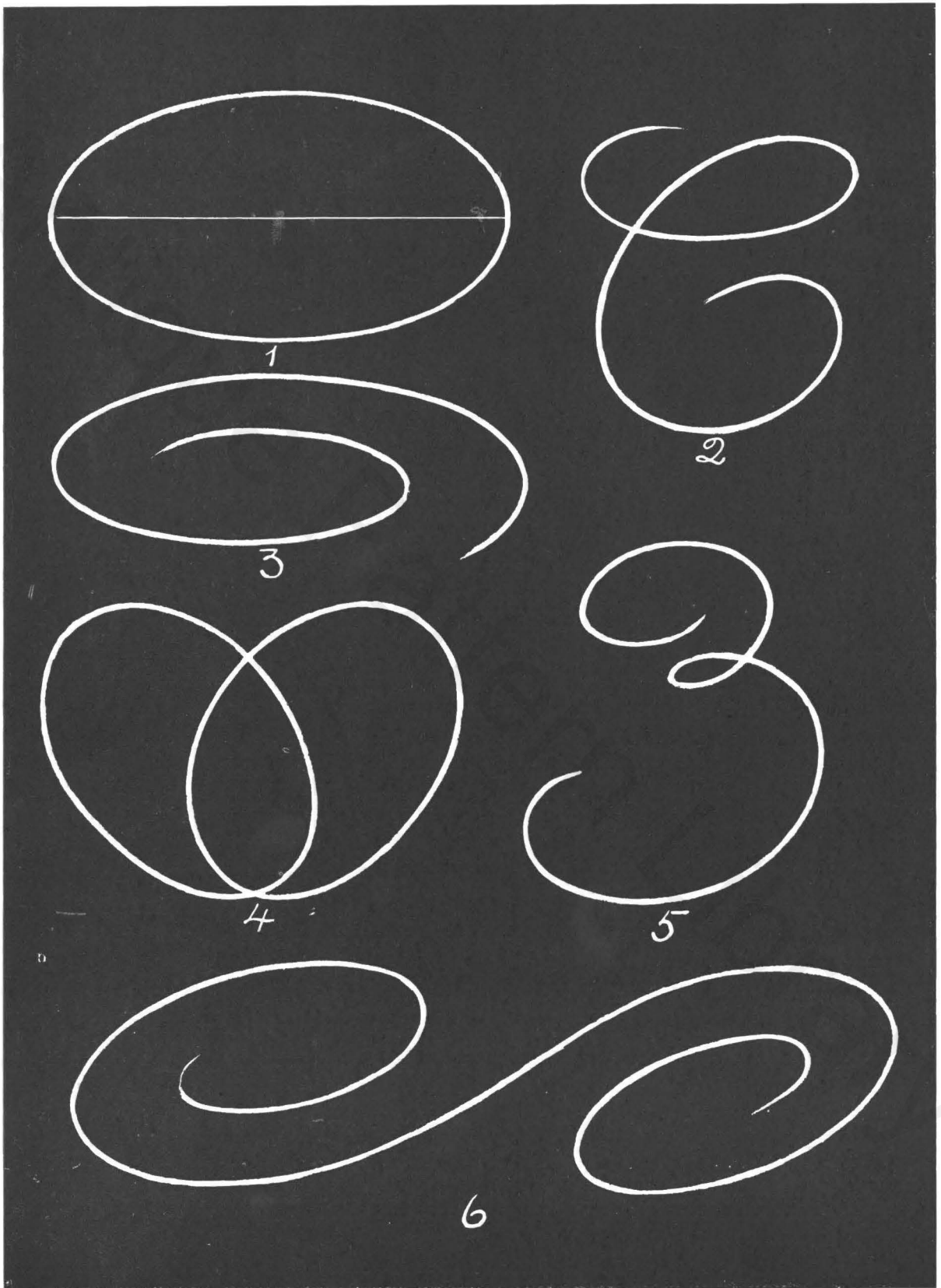
Each of the figures on Plate II. may be drawn about 2 ft. 6 in. across its longest measurement, and each should be drawn with a single stroke of the chalk.

Fig. 1 is a combination of two circles, the ends being left open so as to suggest the starting-point of the drawing. The upper portion of the figure should be drawn first, care being taken to stand well away from the board, or it will be found impossible to obtain a good continuous curve. When the exercise has been practised a few times in this way, the reverse direction may be attempted, and then the same figure may be drawn in a position such that its longest measurement lies in a horizontal direction.

In drawing Fig. 2, great care must be taken to make the lower spiral the same size as the upper; when it has been practised a few times in the position given on the plate, its position may be reversed, and then it may be drawn in a horizontal position as explained for Fig. 1. The student who feels himself quite proficient in drawing this figure, should endeavour to form combinations of lines based upon it, and so invent fresh exercises for himself. By this means he may vary the monotony of these earlier examples without in any way losing the benefit they are intended to impart.

In Fig. 3 the two spirals are combined in a more difficult manner, for it will be observed that the direction of the curvature changes in the middle. The student must regard this exercise as a variation of Fig. 1, and practise it in all the positions specified for that figure.

It is necessary that the student should be continually warned against drawing these preliminary exercises in a perfunctory or careless manner; the benefit to be derived from them depends, not so much upon the accuracy of the results obtained, as upon the degree of mental effort that is brought to bear upon their execution. It must be constantly kept in view by the student that he is endeavouring to obtain freedom of movement, and at the same time perfect control over that movement. We shall, therefore, keep on referring to these points from lesson to lesson, even at the risk of being thought tedious; for experience has shown the writer how readily the young student falls back into habits of carelessness, unless he be continually reminded of the means of avoiding them. He should, therefore, endeavour to fix his mind exclusively upon the line he is drawing, and to draw with a will; as he begins to make progress he will experience the mental exhilaration which follows all successful effort.



LESSON III.

PRELIMINARY EXERCISES.—*Continued.*

Having mastered the drawing of the circle and its accompanying spirals, we next turn to the ellipse and curves associated with it.

Circular curves or arcs are the ones which require the minimum amount of control over the movement of the arm; for if the arm were impelled merely by centrifugal force it is evident that the path traced by the hand would be nearly circular.

When we come to the ellipse, however, far more thought is required to ensure a satisfactory result, for ellipses may be of an infinite number of different forms according as the relation between the major and minor axes is varied.

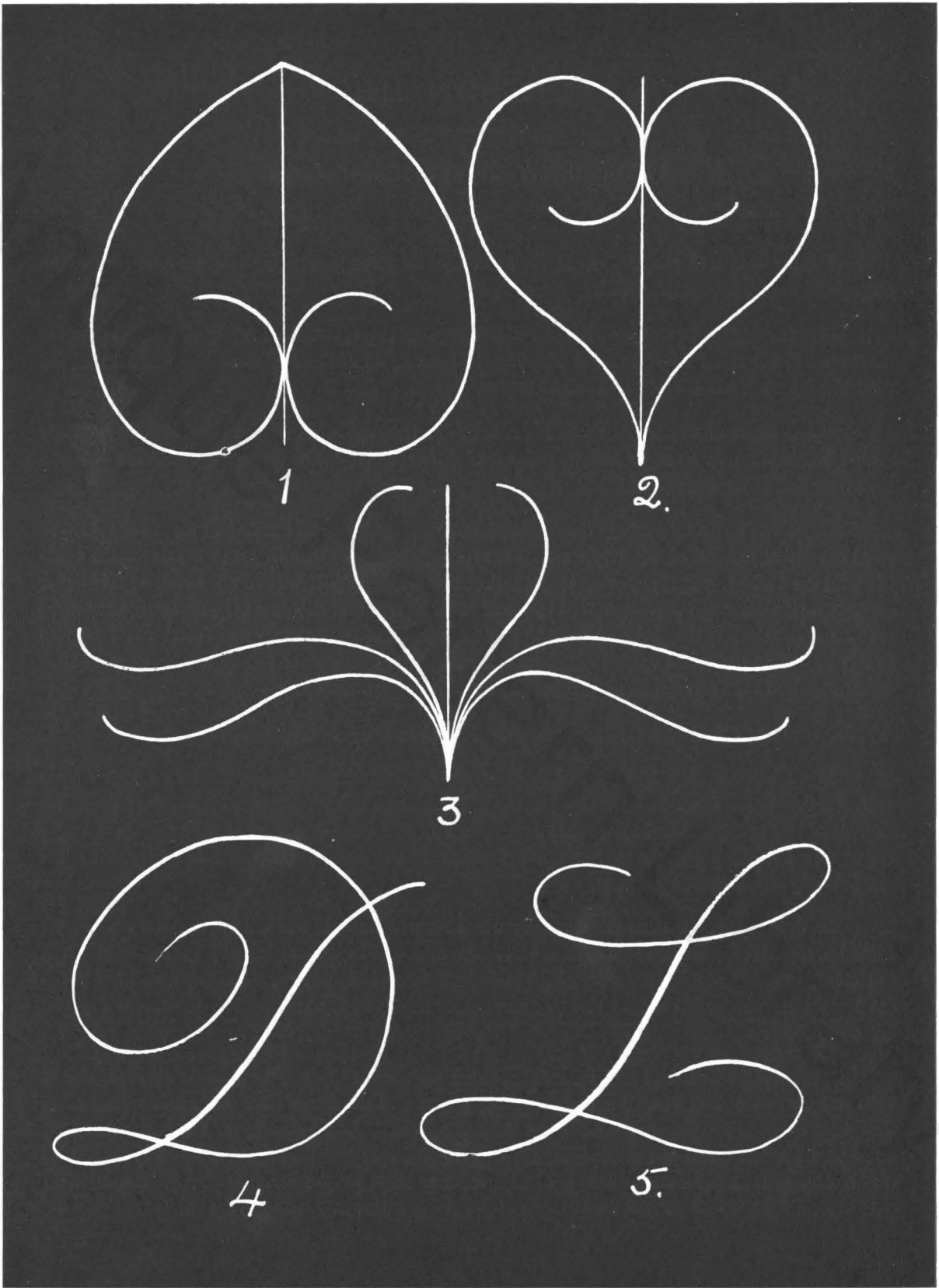
In Fig. 1, begin by drawing the upper portion of the curve first, but do not make your starting point exactly at the end of the major axis, but at a point rather above it. The breaks in the circle in Fig. 1 on Plate I. will give you an idea of what is meant. Similarly, you will continue this upper curve beyond the other extremity of the major axis. The object of this method of drawing the ellipse is to ensure that the extremities of the ellipse shall consist of continuous curves, and not be drawn to a point. The beginner generally represents the ellipse by two arcs of circles, which, if produced, would intersect each other, and so prevent the curve being continuous.

Next draw Fig. 1 in a vertical position, and then in various oblique positions.

Fig. 2 will probably be quite familiar in form, but it must now be practised to a larger scale than usual. Fig. 3 is a spiral based upon the ellipse; draw it from the middle, outwards. Fig. 4 consists of two equal ellipses intersecting each other; in this exercise it may be necessary to draw the major axes in their correct relative positions before attempting the curves. A variation of the exercise may be obtained by inverting it.

In drawing Fig. 6 the same difficulty will be experienced as was felt in the last exercise on Plate II., namely, the change in direction of the curvature. In attempting this exercise begin well to the left, so as to allow room for drawing the entire figure without shifting your own position before the board; the movement should be confined almost entirely to the arm, and should not at any rate extend to the legs.

The intelligent student will have noticed that the process of drawing these exercises is slower than was the case with those on the preceding pages. This arises from the greater amount of thought which must necessarily accompany their execution. The tendency to laboriousness must, however, be resisted, and the examples must be practised over and over again until they become as easy of execution as those which have gone before. The ellipse, especially, must have great attention paid to it, for it is by far the most important single curve that will have to be learnt.



LESSON IV.

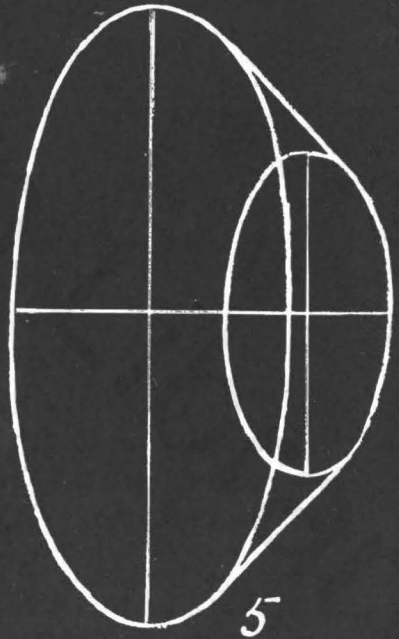
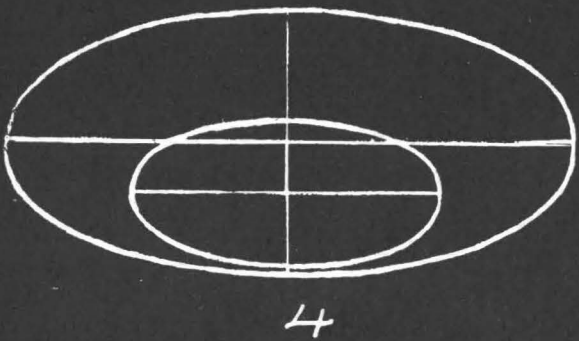
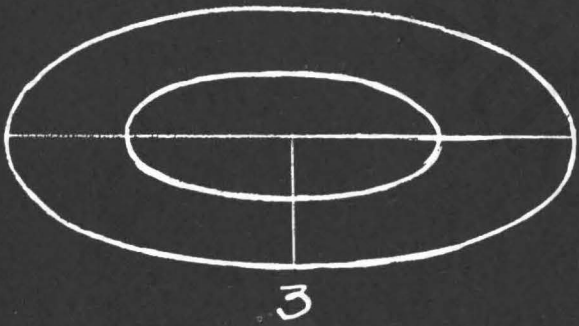
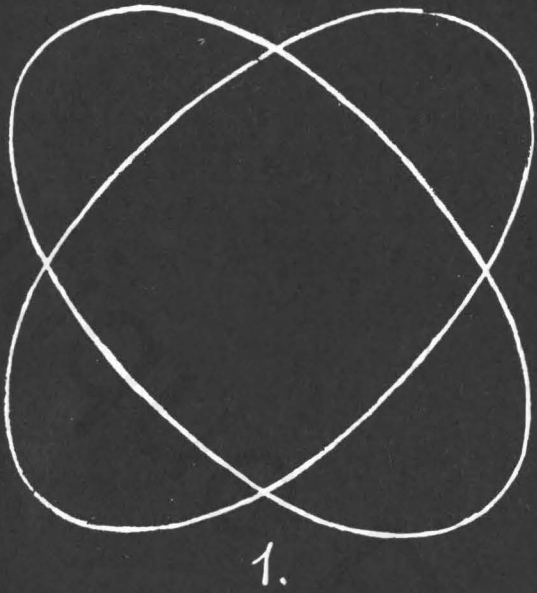
PRELIMINARY EXERCISES.—*Continued.*

In this lesson a new difficulty is introduced—that of preserving the balance of the two sides of a bi-symmetrical figure.

Fig. 1.—Begin by drawing the middle line, taking care to keep it quite vertical; next draw the left-hand side of the figure, starting from the top. In drawing the right-hand side of the figure your aim must be to obtain an exact reverse of the curve you have already drawn; not only must the shape be true, but the size must be correct. In order to obtain this result, it is necessary when drawing the second half of the figure to keep the remainder of the copy in view; if the attention be restricted to the half which is being drawn success will be merely a matter of chance. Remember, therefore, to stand so far away from the board that the entire figure can be easily viewed without having to turn the head from side to side; look at the space contained by the bounding lines rather than at the lines themselves, and strive to obtain correct proportion even at the expense of slight defects in the outline. With practice you will find that the curve will take care of itself, but the proportion will always require your earnest attention.

In Fig. 2 follow out the same process as you have already adopted in drawing Fig. 1. An important feature to be observed in the drawing of this figure is that the curves are tangential to the middle line, both at the top and bottom; great care must be taken in this respect, especially at the bottom of the figure.

Fig. 3 consists of three pairs of lines; do not begin by drawing the whole of the lines on one side but draw a line on the left, and next the corresponding line on the right. Begin with the upper one of the long lines on the left, the last pair of lines to be drawn being those nearest to the middle line. Extreme care must be taken to make all the lines flow smoothly into the middle line, as any abruptness of junction will destroy the value of the exercise. Figs. 4 and 5 are given as suggestions to the student that many forms with which he is already quite familiar, are excellent examples for blackboard practice in his first attempts. Although only a few letters are given in these plates the student should practise others for the sake of variety, selecting for the purpose those especially which may be drawn in a single continuous stroke. They should be drawn the same size as the other exercises, and the student should not be content with the mediocre form which might perhaps satisfy him in writing on the blackboard. A useful exercise consists in drawing one of these letters, and then attempting to reverse it so as to form a symmetrical copy; the difficulty which the student will experience in reversing the letter should, by contrast, convince him of the value of constant practice, for it is by practice alone that the letter has become easier to draw in the first position than in the second.



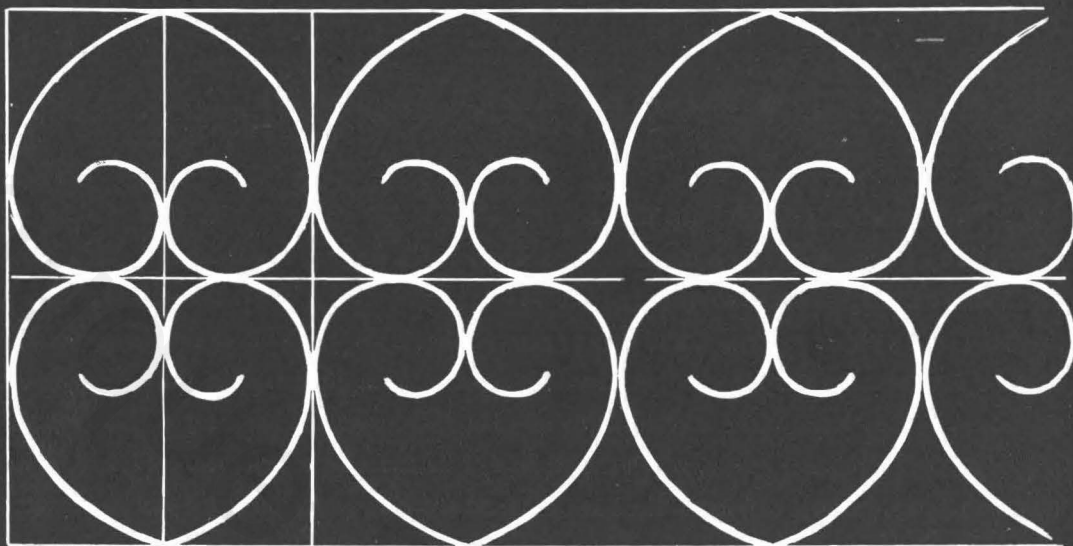
LESSON V.

PRELIMINARY EXERCISES.—*Continued.*

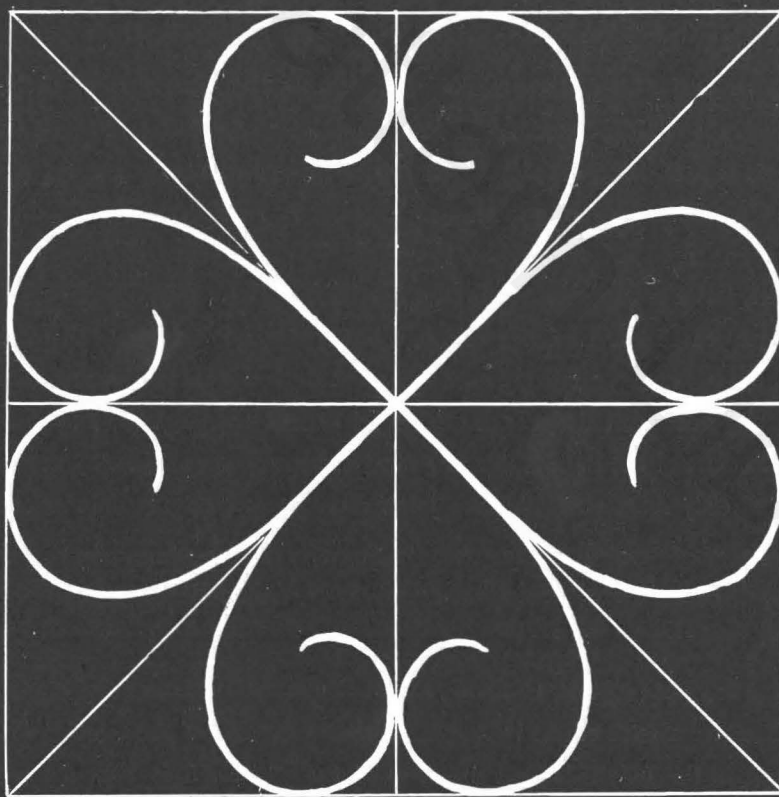
We have already directed the student's attention to the importance of care in drawing the ellipse. In this lesson we devote our attention entirely to the drawing of ellipses in various positions. Fig. 1 shows a simple pattern composed of two ellipses; before attempting it the student is advised to practise Fig. 2 a number of times, and then to practise the ellipse which lies in the position of Fig. 2. Next he may practise the other ellipse, and when he is quite proficient in drawing each ellipse separately, he may attempt the combined figure. He will gauge the accuracy of his drawing by comparing the four corner spaces, which should be exactly equal to each other. Figs. 3, 4 and 5 are examples drawn from objects of circular form, and are here given for purposes of comparison, each with the others. In each of these three figures straight lines are drawn, and it is to the position of these straight lines that we desire to direct attention first. It will be seen that the longest diameter, or major axis, of each ellipse has been drawn, and that a second straight line has been drawn bisecting this major axis at right angles.

In Fig. 3 the major axis of the smaller ellipse coincides with that of the larger, and this indicates that both the circles represented lie in one and the same plane; in Fig. 4 the major axis of the smaller ellipse is parallel to, but slightly lower than, that of the larger ellipse; and this indicates that the circles represented lie, not in the same plane, but in parallel planes, the distance between the parallel axes representing the distance between the planes of the actual circles. In Fig. 5 the axes are again parallel, but a greater distance is shown between them. Fig. 3 might represent a circular ring cut out of paper; Fig. 4, a saucer; Fig. 5, a bowl; and it is important to remember that the principle governing the representation of each and all of these objects is the same, the only difference between them being in the distance between the major axes of the ellipses. In Figs. 4 and 5 it will be seen that the centre of the large ellipse is joined to that of the smaller by the bisecting line to which we have already referred. The line joining the centres of the ellipses one to the other represents the axis of the object, whether this be a plate, saucer, bowl, pail, or any other conical or cylindrical object; and it will be observed that in the drawing this axis lies in the same straight line as the minor axis of each ellipse.

In drawing any such objects, therefore, the student should bear in mind the following rule:—
 “The longest diameter of each ellipse is at right-angles to the axis of the object.” He should begin by drawing a straight line for the longest diameter of the larger ellipse, next a line bisecting it at right-angles, then a line to represent the longest diameter of the smaller ellipse. These guide lines shou'd assist him in keeping the ellipses in their correct relative positions.



1



2

LESSON VI.

PRELIMINARY EXERCISES.—*Continued.*

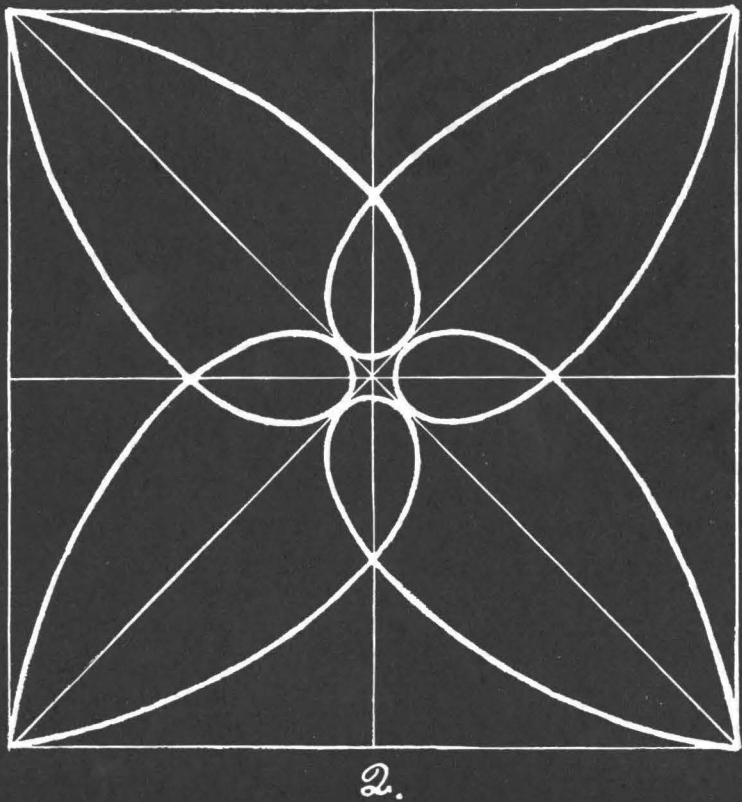
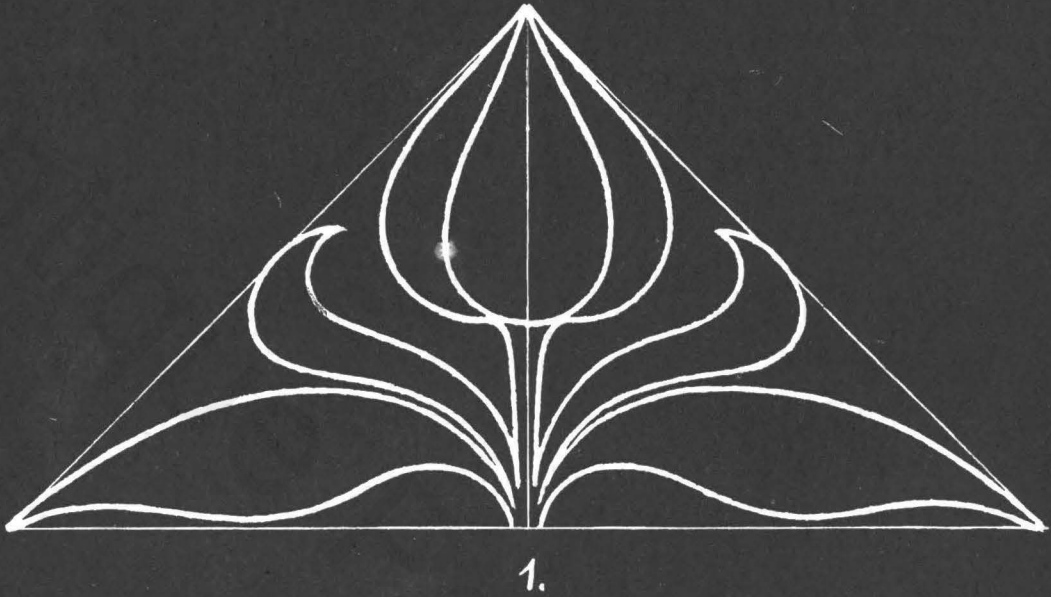
In Plate VI. we return to the first figure practised in Lesson IV., and show how it may be utilised to form an ornamental border or a square pattern. In exercises of this character great precision is required, for a defect in any one of the curves is thrown into relief by comparison with the other curves near it.

In each of the figures the working lines should be accurately set out before commencing to draw the curves. These working lines impose a certain restriction upon the student as regards both the size and the position of the remainder of the drawing; and the presence of this restriction has a tendency to cause him to revert to the laborious method of drawing already condemned. The exercises must, however, be practised until freedom and facility are attained, in spite of the additional restrictions imposed. If the construction lines be drawn, and the curves elaborated by the tedious process already referred to, no useful purpose will have been served, even although the resulting figure be perfect; the means by which the result is obtained are, in these exercises, of far greater importance than the result itself.

Figure 1 will be seen to consist of two rows of repeats of the same form, the lower row being inverted. When the student has practised the exercise as here shown he may vary it by changing the relation of the two rows, and putting that which is now the bottom row at the top.

Similarly he may re-arrange the elements of the pattern in Figure 2 in a variety of different ways; he will thus be gaining an insight into the first principles necessary to enable him to improvise copies for himself. Figures such as these have very little inherent interest; but by encouraging his pupils to exercise their ingenuity in re-arranging the simple elements so as to form fresh combinations, a teacher may make them attractive as class exercises.

We have now completed the preliminary exercises necessary to secure freedom of movement combined with accuracy; but as the student progresses through the remainder of the course laid down, he must constantly return to these early pages and practise the exercises over and over again. Right methods of work are difficult to acquire when wrong habits have already been formed; and, without constant practice of exercises such as these, there is always a tendency to slip back into the rut which is already well worn.



LESSON VII.

ELEMENTARY FREEHAND.

The two figures on Plate VII. illustrate by contrast the remark made in the last lesson as to *inherent interest* in drawing copies. These figures are of equal value as exercises, but Fig. 1 possesses the additional advantage of being interesting, from the fact that it bears some resemblance to a growing flower. Fig. 2, which suggests no such notion, is simply a conventional form. We are all familiar with the desire on the part of children to know what is represented by the copy set before them, and how a zest is added to their efforts when the subject is something which interests them. We would, therefore, advise that, as far as possible, drawings of actual things should form the staple of

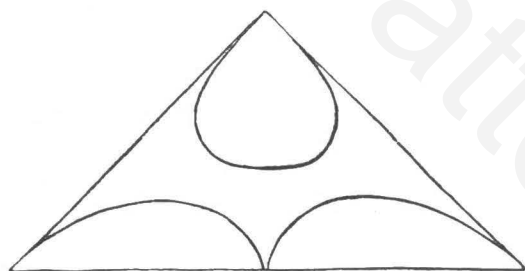


Diagram 1.

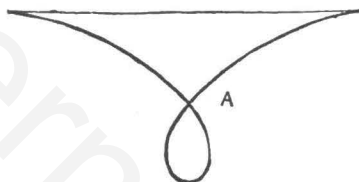
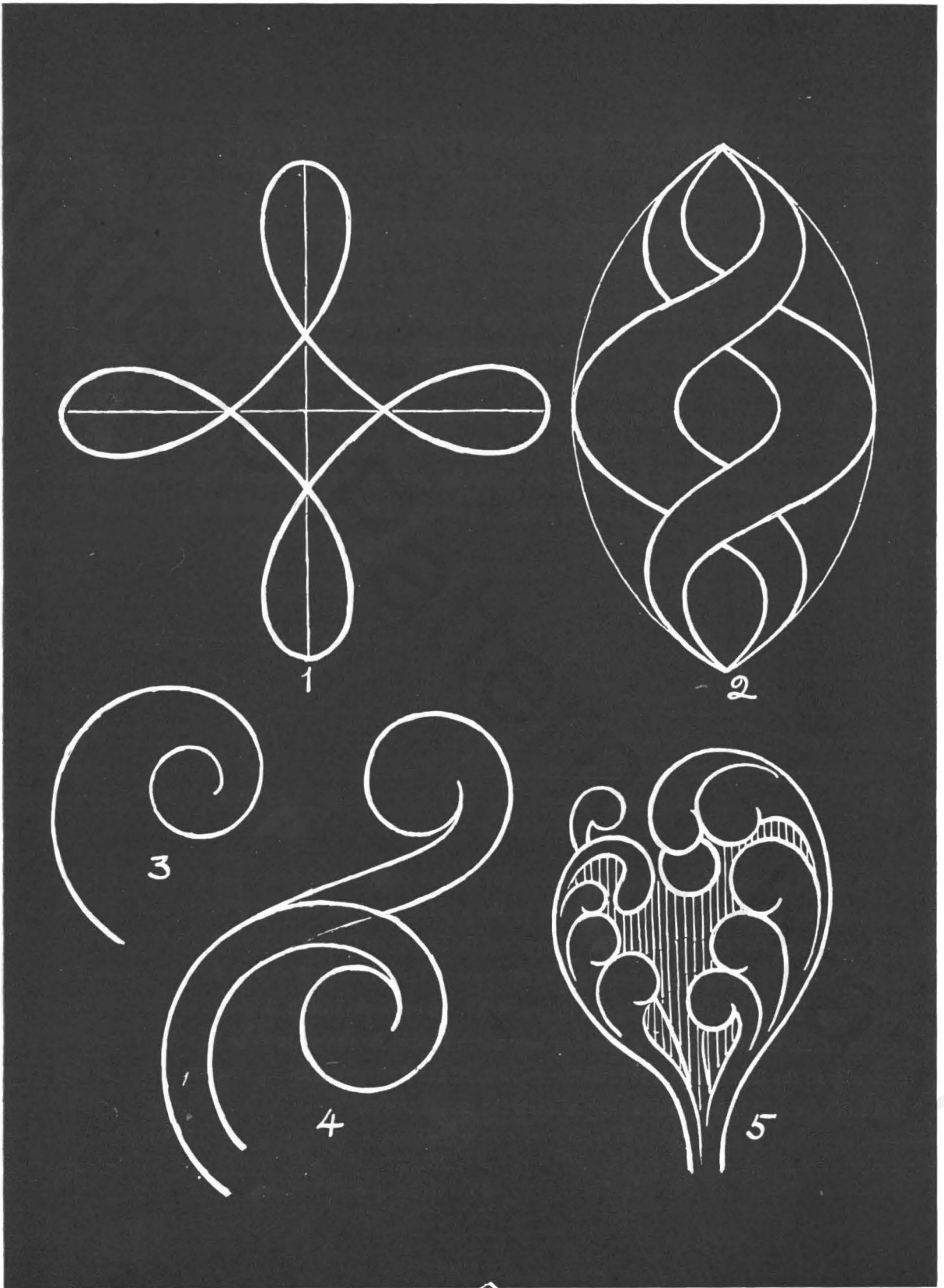


Diagram 2.

the copies set before children; and that whenever purely conventional forms are employed they be not merely copied, but varied or re-arranged by the pupil, so that the mind may be engaged upon the work, and not merely the hand and eye. In each of the figures on Plate VII. begin by drawing the containing lines. Diagram 1 explains which of the curved lines in Fig. 1 should first be drawn, the lines being drawn in pairs as explained in Lesson IV. The curves in Fig. 2 should be drawn in four strokes of the chalk, Diagram 2 showing how much should be drawn in each stroke. It may be necessary in the first attempts to mark the position of the four points of intersection corresponding to A in Diagram 2 before commencing to draw the actual curves.



LESSON VIII.

ELEMENTARY FREEHAND—*Continued.*

Fig. 1 is a more difficult exercise based on the same principle as Fig. 2 on Plate VII. In this case the entire figure is to be drawn in one stroke. The guide lines having first been drawn, the student should begin at the top and endeavour to draw the four loops of equal size and similar shape, practising the exercise alternately round towards right and left. It may be necessary in this case again to mark the points of intersection. The same figure may be practised next without the aid of guide lines or intersecting points. In Fig. 2 the two containing arcs should first be drawn, and next the two curves which come in contact with these arcs at their middle points. In this exercise it will be observed that the curves are not entirely continuous; they should, however, be completely drawn in the first place, and the portions missing in the copy should be cleanly rubbed out afterwards from the drawing.

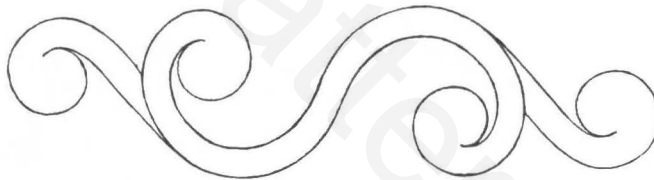
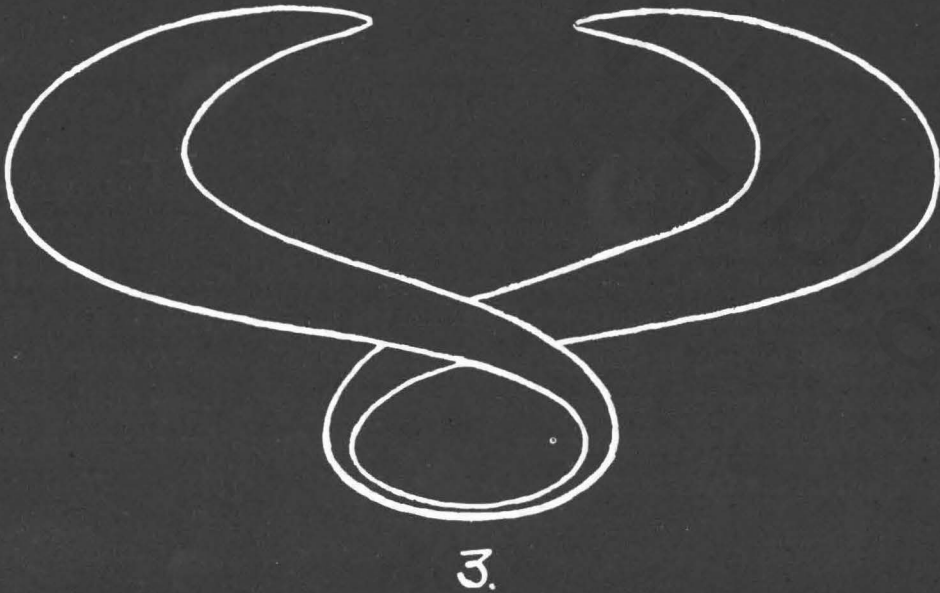


Diagram 4.

By this means alone can the right direction of the different sections of each curve be ensured. Fig. 3 should be practised as a preliminary exercise leading up to Fig. 4. In Fig. 4 the aim should be to make both the spirals flow smoothly from the lower portion of the figure; there should be no abruptness in the junction of the two pairs of curves. Diagram 4 shows how this figure may be utilised in the construction of a more difficult copy suitable for the upper standards in an Elementary School. Fig. 5 is a conventional adaptation of the opening frond of the bracken. Students living in any part of the country where the actual plant is common will find much profit in collecting actual specimens from which to work, for although the same principle will be found to govern the growth of all, each example displays individual peculiarities which differentiate it from all the rest. This recognition of a single principle underlying many types is another step forward towards the power of designing original copies referred to in Lesson VI.



LESSON IX.

ELEMENTARY FREEHAND.—*Continued.*

The conventional forms on Plate IX. are intended as examples for use in the drawing lesson. In each case the figure should be built up step by step before the class. In Fig. 1 the rhombus should be drawn first, and for a young class the diagonals of the rhombus may also be drawn. Next draw the curved lines in pairs, beginning with the outer curves and ending with those nearest the middle line.

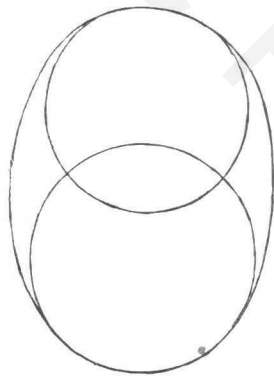


Diagram 2.

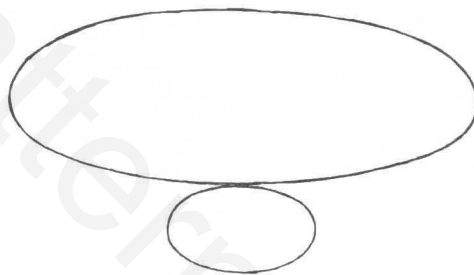
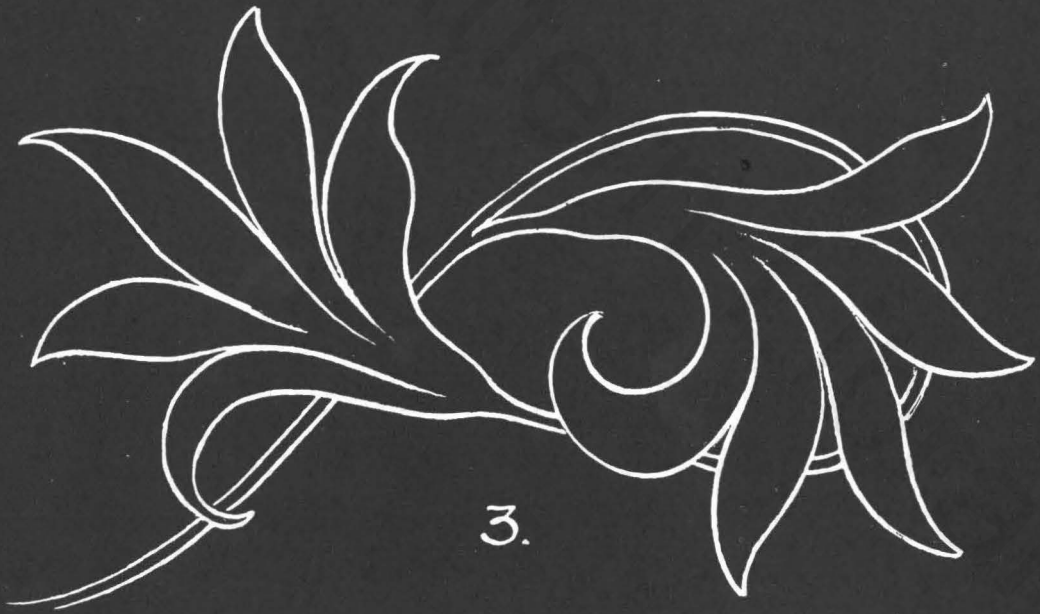
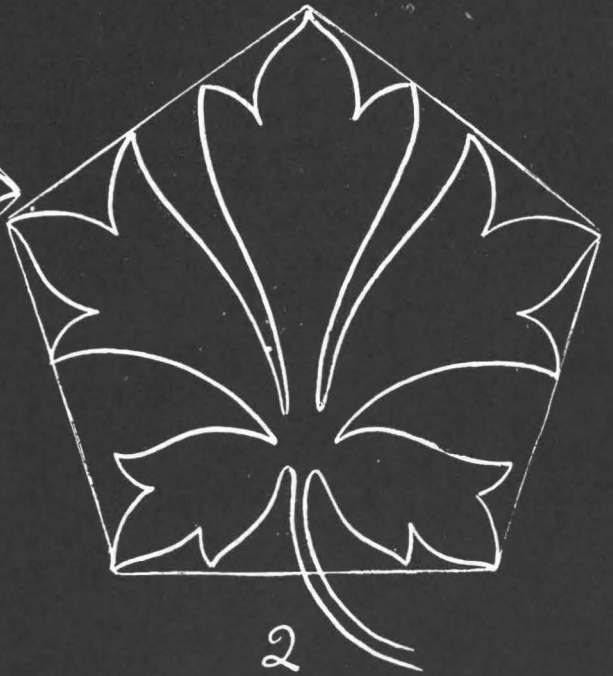
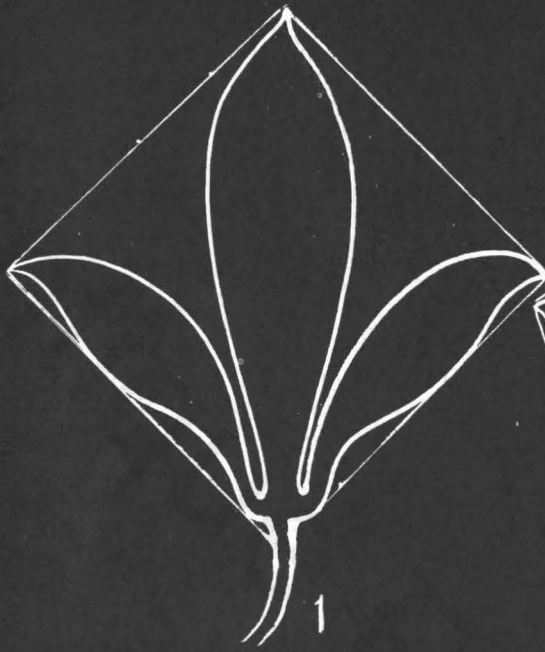


Diagram 3.

In Fig. 2 the containing ellipse should be drawn, and next the two intersecting circles shown in Diagram 2, taking great care to preserve the relative sizes of these circles. In drawing this figure on the board the circles shown in Diagram 2 should enable the teacher to complete the figure in long sweeping strokes, and at the same time preserve the necessary accuracy of form.

The method of drawing Fig. 3 is illustrated in Diagram 3; and here again the assistance of the ellipse should enable the figure to be drawn in long free curves. The guide lines suggested by these and other diagrams should be drawn on the blackboard much more lightly than the lines of the figure itself; they may then be left on the board without in any way interfering with the appearance of the finished example. This plan is far more workmanlike than attempting a system of lining-in, which really means doing the work twice over.



LESSON X.

ELEMENTARY FREEHAND.—*Continued.*

In copying examples such as those given on Plate X., the aim should be to render the spirit of the original rather than to obtain a mechanically accurate reproduction.

In Figs. 1 and 2, it will be observed that although in each case there is a general balance of the two sides of the copy they are not absolutely symmetrical.

This general balance is to be observed in the majority of leaf forms, but mechanical symmetry never.

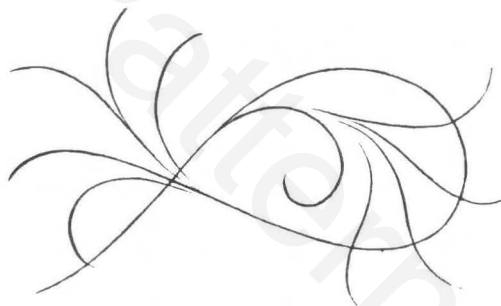
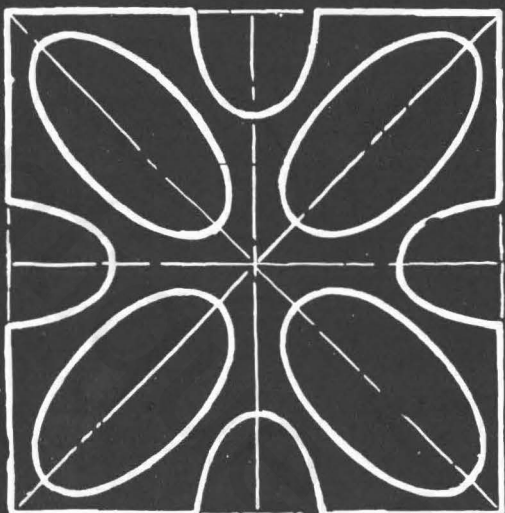


Diagram 3.

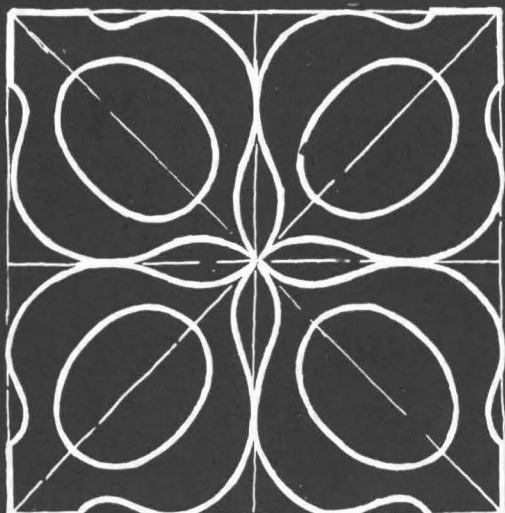
In both Figs. 1 and 2, the student should begin with the rectilinear figures, so as to ensure true proportion in his drawing. He should observe next the position of the point from which the different parts of the leaf radiate, and draw the long curves outward from this point. The sub-divisions at the angles in Fig. 2 should be the last part of the copy to be drawn.

Fig. 3 shows a spray arranged in the form of a scroll, and it is this scroll form which must first be drawn. In all drawings of this character it will be found advisable to begin with the general form and gradually to break it up into details, rather than to attempt to build up the general shape by adding one detail to another.

Diagram 3 illustrates the steps to be followed in this exercise.



1



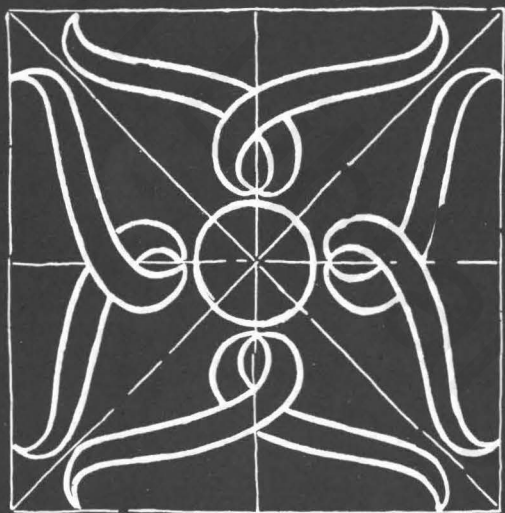
2



3



4



5

LESSON XI.

ELEMENTARY DESIGN.

The figures on Plate XI. are examples of the construction of elementary patterns from simple lines and forms already learnt. We do not propose to go very deeply into the subject of design, but to confine ourselves to that phase of the subject which is most useful to the student of blackboard drawing.

We have already referred to the practice of improvising new copies by re-arranging the elements of those which are already familiar, and we now propose to go a step farther.

Side by side with his freehand exercises the student should cultivate the power of designing simple examples, for his ultimate aim should be to use the blackboard without reference to copies; and the skill and confidence necessary for this end are best acquired by practising original work from the outset.

The student may regard design primarily in the sense of arrangement. He has made himself familiar with certain forms; let him now devote his mind to arranging these forms so as to produce pleasing combinations. The easiest and most obvious way of doing this is to lay out the forms upon some geometrical plan. Thus, in Fig. 1 a square is adopted as the "*field*" upon which the design is to be laid out, and the ellipse is the "*form*" employed. Four ellipses are drawn on the diagonals, and four semi-ellipses on the diameters of the square.

In Fig. 2 the square is again used as a geometrical basis, ellipses are drawn on the diagonals, and the design is completed by the addition of curves which blend the forms of the ellipses with that of the square.

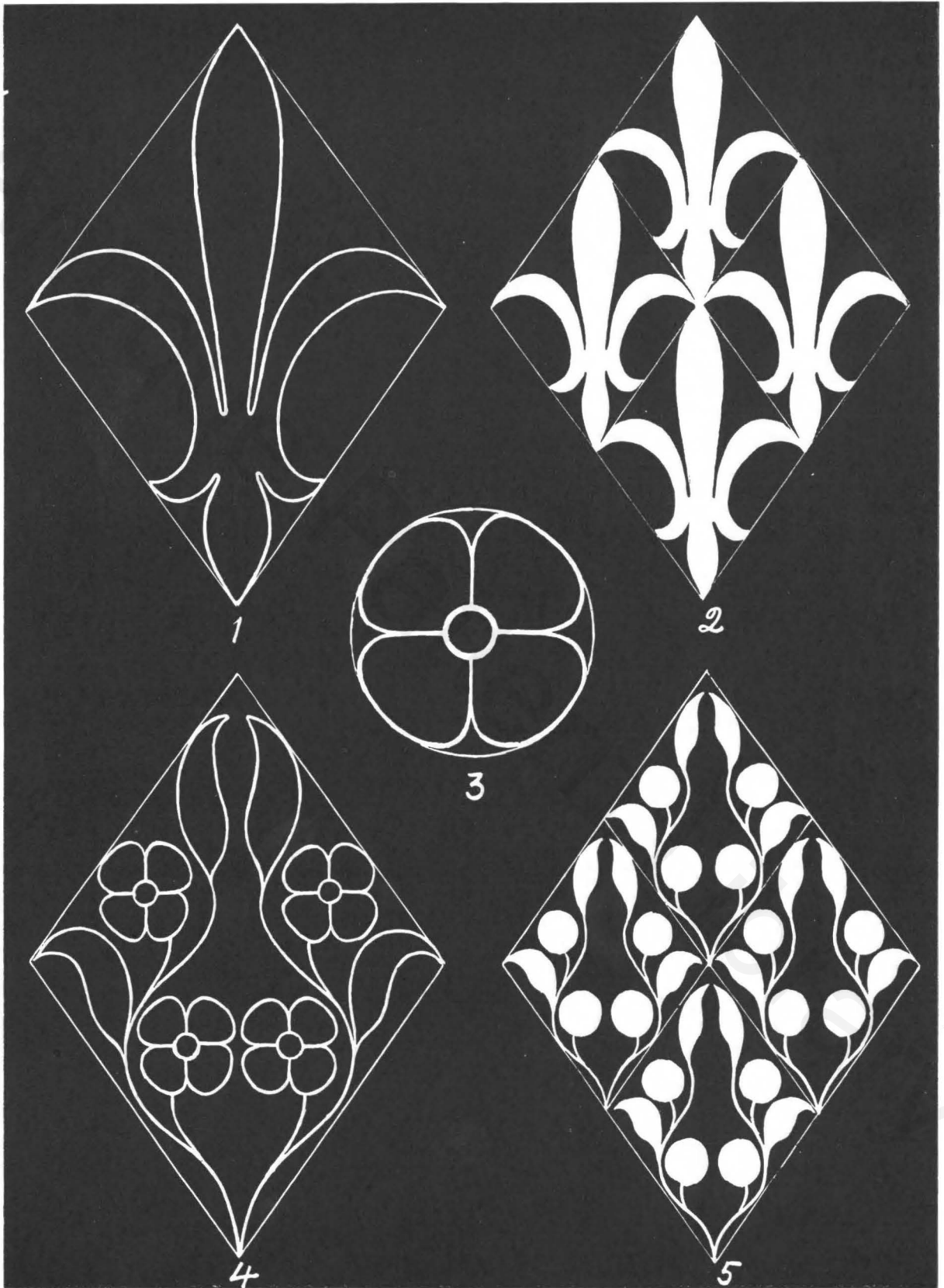
Fig. 3 is a simple design for a continuous border. Each element of this pattern fits into an oblong, therefore the border should be divided up into oblongs before drawing the curves.

Fig. 4 shows a method of filling a square with a bi-symmetrical copy; while Fig. 5 shows how a simple scroll form may be laid out so as to form a square-shaped design.

Without using other elements than these the student will find ample scope for his ingenuity; but by bringing two or more different forms into combination in the same design he may still further increase the possibilities of variation.

In the drawing lesson it will be found extremely useful to prescribe certain forms for use by the class, and, having first shown one or two examples of their combination, to call upon the children to evolve fresh patterns. Thus, in Fig. 1 the ellipse and square might have been prescribed; in Fig. 5 the scroll and square.

The interest of the pupils in this kind of work will ensure that their drawing is carefully done, and an additional stimulus may be provided by allowing the most successful drawings to be coloured.



LESSON XII.

ELEMENTARY DESIGN.— *Continued.*

In the figures on Plate XII. the lozenge has been adopted as the geometrical basis on which to work. Fig. 1 shows a bi-symmetrical design filling a lozenge, while Fig. 2 shows how, by repeating the geometrical figure, an effective all-over pattern may be obtained. By the simple process of repetition, this class of design may be extended so as to cover any required space.

We have now dealt with three important steps in the practice of design: first, selection of form; secondly, arrangement; thirdly, repetition.

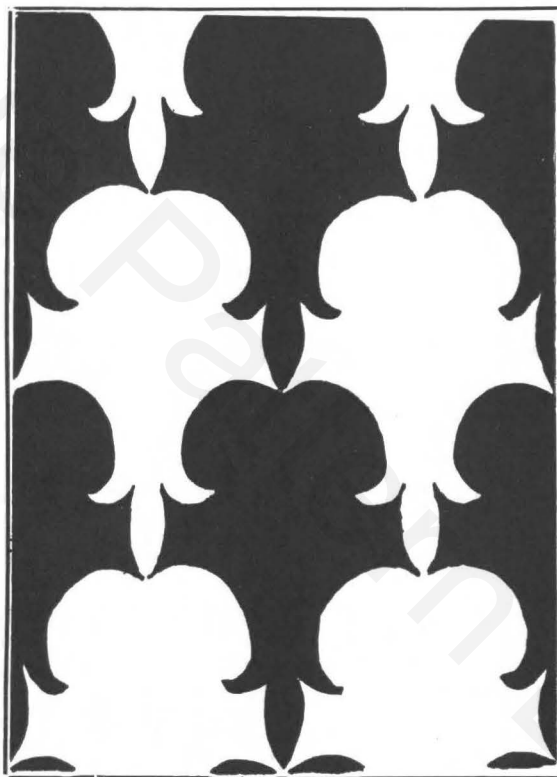
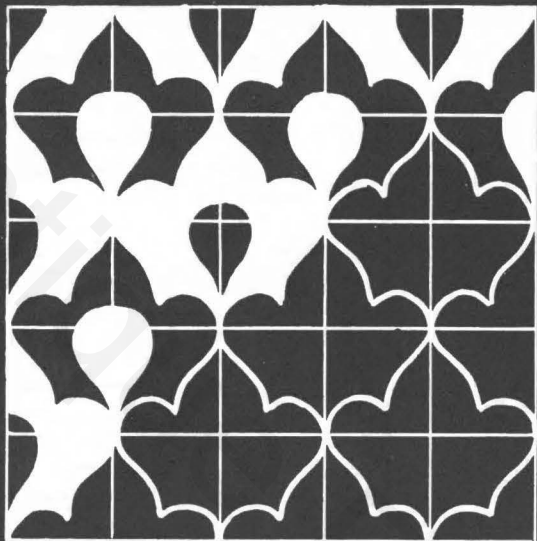


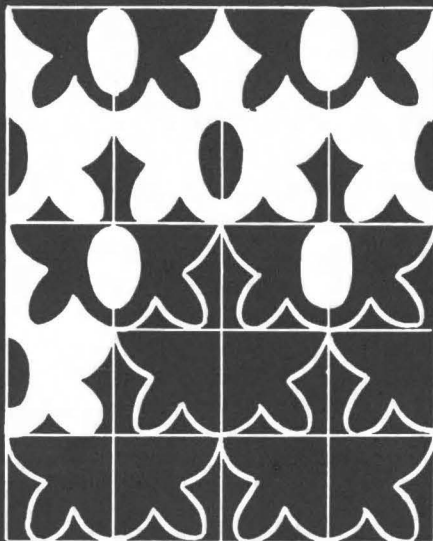
Diagram 2.

It may be necessary to direct the attention of the student to the special advantage which follows from repetition of the geometrical figure and its contained form, as shown in Fig. 2. It is to be observed, then, that this repetition establishes an entirely new set of forms, namely, the spaces between the repeats of the original form; and it is the presence of these new forms in juxtaposition with the original forms which gives the added richness of effect to be observed in Fig. 2, as compared with Fig. 1. The suitability of any particular figure for use in a repeating pattern of this kind depends largely upon the character of the new forms obtained when the figure is repeated. Thus Fig. 4, although by itself more interesting than Fig. 1, develops no new form when combined as in Fig. 5.

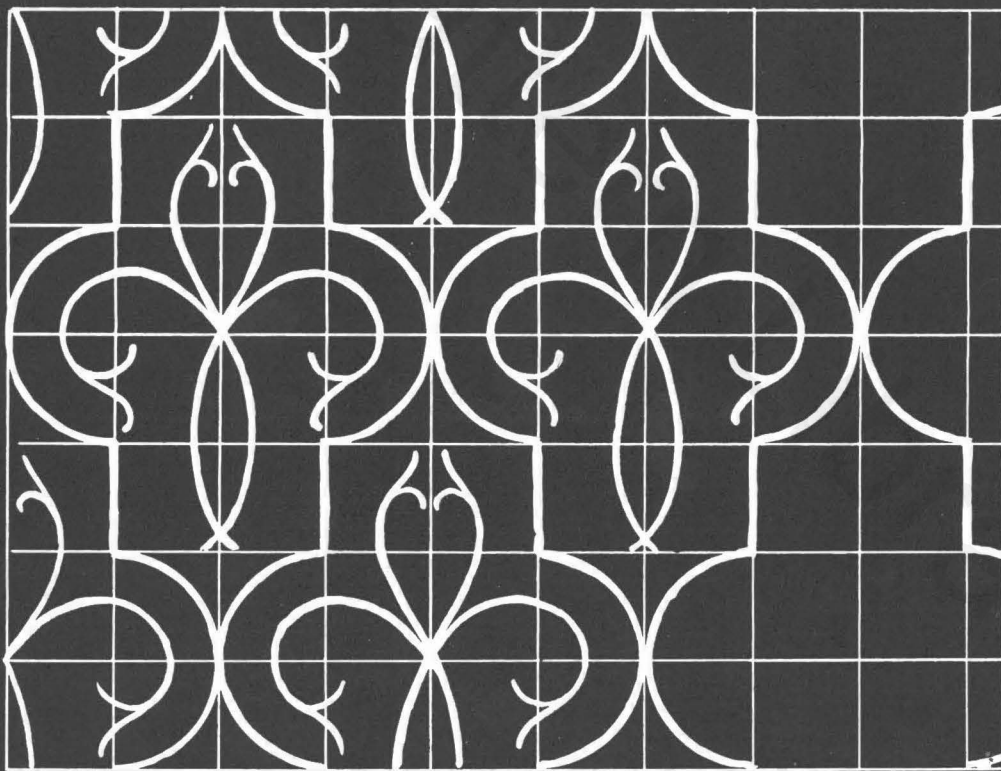
In Diagram 2 a new all-over pattern has been developed from Fig. 2. The pattern of Fig. 2 will be seen to consist of a white figure on a black ground, the ground spaces repeating with the same regularity as the figure. We have already said that the combination of the figure and ground establishes a new form, and this form is used as the figure in Diagram 2. In this diagram it will be seen that the figure space and the alternating ground space are both of the same shape and size, a method of design known as *counter-change*.



1



2



3

LESSON XIII.

ELEMENTARY DESIGN.—*Continued.*

Plate XIII. gives further examples of all-over patterns, in this case based upon the square. The squared blackboard may be utilised for this class of exercise, although the size of the squares will perhaps be found too small in the majority of cases. This difficulty might be overcome, however, by allowing four squares on the blackboard to represent one square in the pattern, thus increasing the scale of work to a serviceable size.

Figs. 1 and 2 are illustrations of the principle of counter-change, referred to in Lesson XII., for it will be observed that in the completed portion of these designs the figure is alternately black and white. The white portions are somewhat larger than the black; but this has arisen from the fact that the width of the preliminary outline is included in each of the white figures. By using a very fine outline this discrepancy might have been avoided.

The unfinished portion in each of these figures serves to indicate the method by which it has been constructed. If we look at the bottom right-hand square of Fig. 1, we see that a broken curve is drawn diagonally across it. The next square to the left shows the same lines reversed, and with the exception of the central loop forms, these form the entire pattern, which is constructed by reversing and repeating in this way. Fig. 2 is constructed similarly from a different element, and an ellipse substituted for the loop form.

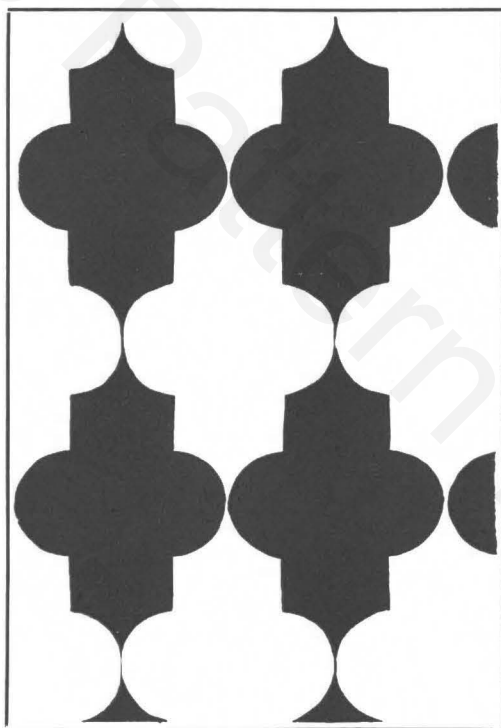


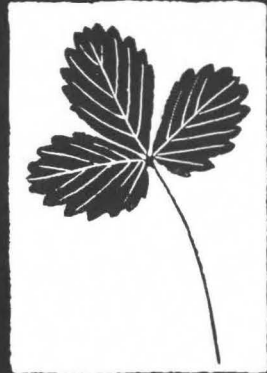
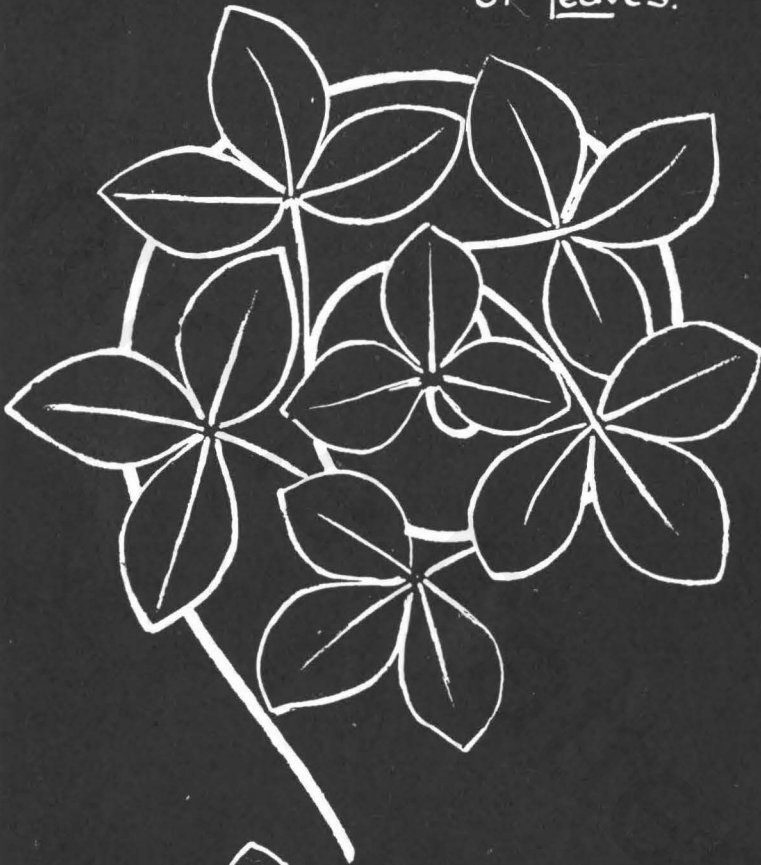
Diagram 3.

Observe that, in each successive horizontal row of squares, the element is moved one place to the left or right, in order to obtain the required combination.

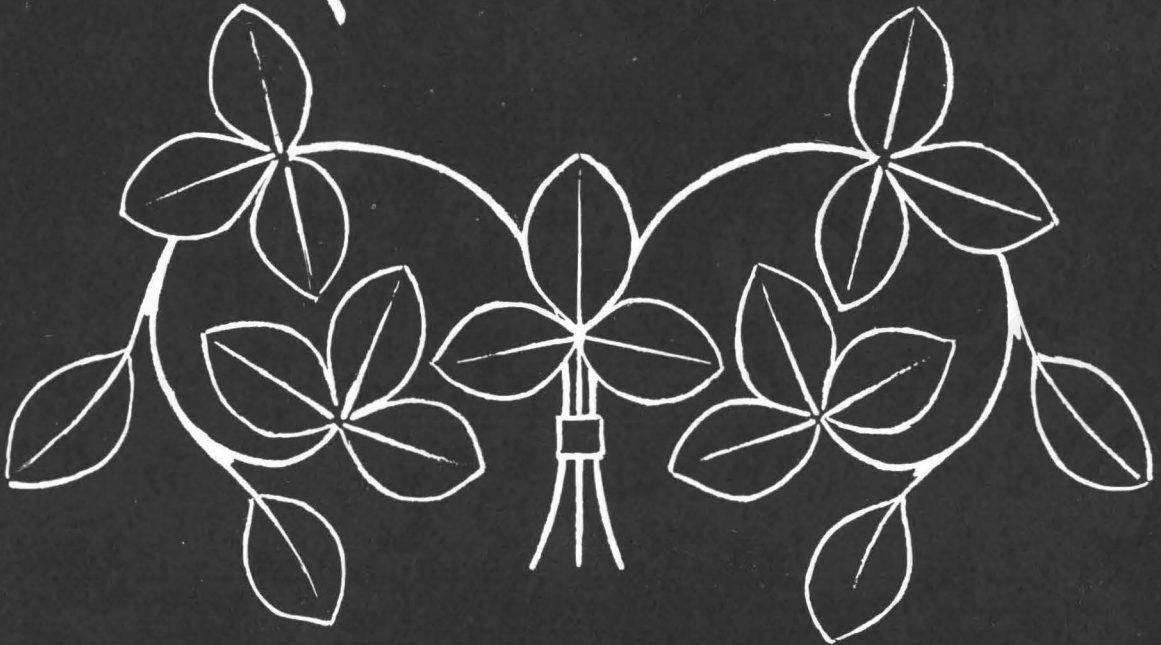
In Fig. 3 the method of construction is slightly different. The main spaces of the pattern are contained entirely by straight lines and semicircles. In order to appreciate this construction, let the eye be carried along one of the vertical lines on which the centre of a semicircle falls. It will be seen that the semicircles lie alternately to the left and right of this line, and that they are arranged at regular intervals.

Diagram 3 shows an application of the principle of counter-change to this design.

Ornamental arrangement
of leaves.



Wild Strawberry
leaf.



LESSON XIV.

ELEMENTARY DESIGN.—*Continued.*

Having considered a few simple methods of laying out patterns upon a purely geometrical basis, we next proceed to apply the same principles to conventional forms. We may consider all the forms with which we have to deal as falling into three classes: geometrical forms, conventional forms, and natural forms. Geometrical forms are such as may be described by rule and compass, their essential characteristic being mechanical accuracy. Thus the square, the circle, the triangle, are geometrical forms. In conventional forms we attempt to combine the mechanical character of the geometrical with the interest which attaches to natural forms. In order to effect this, the salient lines only of the natural form are selected, and these are combined in some regular manner, or according to a fixed general principle.

Thus in the first figure on Plate XIV. the design consists of a combination of the spiral, with which we are already familiar, and the leaf of the wild strawberry.

In setting out such a design as this, the spiral should first be drawn as shown in Diagram 1, for it bears the same relationship to the leaves as did the squares to the figures on Plate XIII.

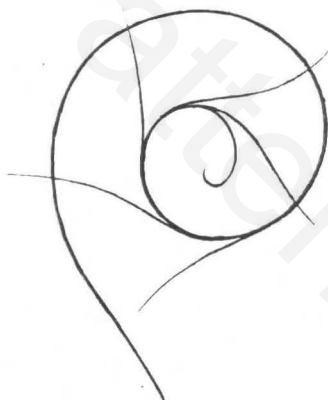


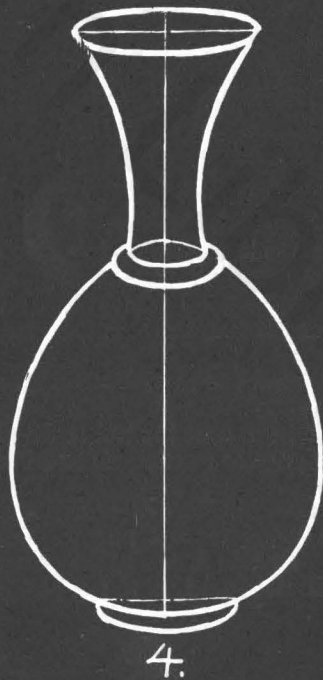
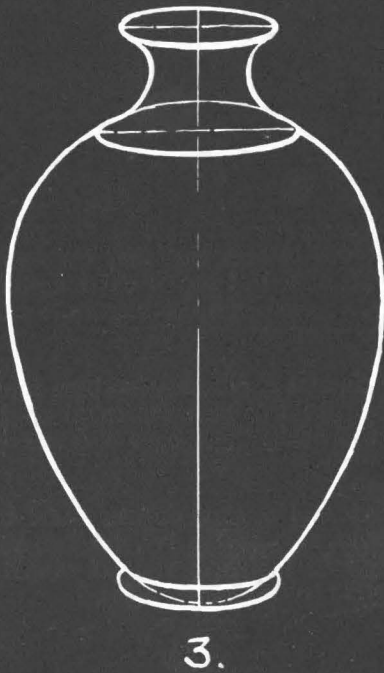
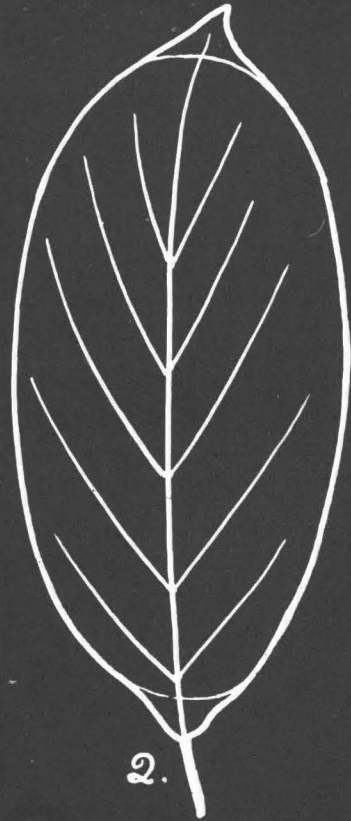
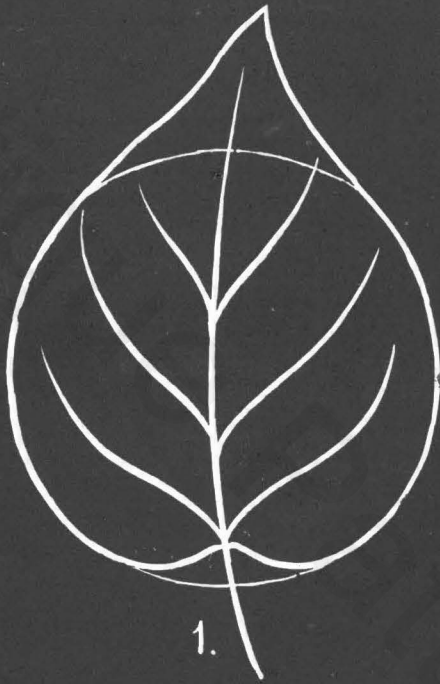
Diagram 1.

If the leaves in the design be carefully observed it will be seen that they are arranged in a regular manner round the spiral, and that the stem of each leaf grows out tangentially, thus conforming to one general principle. It will, moreover, be seen that the leaves are not absolute copies of the natural leaf, but that the salient form only is preserved.

In the second design on Plate XIV. an additional element of difficulty has been introduced by combining two spirals so as to form a bi-symmetrical copy. In this case the spiral on both sides should first be drawn, next the leaf stems on both sides, and finally the groups of leaves—these last being drawn in pairs so as to preserve the balance.

The student will do well to attempt the construction of original designs based upon these principles, but using for the purpose fresh natural forms, such as the ivy, the honeysuckle, the hawthorn, &c. By this means he will open up to himself an unlimited store of material for his lessons, and will not be driven to fall back upon repetition of hackneyed examples.

Forms based upon elementary figures.



LESSON XV.

OBSERVATION OF ELEMENTARY FORMS.

We have referred two or three times to the importance of speed in the execution of blackboard drawings, and our first exercises were devised largely with a view to promoting it. The student will find his work very much simplified, and his speed in execution consequently increased, if he will strive to cultivate the faculty of analysing the forms he has to draw. As a result of this analysis he will find that more or less complicated forms often have for their basis one of the elementary figures with which he is familiar. The figures on Plate XV. are given in illustration of this fact.

Fig. 1 represents a lilac leaf, and it will be seen that a very considerable portion of its outline conforms to the circumference of a circle. This suggests that a circle might first be drawn, and the point of the leaf and other variations added.

Again, in Fig. 2, the laurel leaf is observed to be almost perfectly elliptical in shape, and this suggests that an ellipse might be used with advantage in obtaining the general shape.

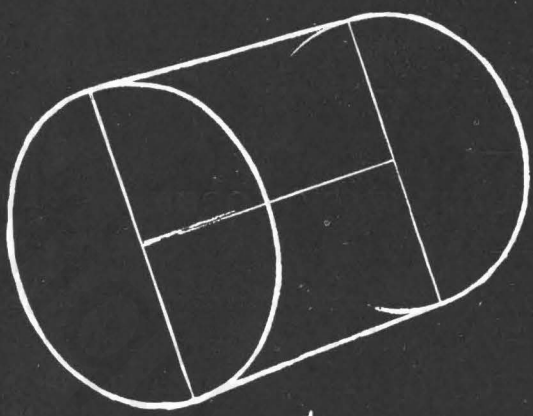
Figs. 3 and 4 offer examples of an extension of the same principle to less simple forms. Each of these examples is made up of a combination of several distinct parts, and in analysing them the student should fix his attention upon the principal part only. Thus, he will in each of these cases observe that the body of the vase suggests the form of an egg—the one case being an inversion of the other.

He will begin, then, by drawing the oval or egg form; next the ellipses; and lastly the lines showing the contour of the neck.

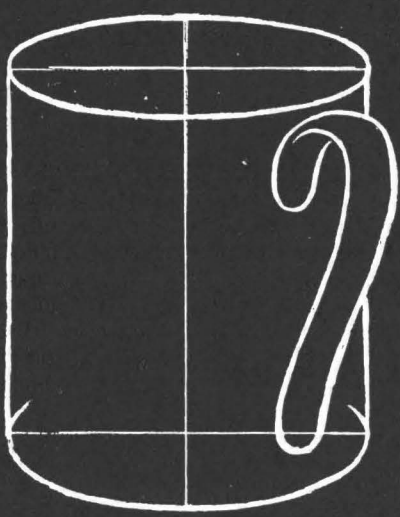
It is to be observed that in vase forms the ellipses follow the rule already laid down with regard to cylinders and cones; *i.e.*, their longest diameters are at right angles to the axis of the figure.

Figs. 3 and 4 are given on this plate in order to bring together examples of the principle we desire to illustrate, but the practice of these figures may be deferred with advantage until after Lesson XVI.

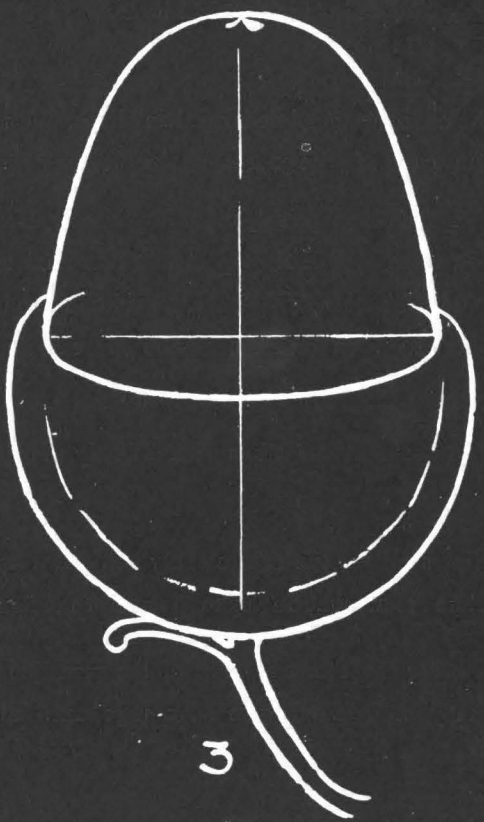
Ellipse and Oval.



1.



2.



3



4.

LESSON XVI.

THE ELLIPSE AND THE OVAL.

Fig. 1 on Plate XVI. represents a cylinder lying on its side. In drawing the object in this position the first point to be determined is the apparent inclination of the axis. This apparent inclination is affected by two conditions, viz., the height of the eye above the object, and the direction of the axis with regard to the line of sight. When the cylinder lies at right angles to the line of sight its axis is represented by a horizontal line; when, however, the axis is in any other direction it appears to slope upward or downward towards its further extremity, and the degree of slope and the apparent length of the axis are increased as the eye is raised above or lowered beneath the level of the object. In order to appreciate this, the student should place the actual object before him and observe the effect of altering the point of sight or the position of the object. Having determined the apparent slope, draw the axis in position. Next draw lines at right angles to it through each of its extremities, and let these lines represent the longest diameters of the ellipses. Although only one ellipse is completely drawn in Fig. 1, the student is advised to draw both, and to rub out afterwards that portion of the remote ellipse which is invisible. The remote ellipse will be somewhat smaller than the near one, but it will be more nearly circular in form. Having drawn the ellipses let the top and bottom lines of the figure be drawn as tangents to them.

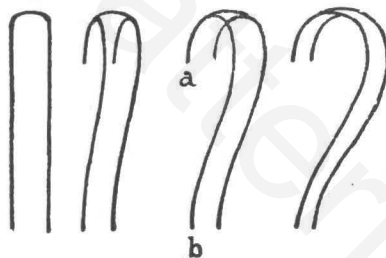
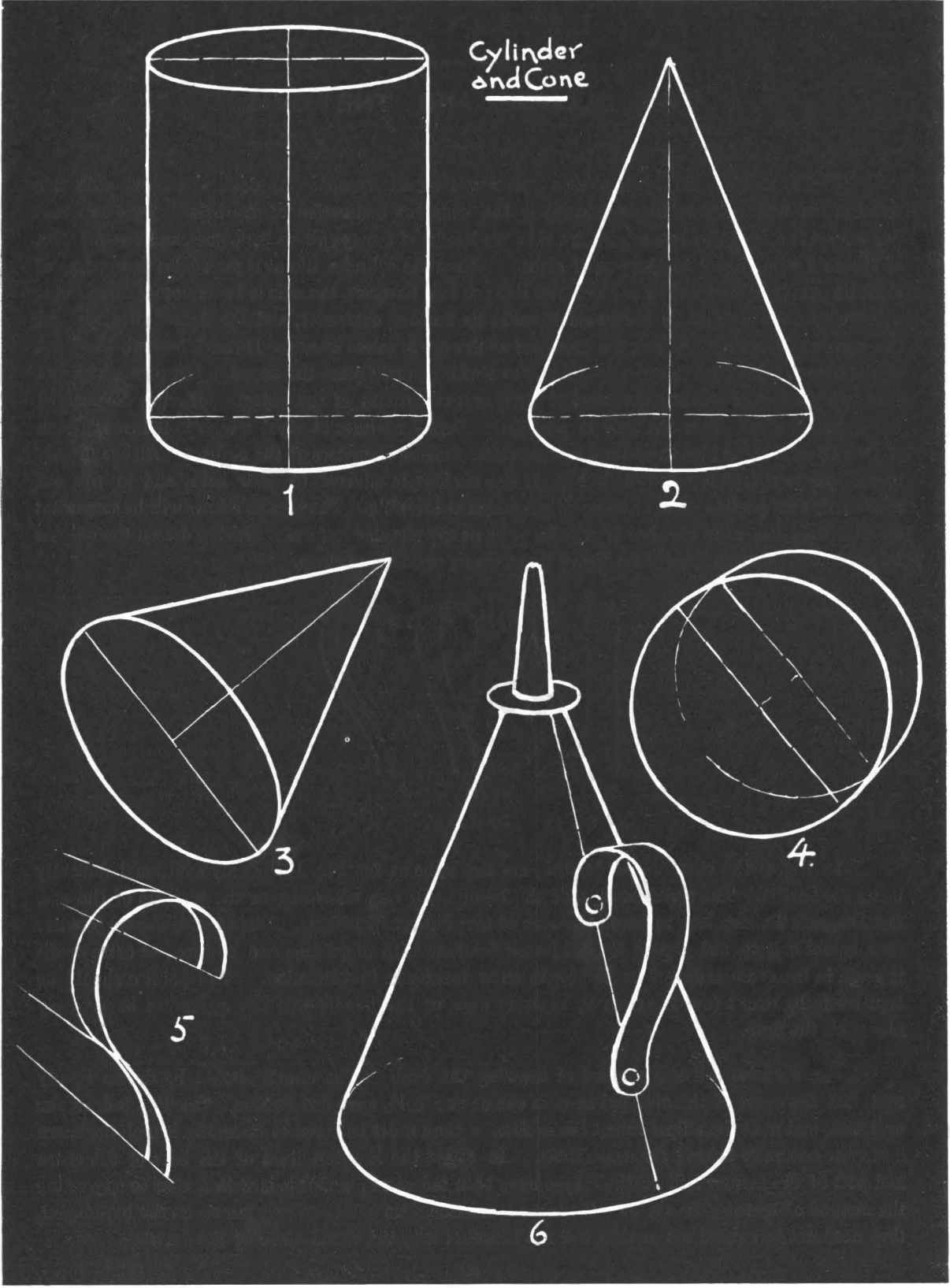


Diagram 2.

In Fig. 2 the steps in the drawing are the same as for Fig. 1, the only additional difficulty being the handle. The apparent form of the handle will vary according to the position of the eye, and Diagram 2 shows how to draw it in each of four different positions. The student should practise from actual objects, and should make himself familiar with more than one position, as extra credit is given in the examination if he be able to show facility in this direction. The point *a* should be kept vertically over *b* (see Diagram 2) in every case, or the handle will not appear to be properly placed on the mug.

Fig. 4 shows a useful method of drawing the oval. The circles should be drawn lightly first, and the curve of the oval put in with one or two bold, sweeping strokes. In Fig. 3 draw the oval first, and next the ellipse round the middle. Care must be taken to make the cup of the acorn disappear naturally behind the acorn itself. In Fig. 3 the invisible lines of the base of the acorn and part of the further half of the ellipse have been indicated; and this is with a view to suggesting the method of drawing the object. If these superfluous lines be drawn very faintly on the blackboard, they need not be rubbed out as they will not interfere with the effectiveness of the drawing.



LESSON XVII.

THE CYLINDER AND THE CONE.

The principles governing the representation of the cylinder and the cone are identical, the difference between them being merely one of detail. In each case the axis should first be drawn, and next the longest diameter of the ellipse or ellipses. Reference to Figs. 1 and 2 will make this clear. In drawing the sloping sides of the cone they should be drawn so as to touch, but not to intersect, the ellipse; they should not be drawn to the extremities of the major axis of the ellipse, or they will intersect the curves of the ellipse.

Figs. 3 and 4 show the cone and cylinder in fresh positions, but the method of drawing is still the same. In reference to Fig. 4, note that the shorter the axis of the figure, the more nearly circular will be the ellipses.

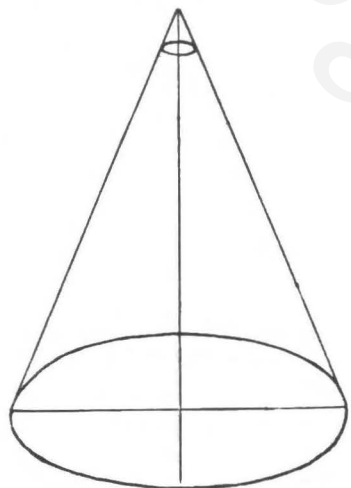


Diagram 6.

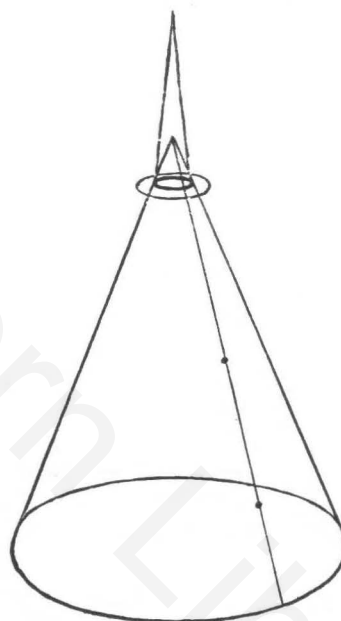
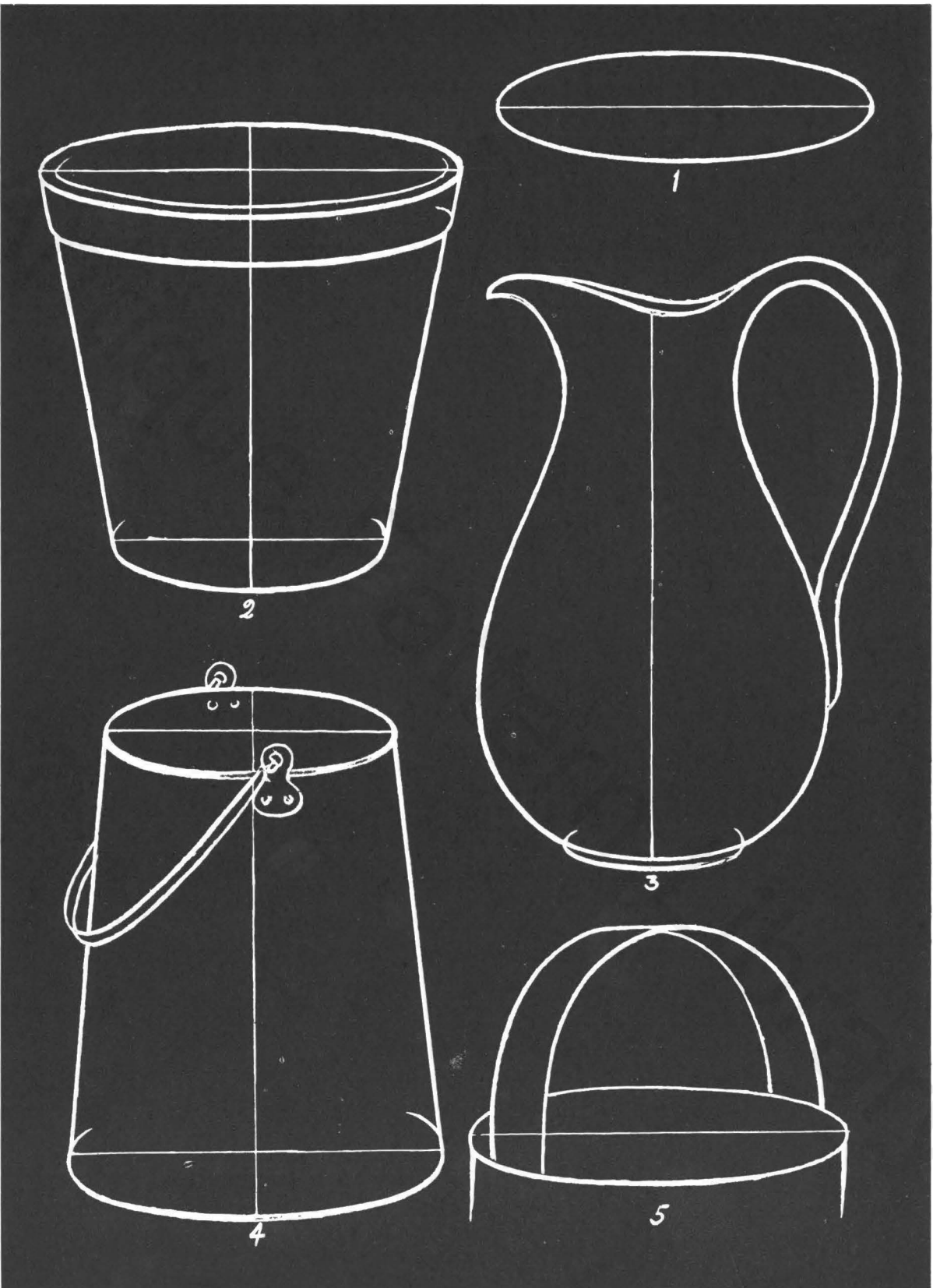


Diagram 6a.

Fig. 6, an oil tin, is based upon the cone. Diagrams 6 and 6a explain the preliminary steps in the drawing of this figure.

In Fig. 2, on Plate XVI., attention was directed to the necessity for keeping the handle vertical; but in this figure care must be taken to see that the extremities of the handle lie, not in a vertical line, but in a straight line drawn from the vertex of the cone to a point in the circumference of its base. Figure 5 illustrates the principles governing the drawing of the handle, the straight lines there shown being drawn so that if produced they would meet all in one point. Note that the spout of the tin is a small cone, although the vertex is somewhat blunted.



LESSON XVIII.

SIMPLE COMMON OBJECTS.

Figs. 2 and 4 are both based on the cone. In each case the general form of the object should be drawn first as shown in Diagrams 2 and 4 respectively.

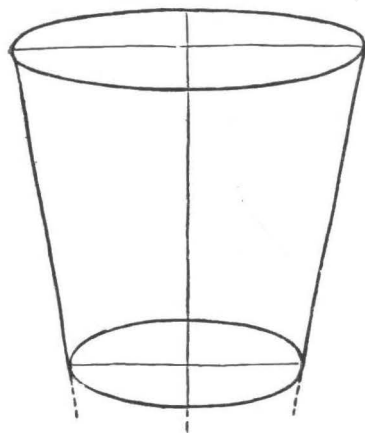


Diagram 2.

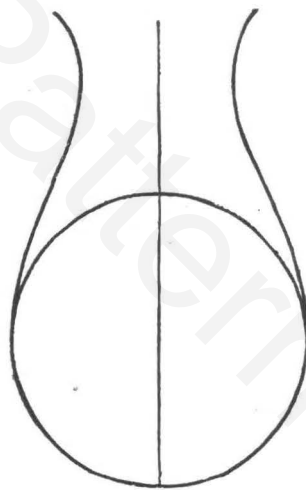


Diagram 3.

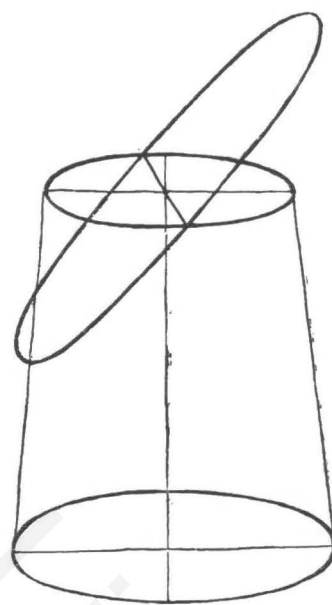
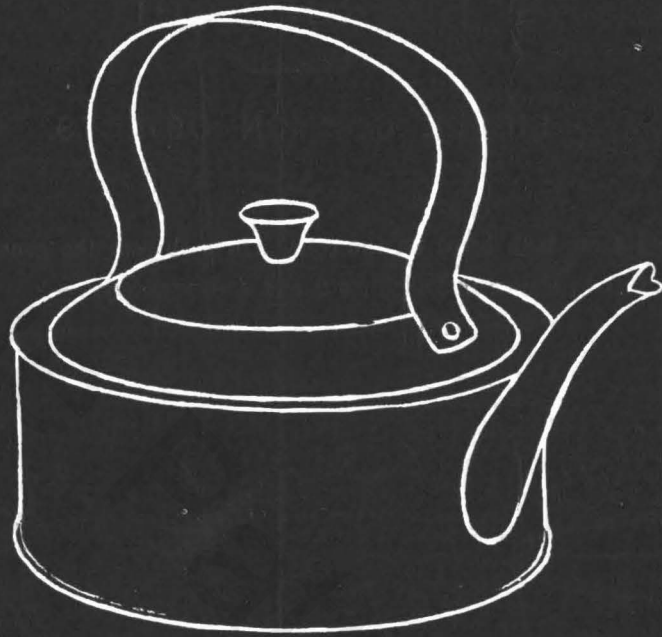


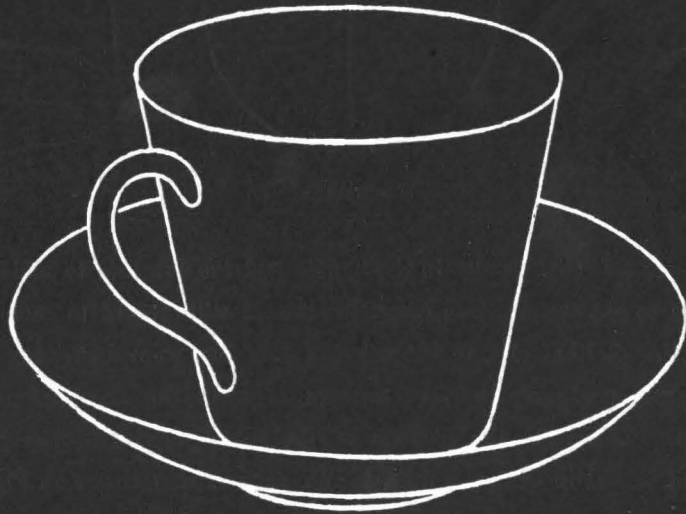
Diagram 4.

Fig. 4 introduces a fresh difficulty in the handle and the brackets to which it is attached. Care should be taken to get the brackets correctly situated with regard to each other; in order to do this, first fix the position of one bracket and join the point indicating this position to the centre of the ellipse, producing the line through to meet the circumference of the ellipse on the opposite side. This fixes the position of the second bracket. The same method of proceeding should be followed in dealing with a handle such as that shown in Fig. 5. Diagram 3 explains the preliminary step in the drawing of Fig. 3.

Common
Objects.



1.



2.

LESSON XIX.

COMMON OBJECTS.—*Continued.*

Diagrams 1 and 1a illustrate the steps in drawing the kettle on Plate XIX., while Diagram 2 explains the method to be adopted for the cup and saucer. The kettle is built up on a cylinder, the cup on a truncated cone. The correctness of the general proportions of the figures will depend upon the accuracy of the cylinder and cone respectively. If either the kettle or cup be revolved on its own axis new views will be obtained of the spout and handle in the one case, and of the handle in the other; but it is to be observed that no alteration occurs in the appearance of the cylinder or cone.

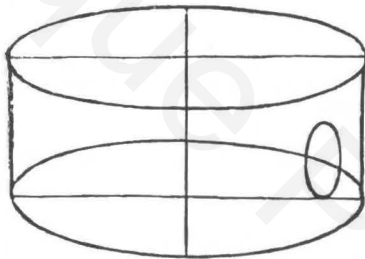


Diagram 1.

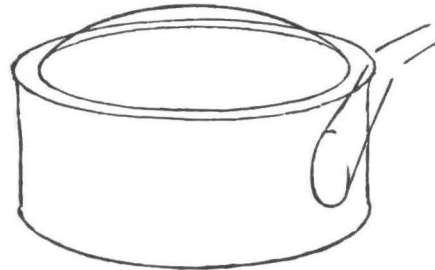


Diagram 1a.

Fig. 1.—First draw a cylinder resting on one of its circular ends. Next draw the ellipse showing the junction of the spout with the cylinder (see Diagram 1). Within the upper ellipse of the cylinder draw another concentric ellipse, as explained in Lesson V., Fig. 3. This ellipse represents the base of a dome-shaped construction forming the top of the kettle. Draw this as shown in Diagram 1a, and rub out those portions of the ellipses which lie behind it. Next draw the spout, obtaining the general directions of its lines as shown in Diagram 1a. The handle should be practised in various positions as suggested for Fig. 2, Plate XVI.

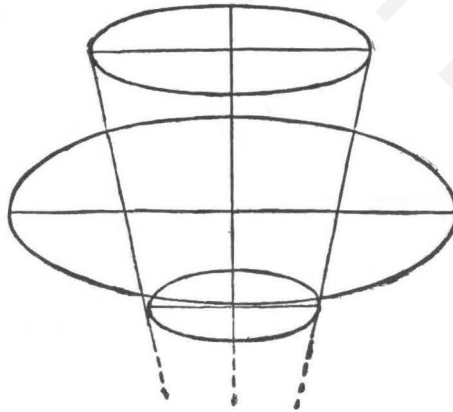
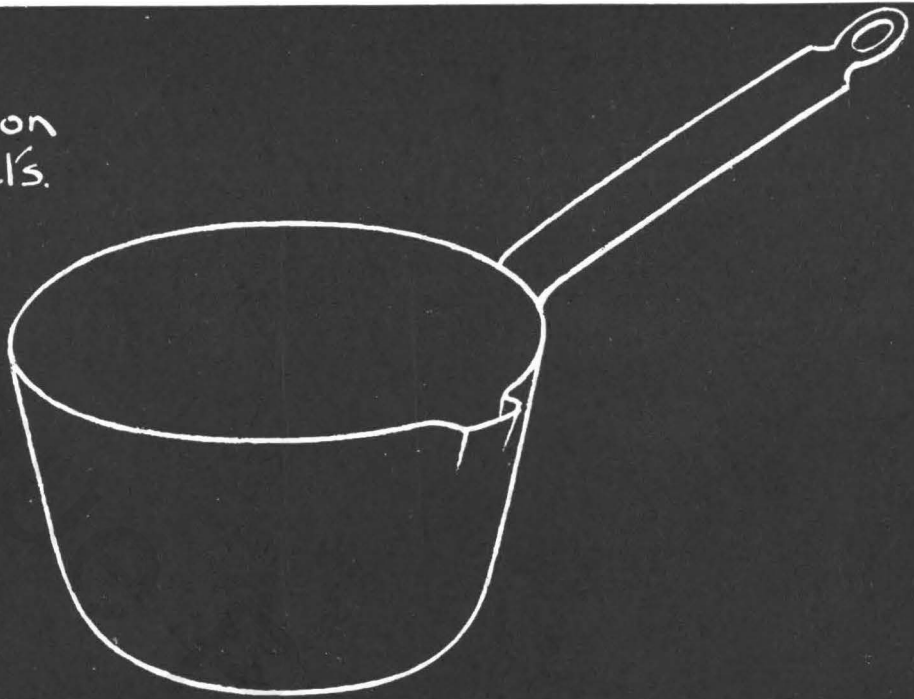


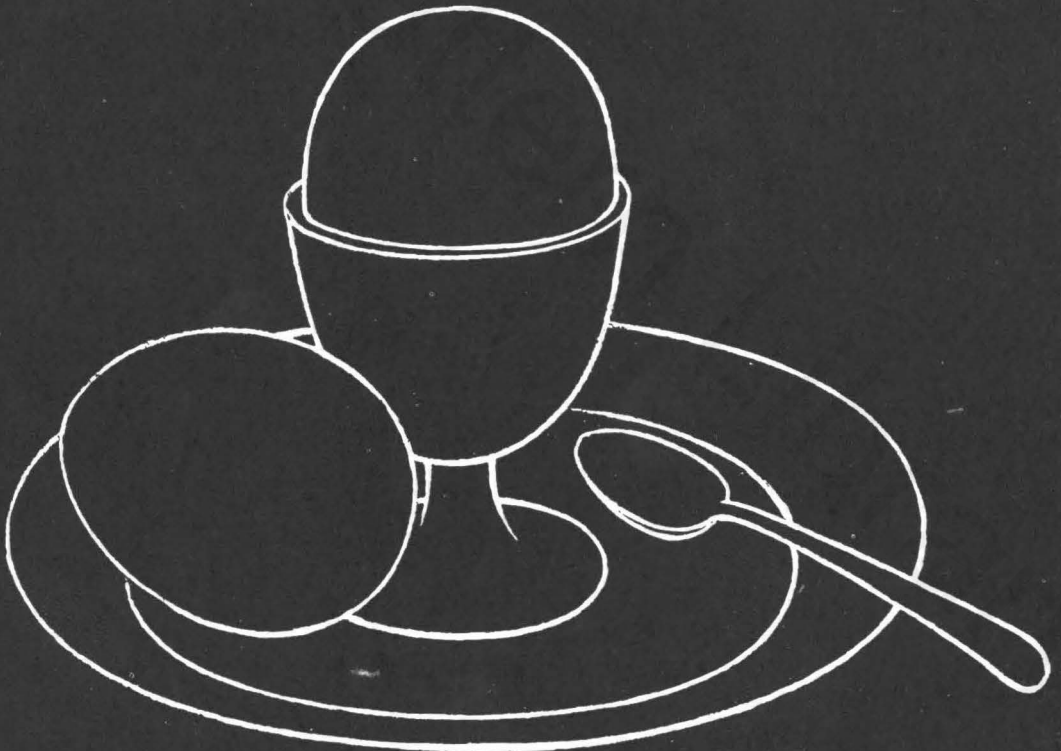
Diagram 2.

In drawing the cup and saucer the greatest care must be taken to make the cup appear to rest in the bottom of the saucer; and the saucer itself must not be made to appear too deep, or it will have the appearance of a bowl.

Common
Objects.



1.



2.

LESSON XX.

COMMON OBJECTS.—*Continued.*

In all the lessons on common objects the student is earnestly advised to place the actual objects before him, and to strive to realise their appearance from various points of view. By this means alone will he obtain the full benefit of his practice.

Diagram 1 shows the method of commencing the egg-saucepan, which is another variation of the truncated cone. Observe that the spout and handle are not in this case on opposite sides of the circle, but that there is a quadrant or quarter-circle between them. The same arrangement of spout and handle may be observed in the case of an ordinary tin coffee-pot.

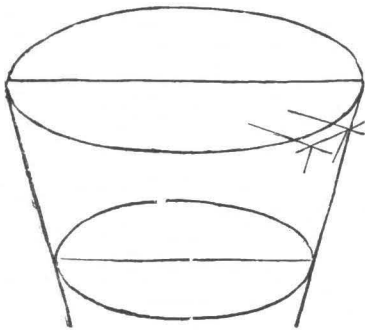


Diagram 1.

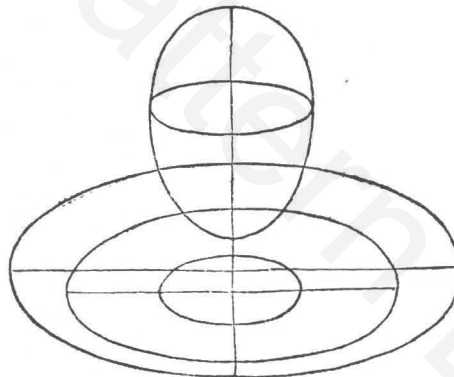


Diagram 2.

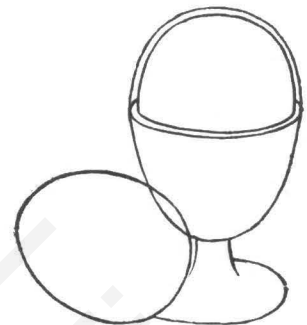
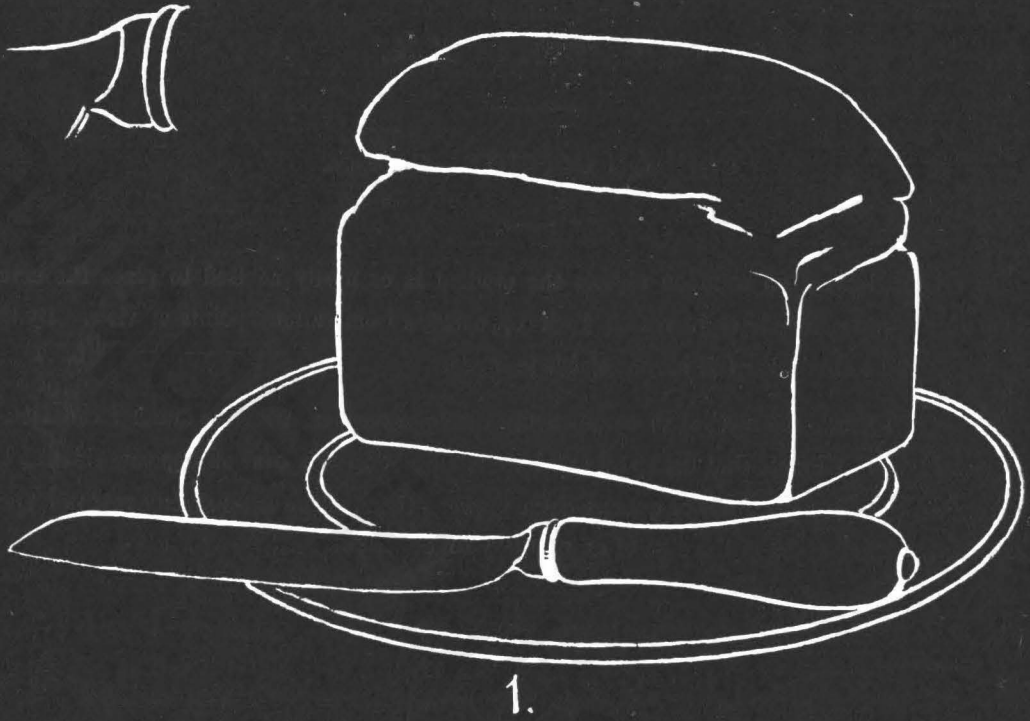


Diagram 2a.

Diagrams 2 and 2a illustrate the steps in the drawing of Fig. 2. Great care must be taken with the egg in the egg-cup to make it appear to fit, and the same remarks apply here as were employed in Lesson XVI. with reference to Fig. 3. The student is advised to practise the objects separately before attempting the entire group. In the egg which lies on the plate observe the slightly upward slope of its axis, indicating that the narrow end of the egg is turned away from the spectator. In drawing the spoon begin by indicating its general position, next draw the bowl, and lastly the handle, taking care to represent faithfully the slight curvature of the latter.

Common Objects.



LESSON XXI.

COMMON OBJECTS.—*Continued.*

Fig. 1 on Plate XXI. is to be drawn as shown in Diagram 1. The shape of the loaf is based upon that of the square prism, although the upper portion presents certain irregularities.

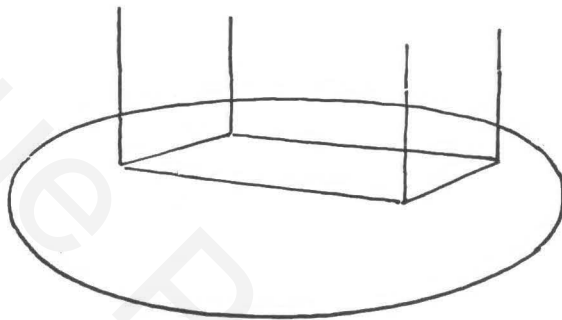


Diagram 1.

In drawing objects of this character it is advisable to commence with those portions which present the greatest regularity of form. Thus the lower portion of the loaf should be drawn first, and the more broken and irregular upper portion added. A defect in the drawing of the lower portion would be more noticeable than a similar defect in the upper part, therefore great care must be taken to set out the first lines accurately.

In drawing the knife the most difficult feature is the junction of the handle with the blade. This should be studied from the enlarged sketch given on the Plate. The handle is bi-symmetrical, *i.e.*, its two sides exactly balance each other; therefore a middle line showing its general direction should first be drawn, and the curves made to balance each other on opposite sides of this middle line. Note the slight curvature of the blade, but be careful not to exaggerate it. The back of the blade lies nearly in a line with the middle line of the handle.

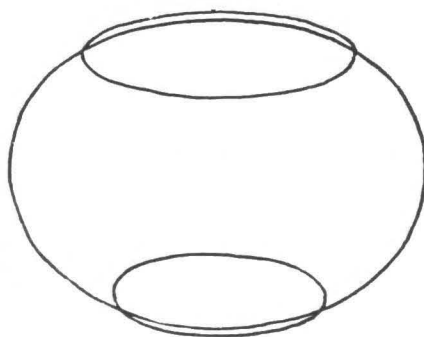
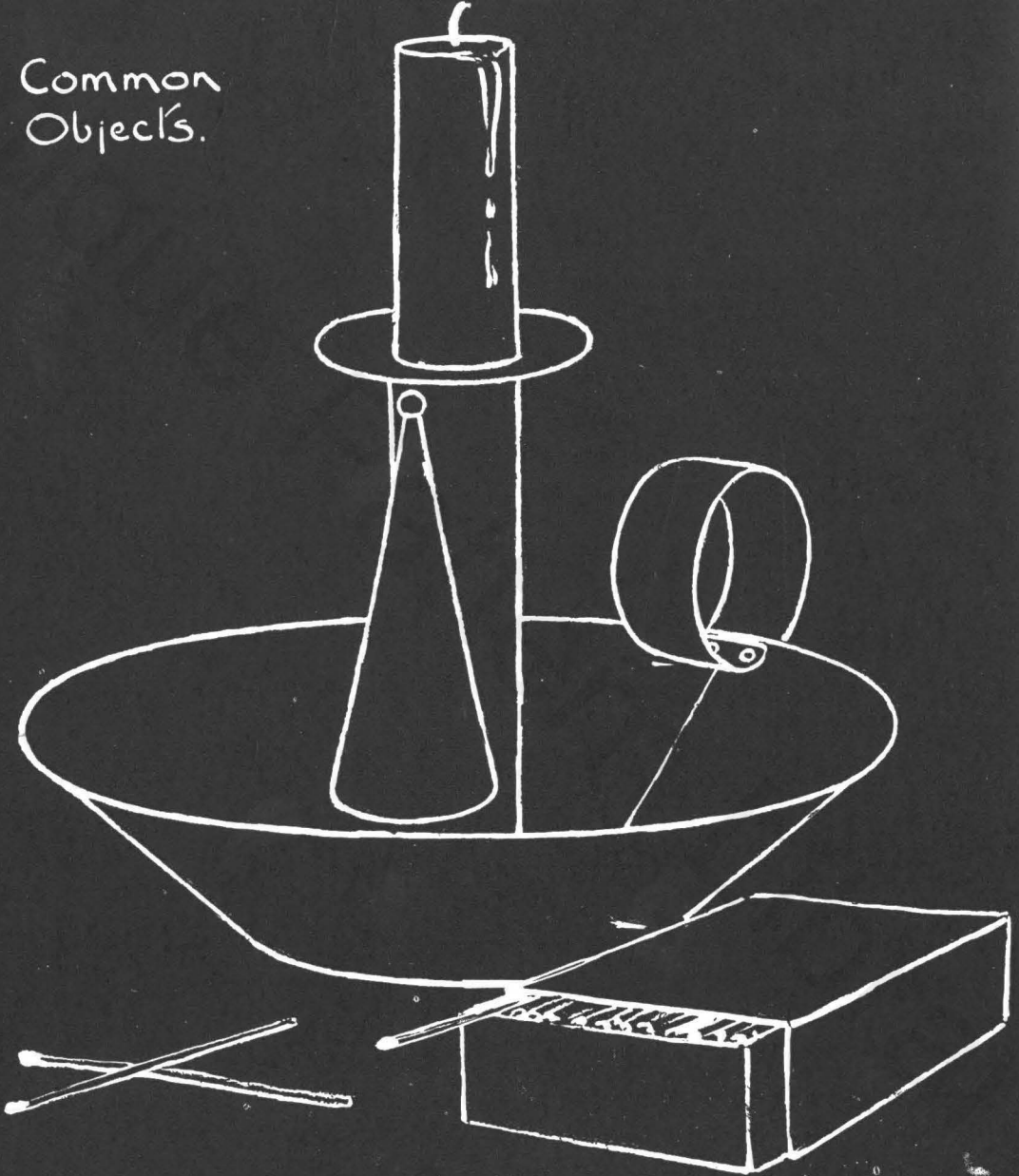


Diagram 2.

Begin the teapot by drawing a large ellipse as shown in Diagram 2. The rim and the domed lid follow the same steps as have been already explained in connection with the kettle on Plate XIX. The spout and handle lie on opposite sides of the body of the teapot; their positions should be accurately determined before drawing them. The teapot should be practised in a number of different positions.

Common
Objects.



LESSON XXII.

COMMON OBJECTS.—*Continued.*

The different parts of this group should each be practised before attempting the group as a whole. Thus the match-box, the extinguisher, the saucer of the candlestick, and the handle of the same may each serve as a separate exercise leading up to the more difficult task.

In commencing to draw the group as a whole follow the plan shown in Diagram 1. Note that the line indicating the junction of the tin in the saucer is drawn towards the vertex of the cone of which this saucer is a portion.

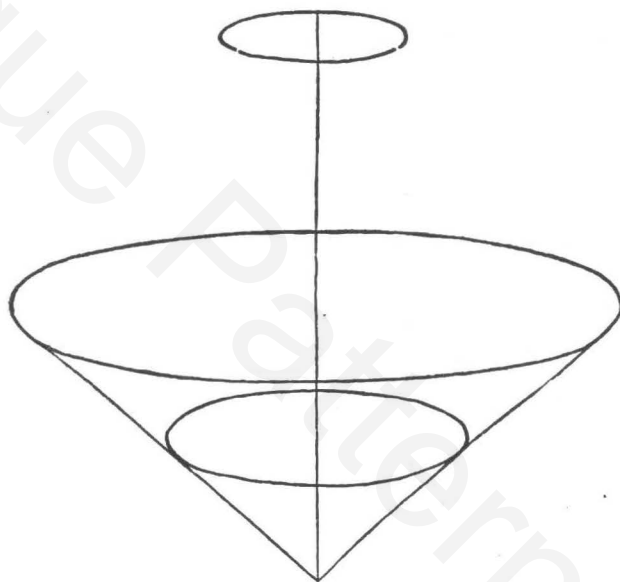


Diagram 1.

The handle partakes of the general form of a cylinder; the direction of the axis of this cylinder being in general agreement with that of the circumference of the ellipse at that point. Note that the cylinder dips below the edge of the saucer. Having drawn the cylinder in the required position, the necessary alteration required in order to express the construction of the handle may be effected as shown in Diagram 2.

In drawing the candle take care to make it a little narrower than the socket, and in drawing the extinguisher let its base be sufficiently large to enable it to cover the candle.

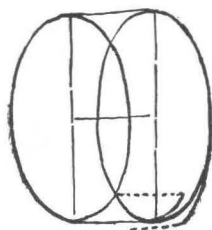
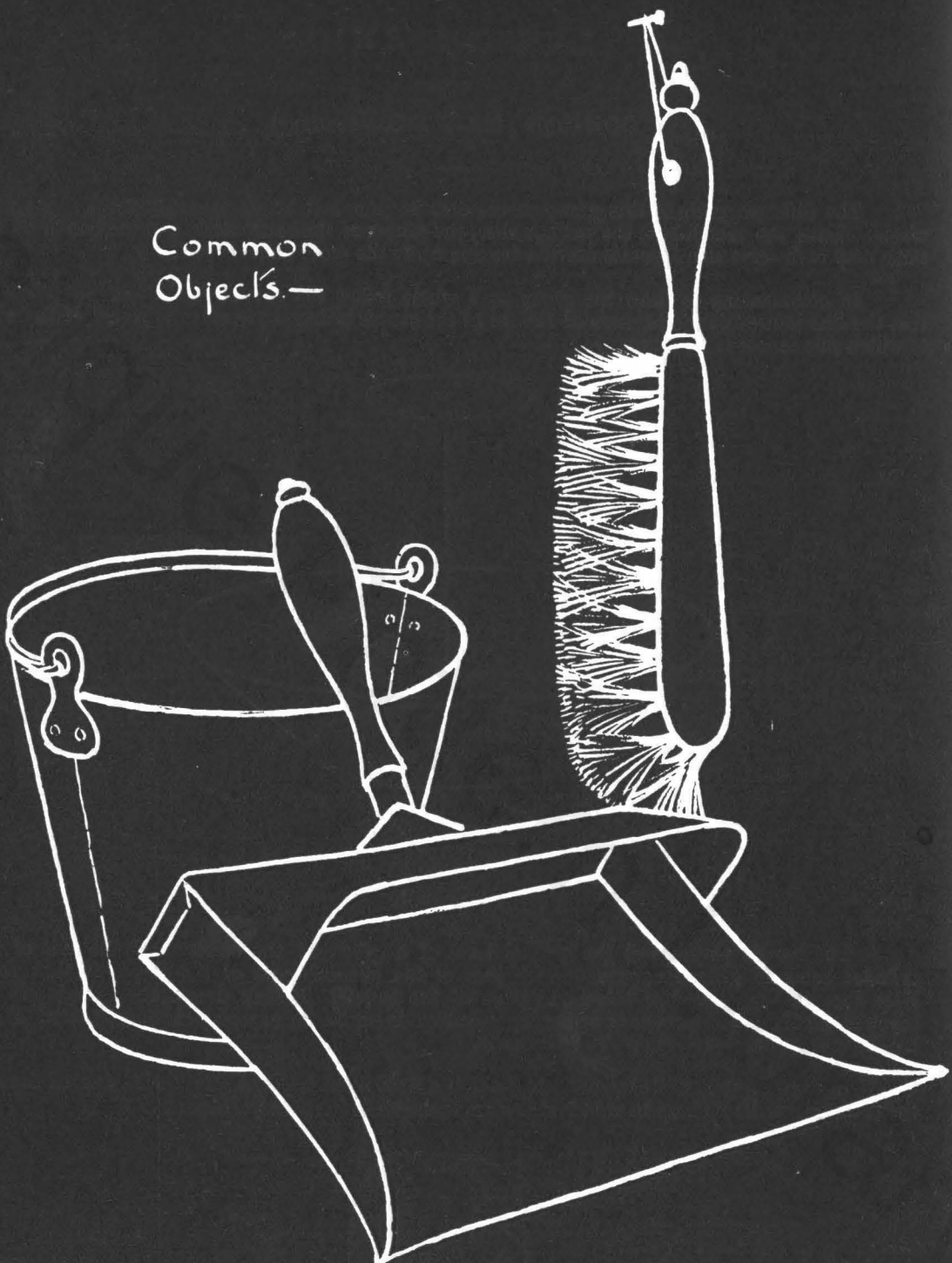


Diagram 2.

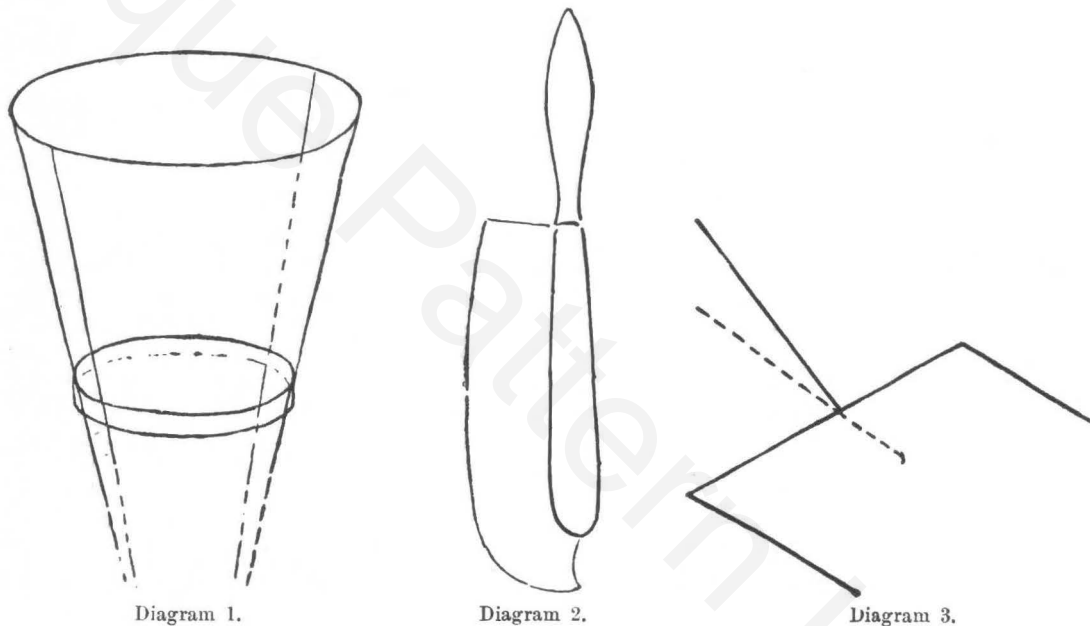
Common
Objects.—



LESSON XXIII.

COMMON OBJECTS.—*Continued.*

The same plan must be observed in this as in the preceding lesson; that is, the objects must be practised separately before being attempted together. Diagram 1 shows the method of drawing the pail, which is another illustration of a truncated cone. Note that the principal straight lines in the diagram all converge towards one point; and if the cone were completely drawn, this point would be its vertex. The band round the bottom of the pail, however, does not lie in the surface of the cone, but is cylindrical in form. It should be drawn after the upper part of the pail, and the short vertical lines on the left and right of it should be very carefully attended to, or they will give the rim the appearance of being splayed outwards at the bottom. In drawing the brush begin with the handle; next indicate lightly the general mass of the bristles as shown in Diagram 2, and finally break up this mass into its separate tufts.



The most important feature to be observed in drawing the dustpan is that the handle is slightly tilted upward from the plane of the dustpan itself. (See Diagram 3.)

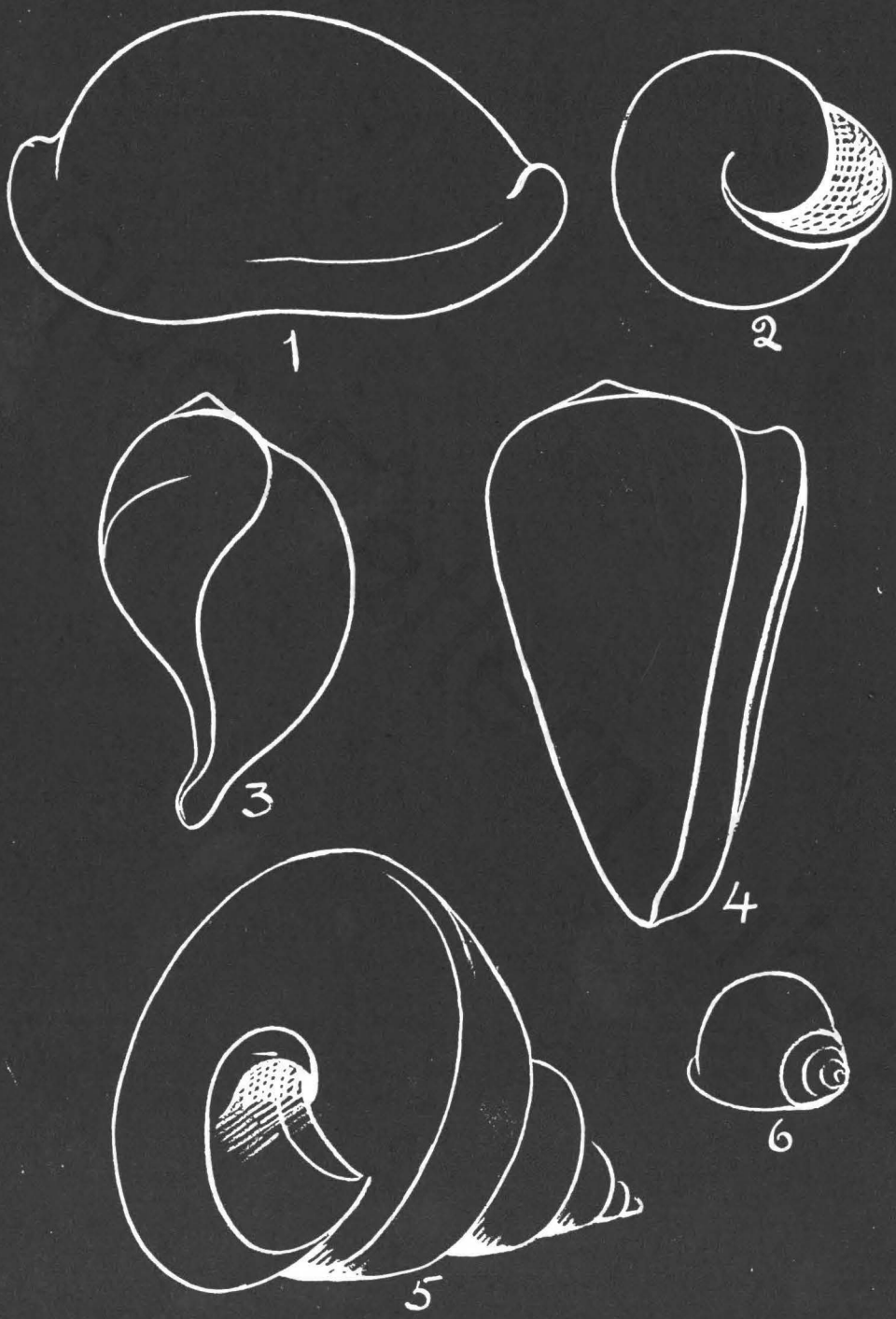
Having completed our examples of common objects, it may be well now to say a few words as to the selection and arrangement of fresh groups by the student himself. He is advised, then, to select large objects of definite form; that is, objects whose general shape conforms more or less to that of a prism, a cylinder, or a cone. In a group, the objects composing it should bear some natural relation one to the other, as shown in Plates XXI., XXII. and XXIII.; otherwise, the notion of the incongruity of their association will overpower whatever sense of picturesqueness the objects themselves may suggest.

The composition of the group should be such as not to betray the fact of its having been purposely arranged. In Plate XXIII., for example, if the pail, the dustpan and the brush had been placed side by side at regular intervals apart, the effect would have been stiff and formal, and the regularity of the arrangement would have destroyed the pictorial effect of the group.

The objects should not be placed all on the same level, nor yet all in one plane. Thus, in Plate XXIII., the brush is raised above the general level, while the dustpan projects forward from the plane of the other objects.

Objects in oblique positions should be combined with others in vertical or horizontal positions, so as to give variety; rectilinear objects should be combined with curved objects for the same purpose.

Shell Forms.



LESSON XXIV.

SHELL FORMS.

Shells are among the simplest, the most beautiful, and at the same time the most easily obtained of natural objects. The student should make himself familiar with the construction of the commoner types, for he will find that they illustrate almost every variety of form he requires to practise.

The illustrations on this and the next two plates give one view only of each type portrayed; but the student will do well to draw from actual examples, and to practise each one from a number of different points of view. His chief difficulty will be to decide which lines to draw and which to omit. Let him examine the shell carefully, and strive to *know* its form and the principles of its construction, and let him keep in mind these principles in making his drawing; by this means he will be led to recognise the essential lines as distinguished from those which are superfluous. The general form of the shell rather than details of marking should engage his first attention; and he should be quick to recognise familiar elementary lines and forms, as was explained in Lesson XV.



Diagram 1.

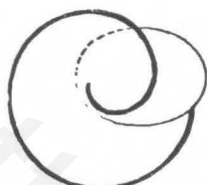


Diagram 2.

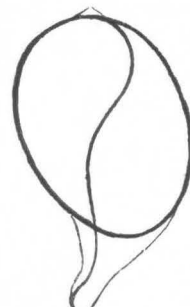


Diagram 3.

Thus in Fig. 1 he may recognise a modified oval; in Fig. 2 a spiral; Fig. 3 is a combination of the oval and spiral; Fig. 4 a combination of the spiral and the cone; Fig. 5 and Fig. 6 each combine the spiral and the cone.

Diagram 1 shows how to draw Fig. 1; begin with the oval and then make the lip-like variations. In Fig. 2 begin by drawing the spiral (Diagram 2). Begin Fig. 3 as shown in Diagram 3. The form of Fig. 4 may be best realised by curling up a piece of paper into a scroll; the relation between the paper and shell being similar to that which exists between a cylinder and a cone (see Diagram 4). Begin Fig. 5 by drawing a cone in the same position and of the same proportions as the shell, and then trace the spiral round the surface of the cone (Diagram 5).



Diagram 4.

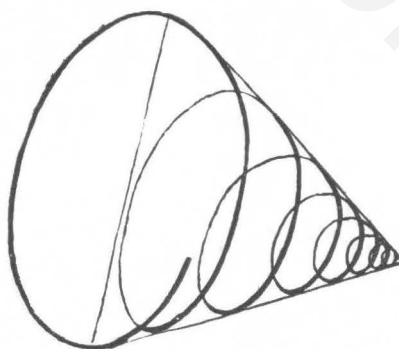
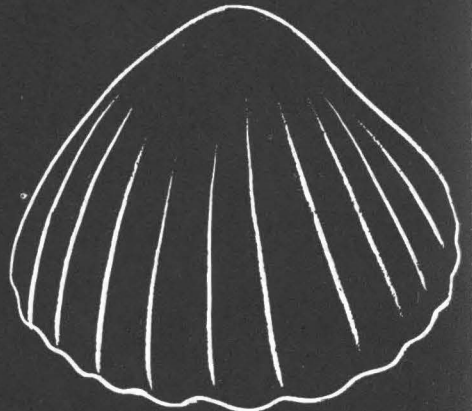


Diagram 5.

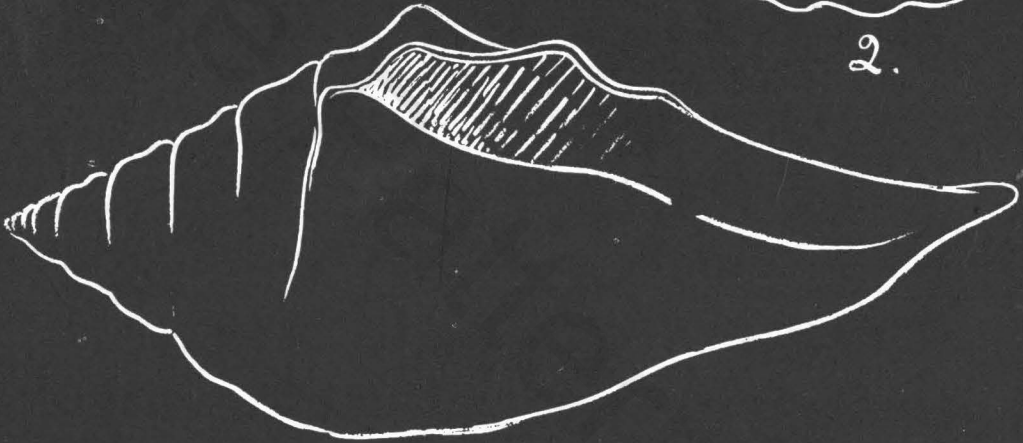
Shell Forms.



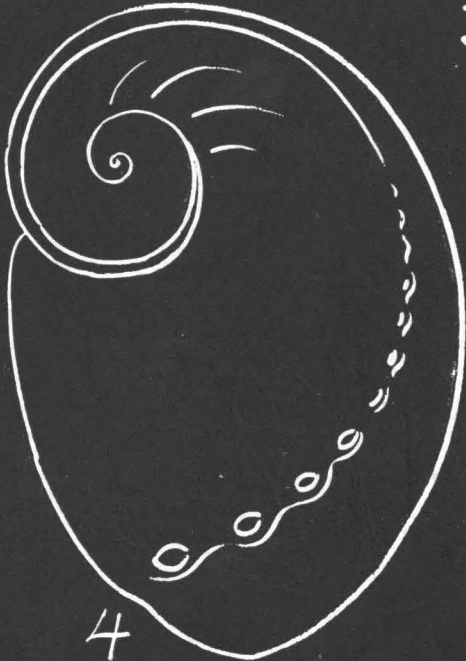
1.



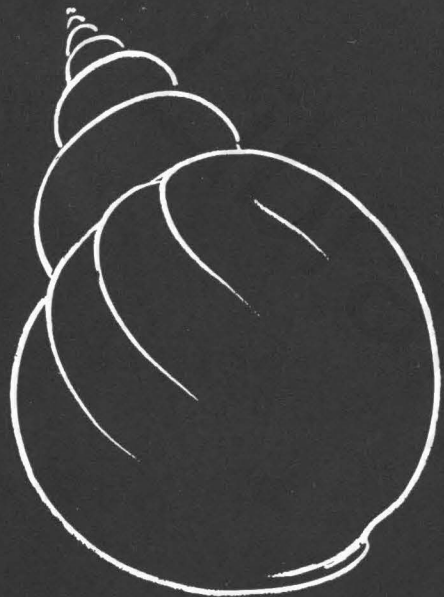
2.



3.



4.



5.

LESSON XXV.

SHELL FORMS.—*Continued.*

The figures on Plate XXV. are of a somewhat more irregular type than those on the preceding plate, but the method of drawing them is the same.



Diagram 1.

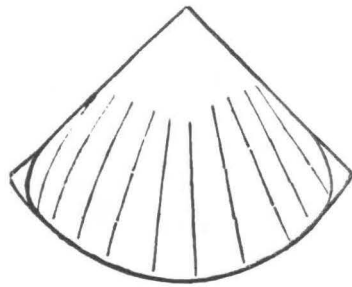


Diagram 2.

The simple basic forms are still present as foundations, although irregularities of detail tend to obscure them. The ellipse may be seen in Fig. 1; Fig. 2 is almost a quadrant or quarter circle, with a number of the radii drawn; the cone appears in Fig. 3; the spiral in Fig. 4; while Fig. 5 combines the cone, the spiral and the sphere. It is interesting to note that the portion of the shell most intimately connected with the life of its occupant displays the greatest degree of regularity and the greatest perfection of form; however rough and irregular the outer surface may be, the internal arrangements will be found to conform to the pattern proper to the species. This being so, it follows that the best guide to the drawing of objects such as these is the realisation of the internal structure, and of the principle on which it is arranged. Keeping this notion before him, the student is likely to achieve a fair amount of success; forgetting it, his work becomes at once less intelligent and less accurate. Diagrams 1 to 5 show how to commence the respective figures to which they refer.

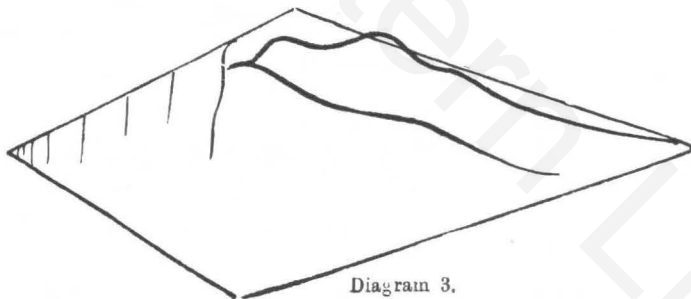


Diagram 3.

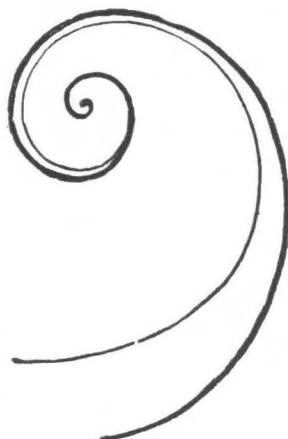
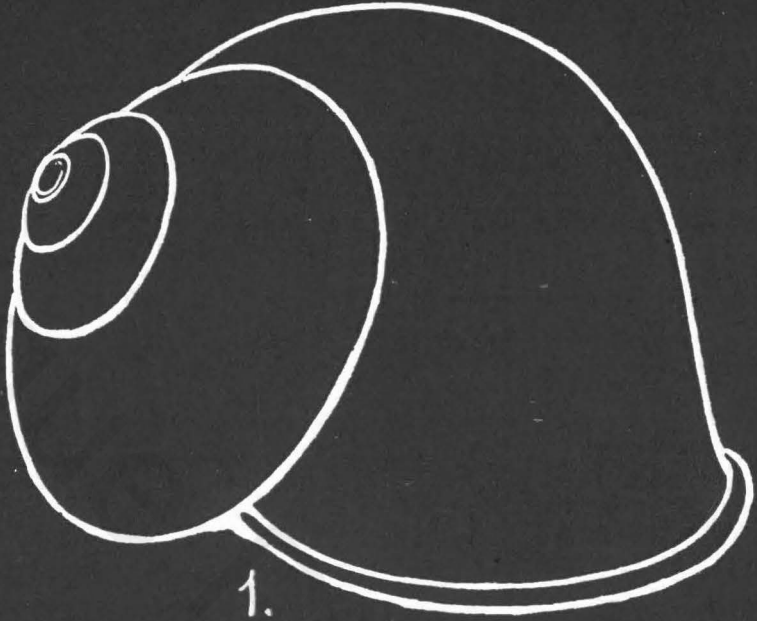


Diagram 4.



Diagram 5.

Shell forms:



LESSON XXVI.

SHELL FORMS.—*Continued.*

The greater perfection of the internal as compared with the external form of shells arises from the method by which the shell is constructed. The molluscs, or shell fish, have soft bodies without bones; they are, however, provided with a means of supplying themselves with a substitute. From their skin a glutinous moisture is secreted; and it is the hardening of this moisture which forms the shell. It will be readily seen that the inner surface of a shell thus formed will partake of the form of its occupant, while the outer surface, being exposed to the influence of accidental surroundings, is likely to be modified thereby during the hardening process. It is very useful to divide a shell by a section through its axis, and thus to obtain a view of the internal structure and the varying thicknesses of the shell wall. Shells are commonly grouped into three classes—univalves, bivalves and multivalves. Univalves consist of a single chamber, generally spiral in form, and the occupant is provided with a thick horny cover for the purpose of closing the entrance when he retires. Bivalves consist of two parts which are hinged together, and are capable of being opened or closed at will by the occupant. Multivalve shells are such as consist of a number of shelly parts hinged together.

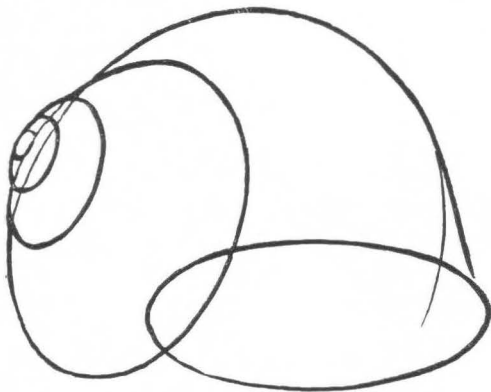


Diagram 1.

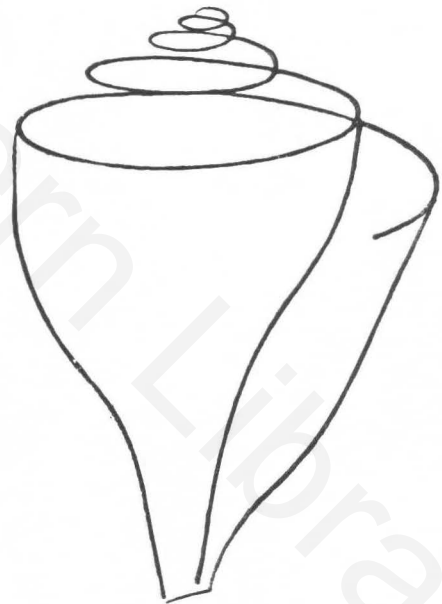
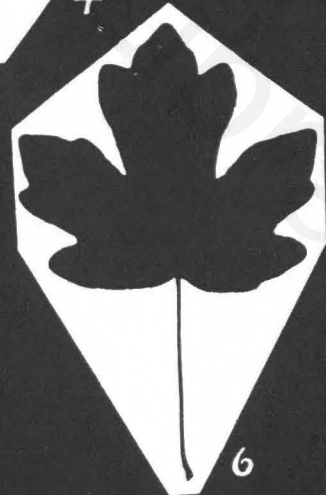
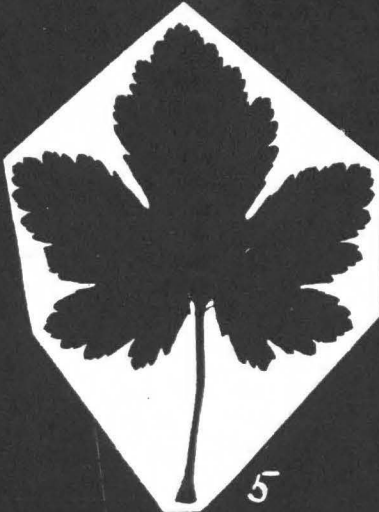
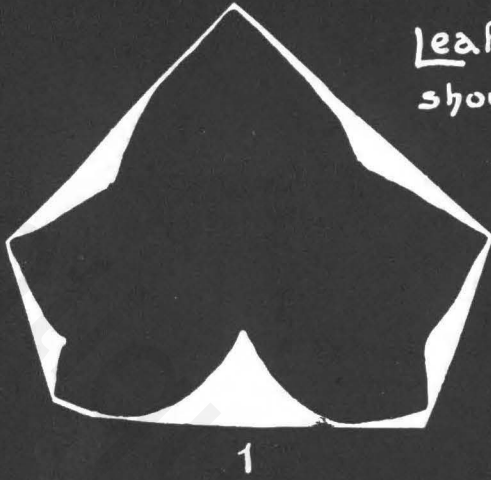


Diagram 2.

Figs. 1 and 2 on Plate XXVI. are both univalves, and, although they are so dissimilar in general outward appearance, they have been constructed on the same principle. This may be seen by referring to Diagrams 1 and 2, which illustrate the general principles of their construction. Whereas, however, the outer form of Fig. 1 follows the structural lines pretty closely, that of Fig. 2 shows considerable divergences. In each case the student must begin his drawing as shown in the diagram.

Leaf Forms
shown by Mass.



LESSON XXVII.

LEAF FORMS.

If a leaf of simple form (such as the ivy leaf shown in Fig. 1) be held at arm's length by the student, and moved into various positions, he will observe that it offers to his view an infinite number of changing forms. But apart from this variety of shapes, each in itself beautiful, there is a certain characteristic beauty of form to be observed in the leaf itself regarded directly, and without these modifications due to varying points of view. Such a form may be obtained by laying the leaf flat on a piece of paper and tracing round it with a pencil. The form thus obtained might well be called the *self-form* of the leaf; for it is the form sought after and realised by the plant in its growth and development.

In commencing the study of leaves, the student will do well to devote his attention first to their *self-forms*, and to practise them until he becomes familiar with the general principles of leaf form, and the characteristic differences between some of the common varieties. The figures given on Plates XXVII.-XXIX. are intended as suggestions rather than as an exhaustive series: the student will derive the greatest advantage from the use, not merely of these, but of examples which he himself has collected.

In drawing the form of a leaf or any similar figure, the eye has a natural tendency to follow the outline of the subject, and so to be drawn away from the consideration of its general proportions. The exercises in this and the next lesson are intended to counteract this tendency by specially directing attention to the mass rather than the outline of the figures. Referring to Plate XXVII. it will be observed that each leaf there represented lies within a figure simpler than itself. In drawing one of these examples the first step is to represent the proportions of this simpler figure correctly. Next, the attention should be concentrated upon the white spaces which differentiate the simple figure from the actual leaf, and these should be laid on by means of a brush and tempera (see Lesson XXVIII.), although the chalk may serve very well for small examples.

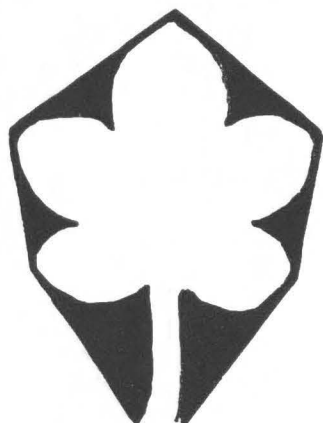


Diagram 4.

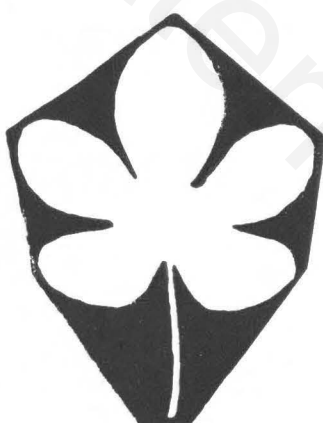


Diagram 4a.

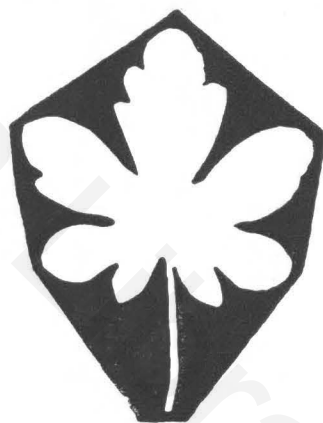
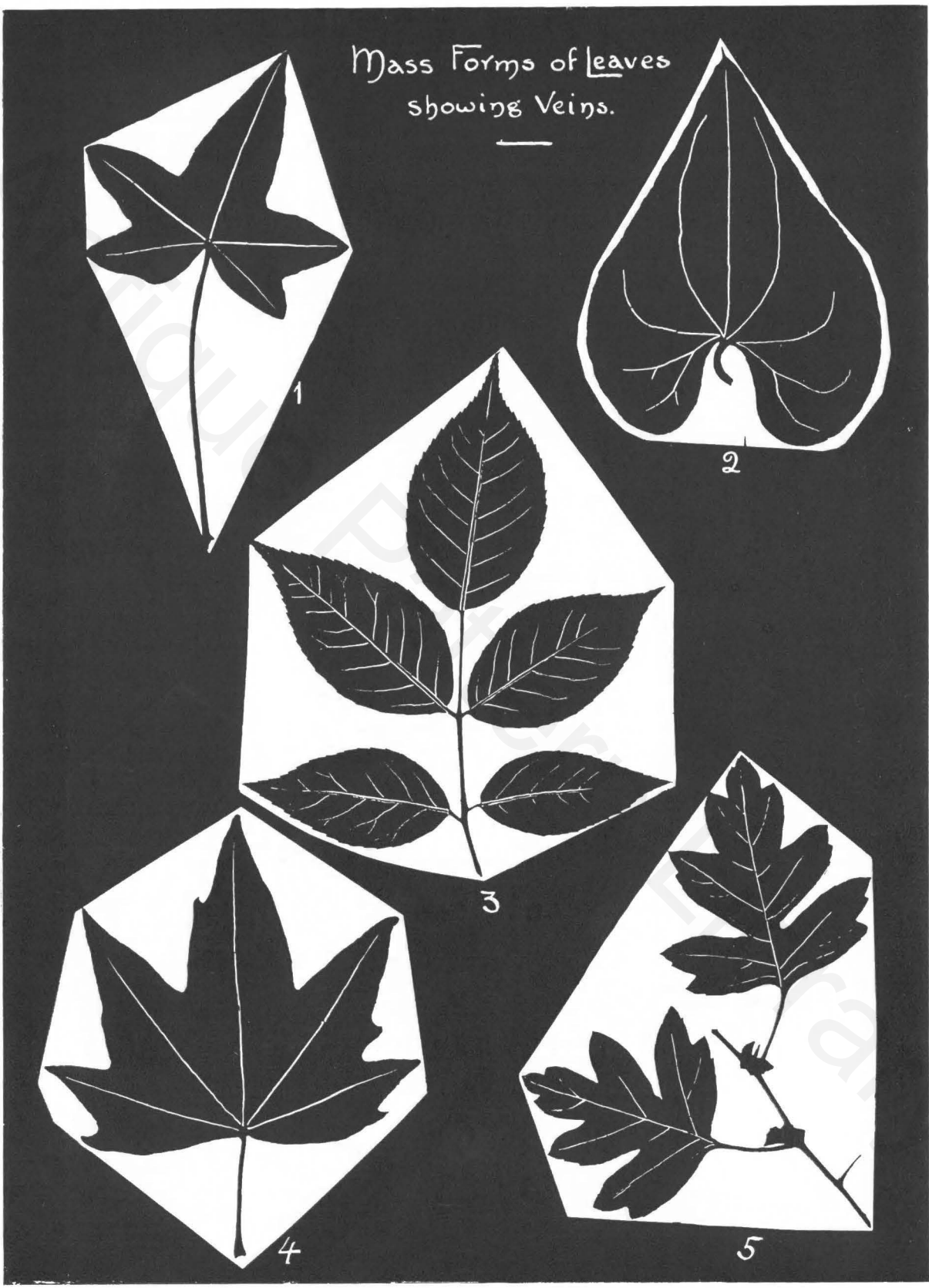


Diagram 4b.

Remember that the object of the exercise is to cultivate the sense of proportion and the power of spacing out drawings correctly; and to eschew entirely, therefore, the use of lines. The white spaces surrounding the leaves should not be laid on in single strokes of the brush, but the student should feel his way from the first simple form to the more elaborate details. Diagrams 4, 4a, and 4b will illustrate the steps in the process.

It will be noticed that in these examples the form of the leaf itself is expressed negatively, the actual drawing being an expression of the difference between the simple surrounding form and the leaf. The alternative method is treated on Plates XL. and XLII. Figures drawn in mass on the blackboard are very suitable as freehand copies for children, who should be called upon to copy the figure in outline.

Mass Forms of Leaves
showing Veins.



LESSON XXVIII.

LEAF FORMS.—*Continued.*

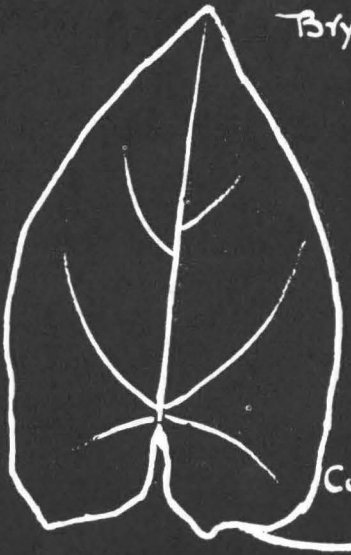
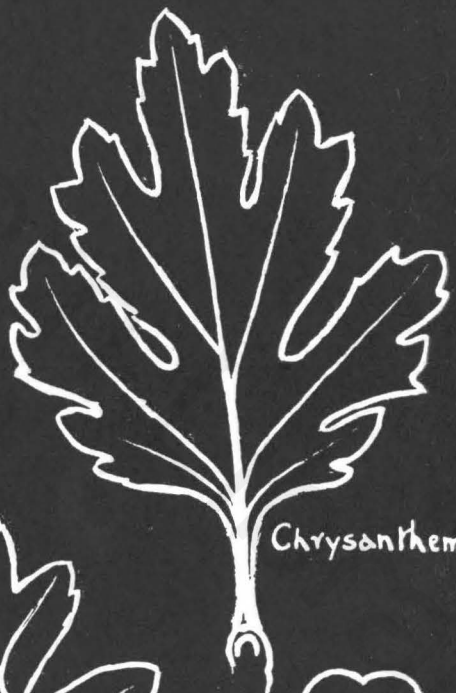
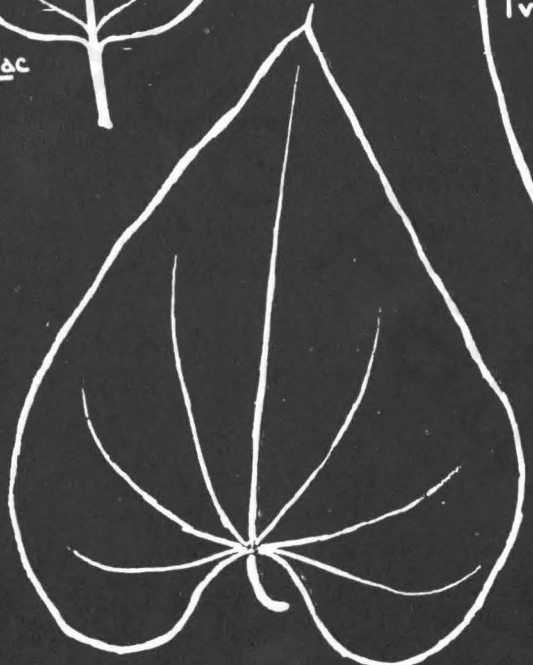
The Syllabus of the Board of Education suggests that the “brush with tempera” may be used as an alternative medium in blackboard drawing; it may be well, therefore, to point out the advantages peculiar to each method of work. The chalk is superior for line-work, and it has the additional advantage of convenience, for it is always ready to hand, and requires no preliminary preparation before it can be used. The brush with tempera, however, lends itself more readily to the covering of surfaces, and is therefore the superior medium where broad masses of black and white are required. On Plate XXVIII. examples are given of the use of tempera and chalk in conjunction. The tempera may be prepared by mixing powdered chalk with water to the consistency of a thick paste. If kept in a small bowl or basin, the addition of a little fresh water from time to time will supply the loss of moisture due to evaporation. Care should be taken, however, not to use the tempera in too liquid a state, or it will run down the board and obliterate or disfigure the work.

The blackboards in use in many schools are allowed to develop a greasy surface, and this will be an obstacle to the laying-on of tempera: this difficulty may, however, be overcome by mixing with the tempera a small quantity of liquid ox-gall. The brush to be used should be a soft hog-hair, or a camel-hair; if the latter, the bristles will require to be cut somewhat shorter than is usual, in order to give the required amount of resistance. The size of the brush should be not less than No. 12 hog-hair; and if larger, so much the better. It should be borne in mind that the primary object of the use of the brush is to cover a surface: a small brush would give no perceptible advantage over the chalk. In mass drawing, either of the two methods, the positive or the negative, may be employed. Plates XXVII. and XXVIII. are examples of the negative method, the figures portrayed being indicated by the space which is left uncovered by the tempera. This method has two advantages: it enforces a preliminary recognition of the *general* form of the figure as distinguished from its details; it also allows of these details being afterwards elaborated positively with the chalk, as has been done in the case of the veins of the leaves on Plate XXVIII. In practice the negative method should precede the positive, for it consists of the analysis of the general mass of the figure, and the breaking up of it into its component parts.

The positive method which is illustrated on Plates XL. and XLI., assumes that the student has formed a mental picture of the general mass, has also performed the process of analysis, and is capable of building up the general figure by a gradual accretion of the details. We shall refer more fully to this phase of mass drawing when we reach Lesson XL.

It will be noticed that the masses used to express the general shape of the figures on Plates XXVII. and XXVIII. are rectilinear in form, whereas the construction lines employed in previous exercises have generally been curved. This difference emphasises the peculiar value proper to each of the two methods of work. In the one case it is desired to direct attention to *form*, and the essential lines and curves are employed; in the other case the *proportions* are the feature under consideration, and the space or area is expressed by the most emphatic means possible. It must be remembered that each method is complementary of the other; form and proportion being both essential to a successful drawing.

leaf Forms in
Outline



LESSON XXIX.

LEAF FORMS.—*Continued.*

On Plate XXIX. we return to the consideration of leaf forms expressed in outline. The student who has worked carefully at the two previous lessons will have little difficulty in drawing any of these examples with a fair degree of accuracy. In each figure let him look first to the general proportions, and, if necessary, let him faintly indicate them on the blackboard; by this means he will ensure accuracy in one department of his work. Next let him endeavour to realise the essential lines—those lines which express the growth and development of the leaf—and let him work out his drawing on the basis of these lines. To the casual and perfunctory student the contours of leaves, such, for example, as those of the oak or the chrysanthemum, are no more expressive than the outline of a map: drawn in this spirit, the exercise is valueless. Under the apparent irregularity of outline the student should strive to observe evidences of life and growth, orderliness and purpose; for, until he does appreciate the existence of these qualities, he will never be able adequately to express the appearance of natural forms. Just as the shell forms were found to possess certain basic lines expressive of their internal structure, and suggestive of the hidden life they were designed to protect, so these leaf forms conform to, and are developed from, certain characteristic ribs and veins through which the life of the tissues is transmitted. These ribs and veins are the key to the arrangement of

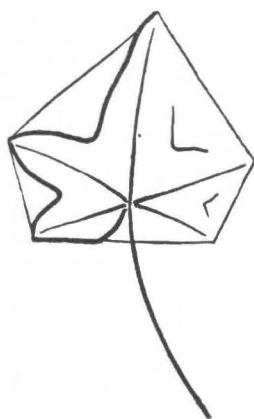


Diagram 1.



Diagram 2.

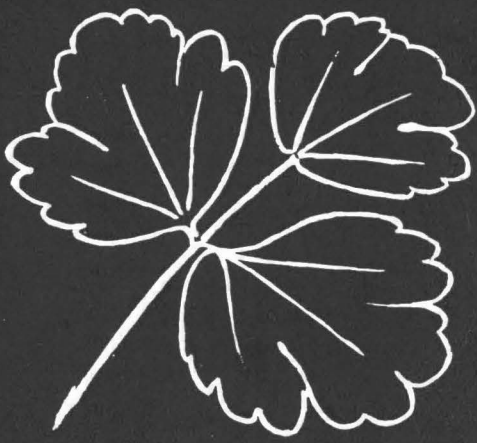


Diagram 3.

the different sections of the leaf. In order to understand the relation which the veins bear to the form of the leaf, compare the ivy, the oak, and the hawthorn. The veins of the ivy radiate all from one point; the veins of the oak spring alternately from opposite sides of the mid-rib; while those of the hawthorn are symmetrically arranged on opposite sides of the mid-rib. Now note how the general contour of the leaves is affected by these varying arrangements. The ivy leaf assumes the form of a pentagonal star, the greatest development being along the vein which most nearly coincides with the direction of the stem; the oak leaf develops a general balance about its mid-rib; while the leaf of the hawthorn is even more perfectly symmetrical than that of the oak. These peculiarities should be brought out in the drawing. Note carefully that each vein serves a different section of the leaf, and that if produced, it would pass through the tip of that section. The diagrams will show the student how to proceed. Begin by drawing the general form; next the mid-rib and veins; lastly the details of the contour of the leaf. In the diagrams the right half of the leaf is in each case left incomplete in order to indicate the steps by which the contour should be drawn. In practising these and similar examples of leaves with a view to committing them to memory, the student is advised to memorise the principles rather than the individual examples; for although by this method he may seem to make slower progress, he will eventually realise that he has acquired, not a mere trick of manipulation, but an intelligent insight into his subject, which will enable him to meet future difficulties with confidence.



1

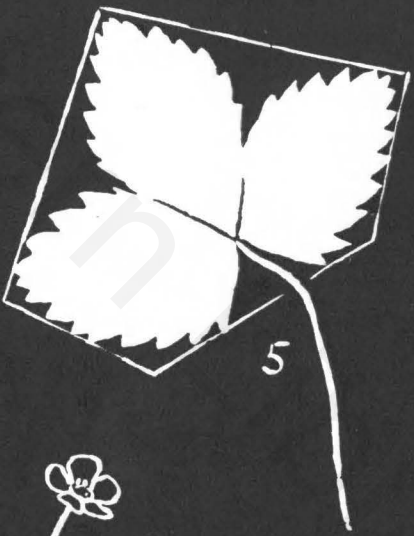


2



3

4



5

1. Columbine.
2. Leaf of Columbine
3. Wild Strawberry
4. Fruit of same
5. General form
of leaf.

LESSON XXX.

FLOWERS AND LEAVES.

On Plate XXX. we commence the study of flowers and leaves as seen in nature, *i.e.*, with all the accidental modifications arising from perspective. It would be quite futile for the student to attempt to represent the foreshortened appearance of a leaf or flower unless he has first made himself fairly familiar with the principles of its growth. Let him begin then, in all cases, by studying the plant he desires to copy, with a view to mastering its peculiarities and the principles of its growth; and, in making his sketch, let him observe the principles; even although doing so may involve slight inaccuracy in form.

Turning to the leaves shown in Figs. 2 and 5, we find that each consists of three separate leaflets arranged upon one stem. In this respect they are similar. Now let us note the points of dissimilarity; for it is by recognising these that the characteristics of the two types may be expressed.

Note, then, that the mid-ribs of the leaflets of the strawberry radiate all from one point, while in the case of the columbine there is a considerable length of stalk separating the upper from the two lower leaflets. In the veining, while the veins of each leaflet of the columbine radiate from the base of the leaf, those of the strawberry are arranged on opposite sides of the mid-rib. (See Fig. 3.)

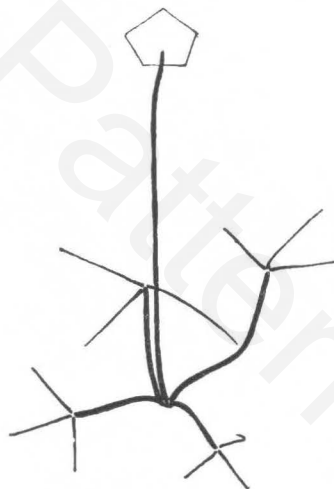
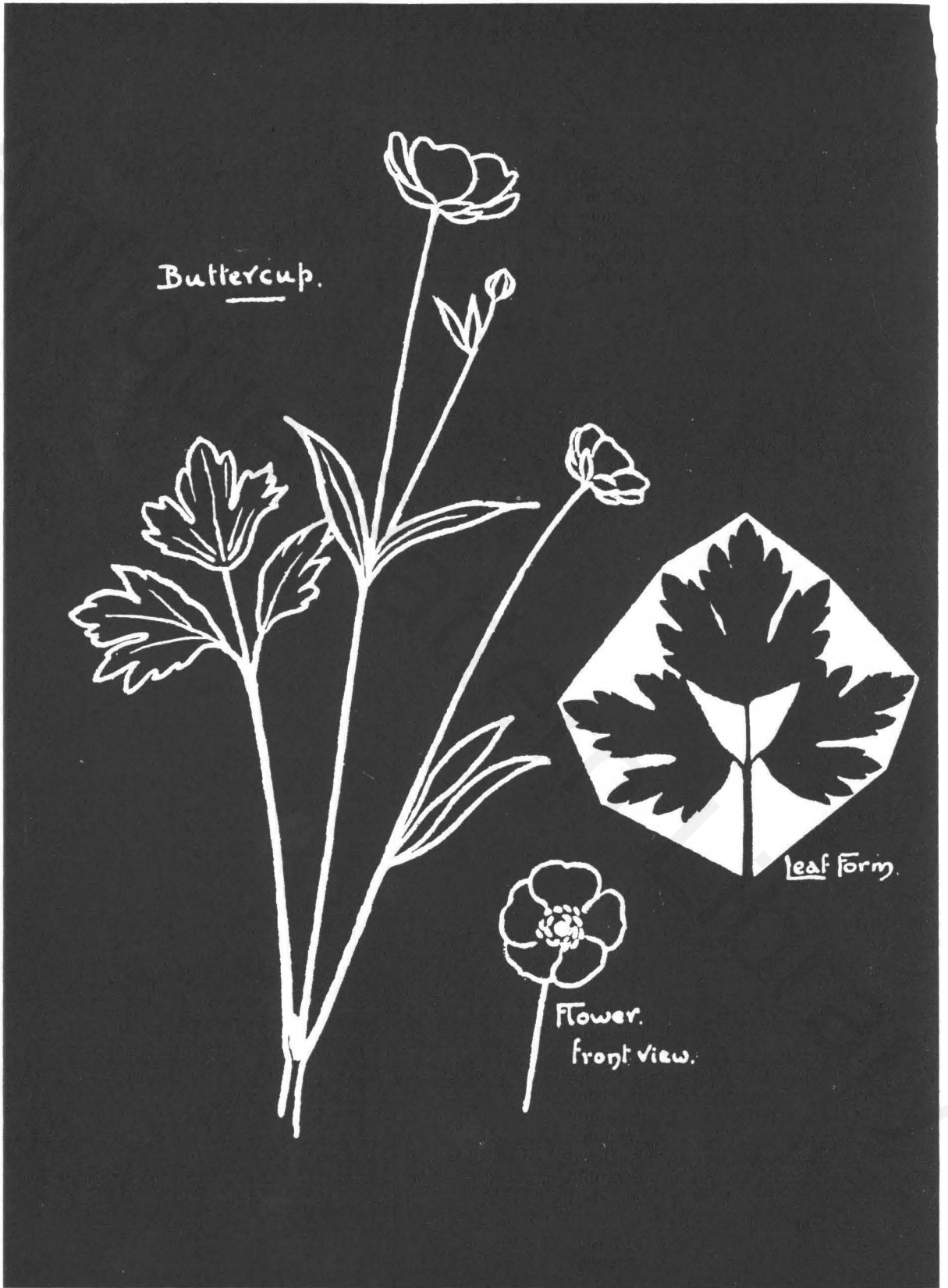


Diagram 3.

Note also the serrations of the edges of the leaves; those of the columbine are rounded and blunt, those of the strawberry pointed. Observe, moreover, how in the case of the columbine there is a tendency in each leaflet towards a subdivision into three parts. Keeping these few important differences in mind let the student practise drawing these two examples. He will note that one figure is given in outline and the other in mass. When he has practised them in this way he may attempt Fig. 2 in tempera and Fig. 5 in outline. Next let him attempt the four groups of leaves growing on the plant in Fig. 3, drawing each group as a separate exercise. He should first draw the bottom group on the left, next the bottom on the right, next the top group on the right, and lastly the top group on the left. By this means he will encounter a gradually increasing degree of difficulty in the pose of each new group. Next let him practise the flower, and finally he may attempt the entire group. When drawing a group such as Fig. 3 he must bear in mind the essential difference that exists between this and such an exercise as that shown on Plate XXIII. In the present case the different sections of the group are part of a united whole; they must therefore be drawn, not as isolated sprays of leaves, but as parts of a single subject and each related to the others.

Diagram 3 will show how to ensure that this important feature of connected growth is correctly expressed. We have left Fig. 1 to the last, as it offers the greatest difficulty. Each bloom should be drawn separately before the complete figure is attempted. In drawing the entire figure begin in the same way as was indicated for Fig. 3.



LESSON XXXI.

FLOWERS AND LEAVES.—*Continued.*

The specimens chosen for reproduction in these pages have been purposely selected from among the commoner varieties of plants and natural objects; and this has been done partly with the view of encouraging the student to collect similar examples for himself, and to practise from these actual objects. In no part of the course can this plan be more easily or more advantageously followed, than in the lessons which deal with leaves and flowers. The benefit to be derived from copying the examples here given is only partial; for the process of transcribing from the natural object to the flat surface has been already performed, and the student consequently finds his work half done for him.

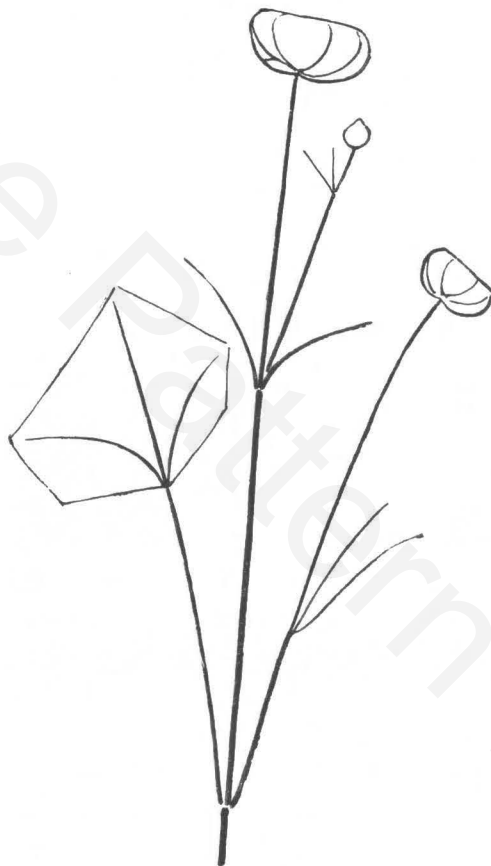


Diagram 1.

If he will take an actual spray, such as the buttercup on the opposite page, and attempt to make a drawing from it, he will appreciate the significance of this fact. He will find himself hesitating as to what shall be represented and what omitted; he will be puzzled by the changing views which result from every trifling movement of his head; he will be bewildered by the multitude of details clamouring for recognition; and finally when his drawing is complete, he will be depressed by a sense of its inaccuracy. These are some of the difficulties and discouragements he must be prepared to encounter when he turns from the flat copy to the actual example; and yet, if he be in earnest, he will find compensations which more than balance them. He will experience the satisfaction of knowing that his work is original—a part of himself—that the copy from which he works is perfect and cannot mislead him; that his work involves mental effort, and not merely mechanical skill.

The flower and leaf should each be practised separately before beginning the more advanced study; and when the construction of each of these different details is familiar the spray should be sketched out as shown in Diagram 1, and thence carried to completion.

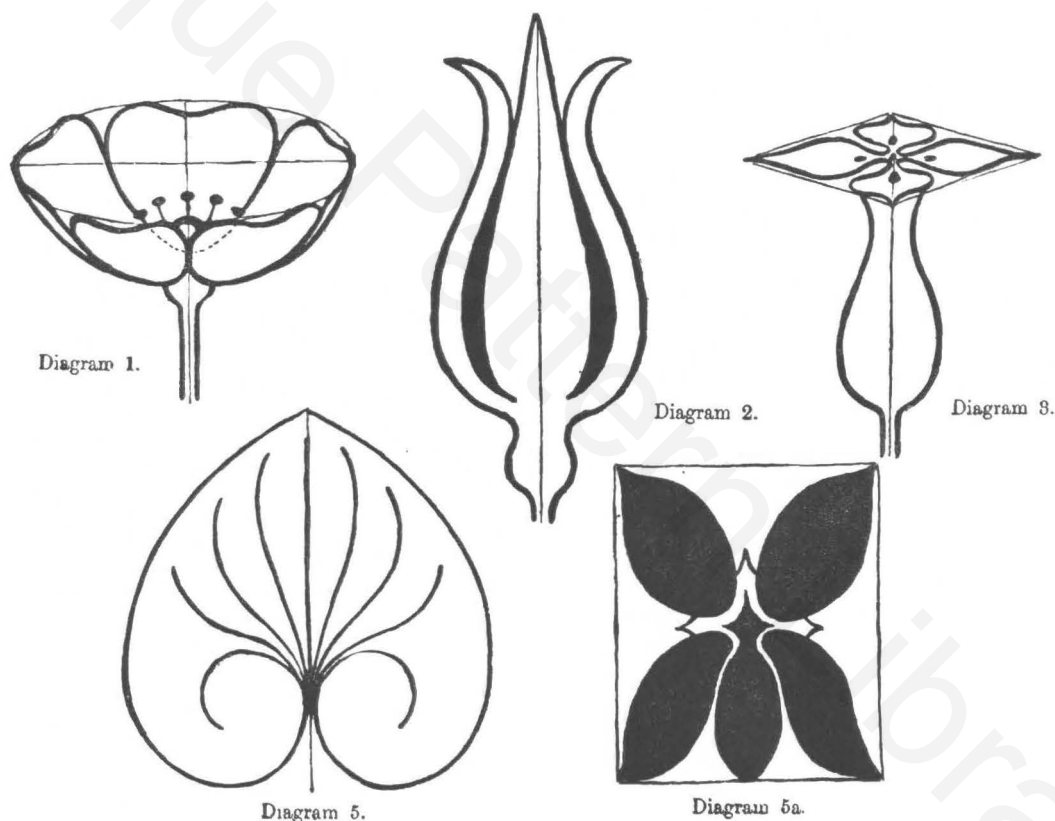


1 Wild Rose.
2 Bud.
3 Seed.
4 leaf.
5 Violet
6 leaf of Violet.

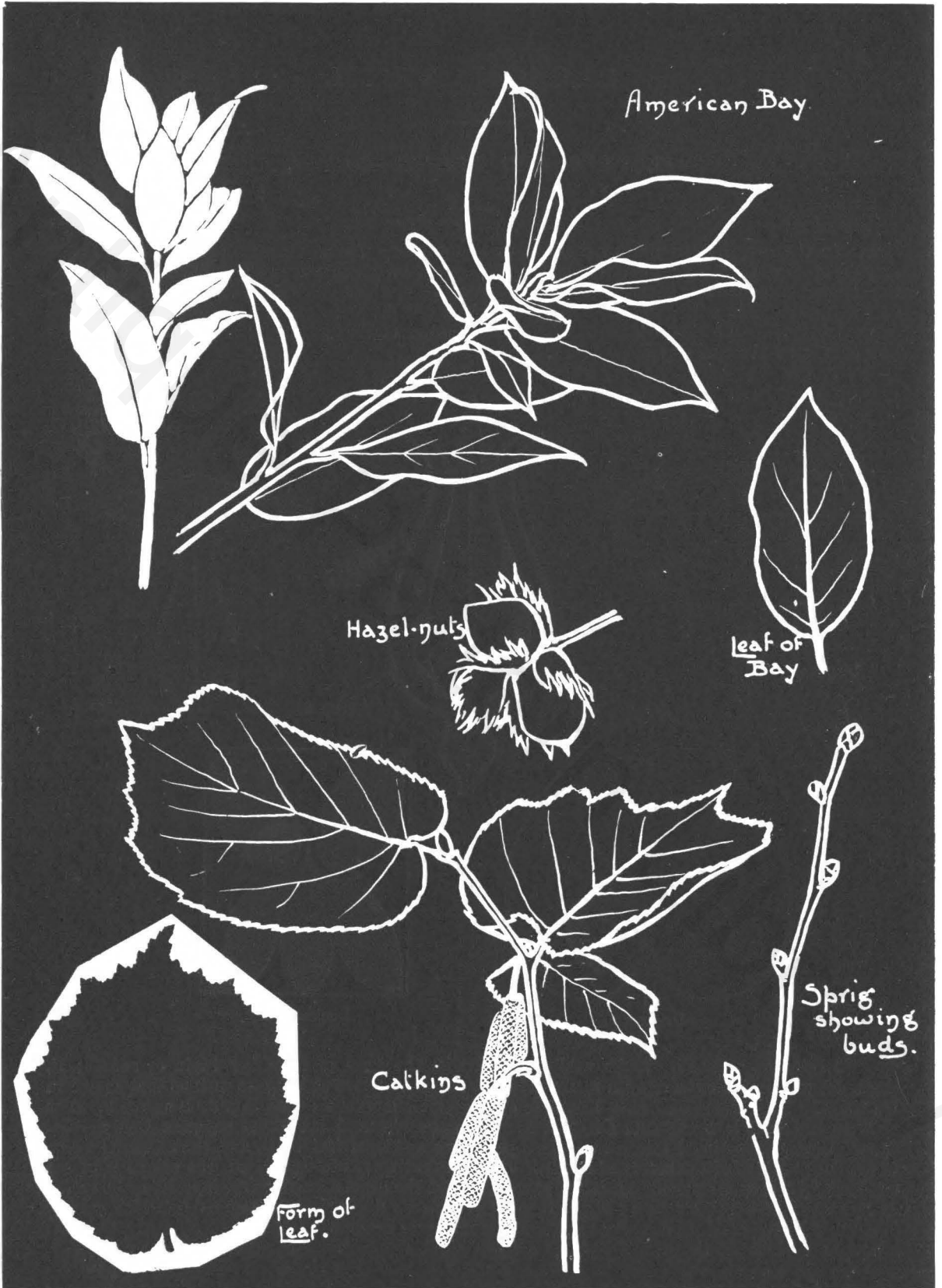
LESSON XXXII.

FLOWERS AND LEAVES.—*Continued.*

In the early lessons we called attention to the value of recognising simple forms whenever they occurred as the foundation or basis of the figure under consideration. This habit of seeking for the elemental lines in any form he may desire to draw should be constantly practised by the student; for by this means he will gradually develop the power of selection necessary to enable him to make original designs. With this idea in mind we analyse some of the figures on Plate XXXII., and show how conventional forms may be evolved from them.



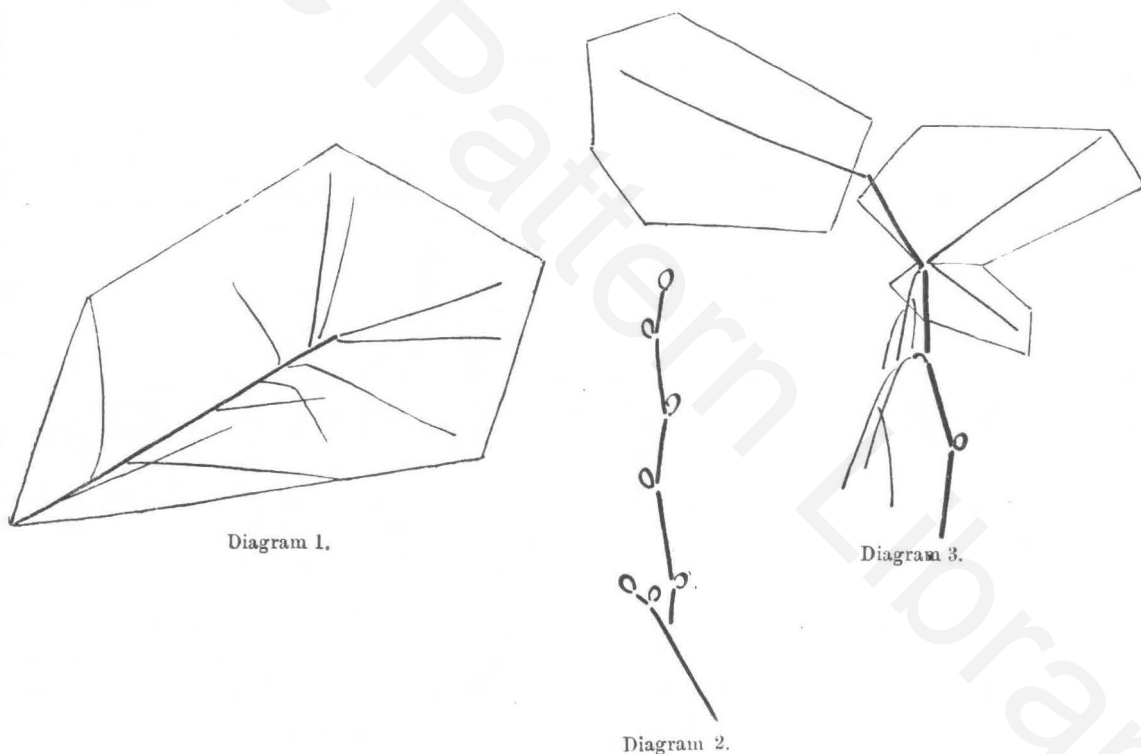
Beginning with Fig. 1, the wild rose embodies the form of a shallow basin or saucer; if, therefore, we eliminate the accidental irregularities, we may arrive at a figure such as that shown in Diagram 1. In the same manner Fig. 2 might suggest Diagram 2; and Fig. 3, Diagram 3. The inverted leaf in Fig. 5 suggests Diagram 5; while the bloom of the violet suggests Diagram 5a. Any of these conventional forms might be repeated on a geometrical basis, and the resulting figure would then partake of the nature of design. Observe that there are two steps: the selection of the forms, and their arrangement. It is not suggested that the conventional renderings here shown are by any means the best possible; they are intended merely to indicate the spirit in which natural forms may be treated with a view to extracting their most ornamental features and characteristics. Examples such as are shown in Diagrams 1-5 are suitable as freehand examples for class use.



LESSON XXXIII.

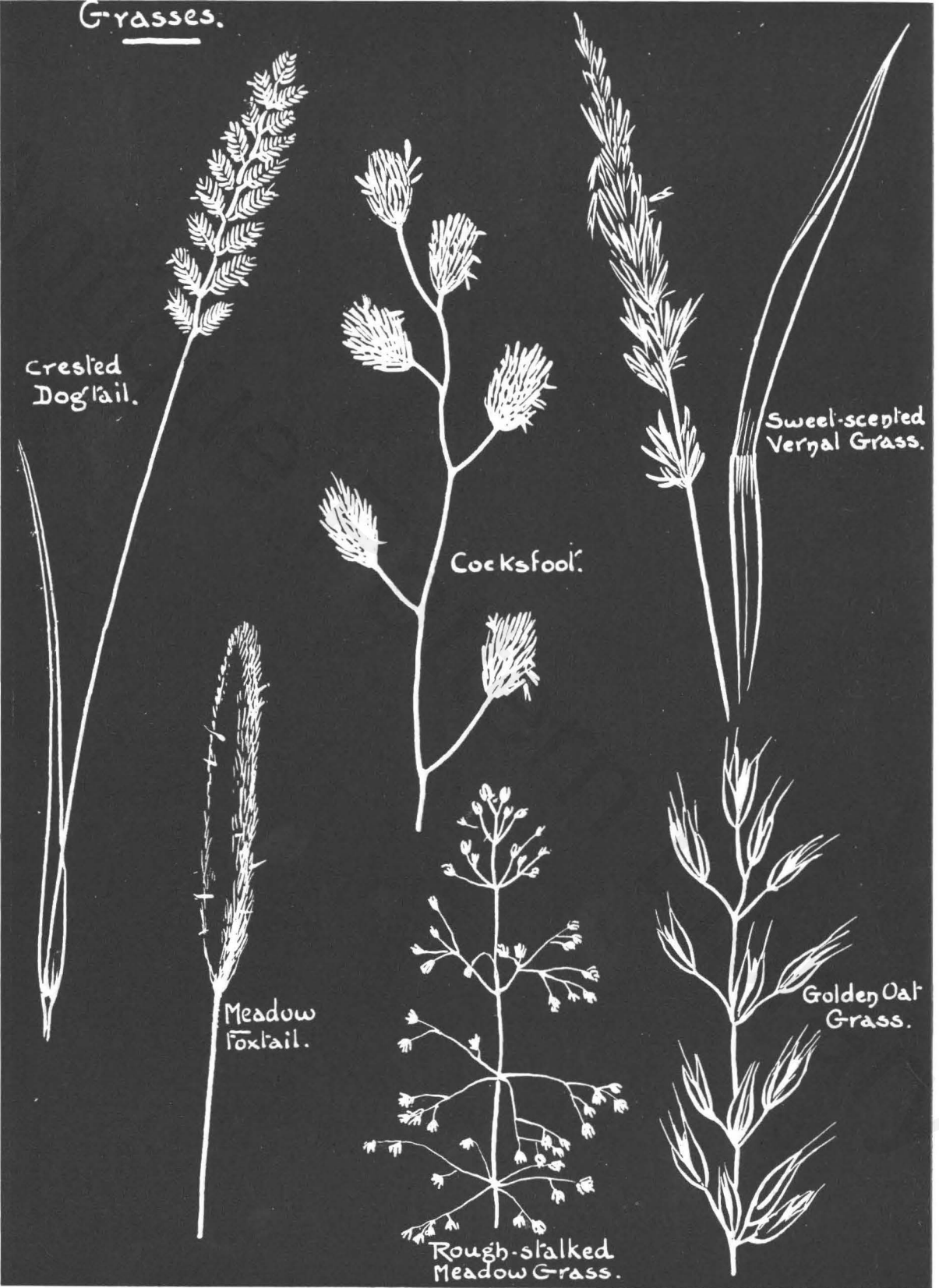
LEAVES AND BRANCHES.

Two sprigs of American bay are shown in Plate XXXIII. : the one in mass, the other in outline. In either of these cases great difficulty will be experienced in making a faithful copy unless the correct method be adopted. The essential lines in each of these examples are the stalk and the mid-ribs of the leaves ; after laying out the general proportions, these should be indicated as shown in Diagram 1. The relative positions of the stem and the mid-ribs of the leaves give to the plant its characteristic appearance, for the leaves themselves are by no means uncommon in shape. The lower portion of Plate XXXIII. is occupied by details gathered from the hazel tree. First study the form of the leaf which is shown in the bottom left-hand corner, the serrated edges being obtained on the same principle as was suggested for Fig. 4 on Plate XXVII. Next study carefully the sprig shown in the bottom right hand corner, observing how the twig changes its direction at each bud (see Diagram 2). Also note how the spaces between successive buds gradually decrease in length as the tip of the sprig is approached.



Before drawing the larger spray practise each leaf separately, noting how the characteristic appearance of the serrated edges is preserved with a minimum of work. Diagram 3 shows how the complete figure should be commenced. The student who has carefully followed out the instructions so far laid down should now be in a position to attempt the illustration of lessons on plant life ; and we shall next proceed to give a few examples of the method in which lessons of this character may be treated. These lessons we shall regard merely from the point of view of illustration, and we shall make little attempt to supply teaching notes.

Grasses.



Crested Dogtail.

Cocksfoot.

Sweet-scepted Vernal Grass.

Meadow Foxtail.

Rough-stalked Meadow Grass.

Golden Oat Grass.

LESSON XXXIV.

COMMON GRASSES.

Plate XXXIV. gives typical illustrations for a nature lesson on some of the commoner grasses; such a lesson as would be suitable for children attending a country school. The principal object of a lesson of this kind should be to train the observation of the children, and to familiarise them with the names and characteristics of the various kinds of grass. Specimens might be selected by the children themselves on their way to school, and the classification of the examples collected might be made the first part of the lesson.

The bringing together of the different kinds in the blackboard illustration emphasises the differences between them, and the labelling of each specimen assists the child's memory in associating the right name with each particular variety.

The whole of the varieties illustrated on Plate XXXIV. might be found in different parts of a single field; yet the average child associates but a single general notion with the name "grass."

The long roots of the crested dogtail grass fit it to withstand the drought: hence it may be found fresh and green when some other grasses are withered.

The cocksfoot grass is a great favourite with the cattle; its peculiar form suggests its name. It grows best on heavy clay soils.

The sweet-scented vernal grass derives its name from the fragrant aroma with which it scents our fields in the early summer. On account of this quality it is especially valuable for haymaking purposes.

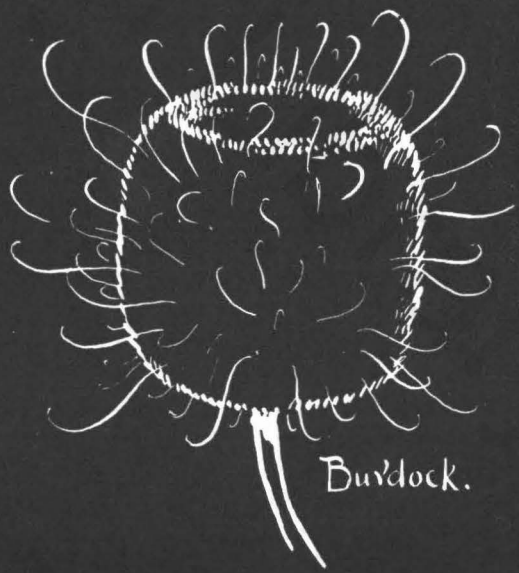
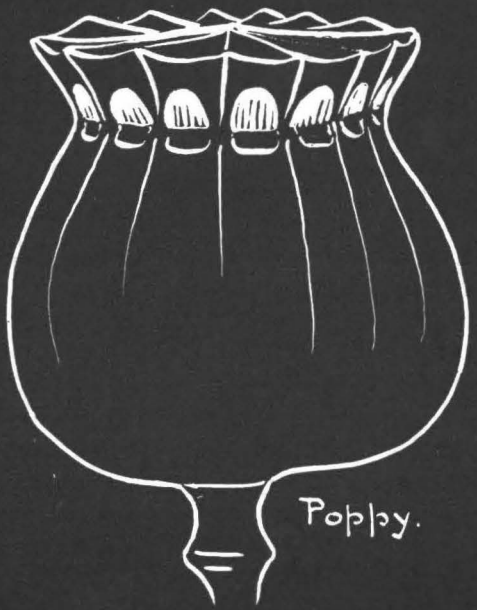
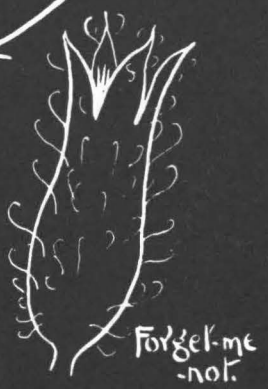
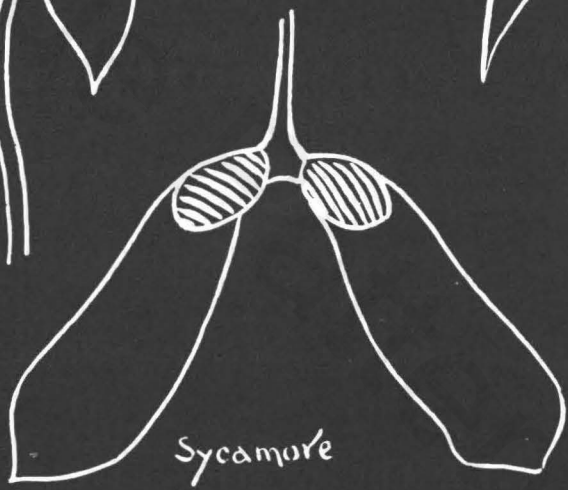
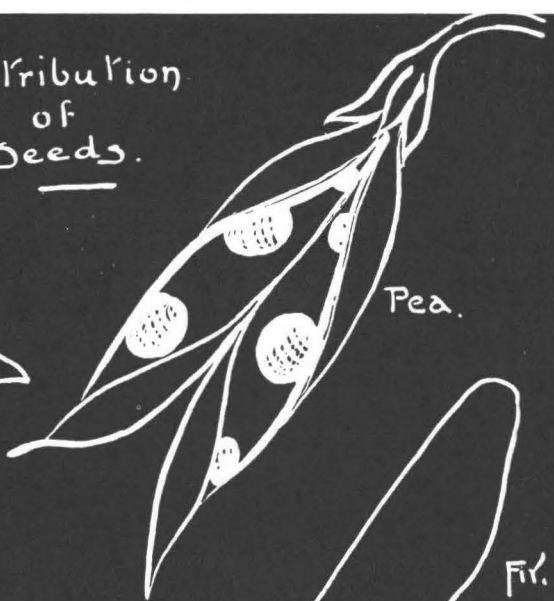
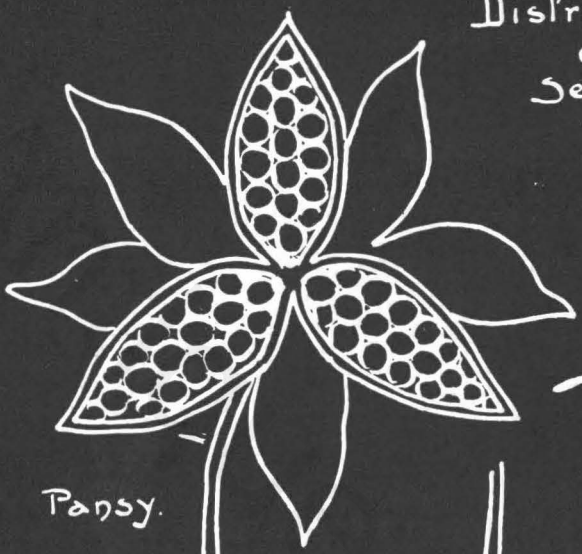
The meadow foxtail is another grass which possesses good haymaking qualities; it grows to a height of two feet, and flowers in April, May and June.

Rough-stalked meadow grass grows best in damp and shady places. Golden oat grass takes its name from the resemblance which it bears to ordinary oats.

These are a few of the varieties which might readily be obtained, but in dealing with a subject of this kind it will be found best to limit the number to be studied at first, and when the first batch are well known, to add to the list from time to time.

It will also be found useful to describe the different uses to which grass is put, the method of making hay, the qualities of good hay, the method of stacking hay, the necessity for absolute dryness before stacking in order to avoid fire, the method of ventilating the haystack, and various other interesting facts and processes in connection with haymaking. Different kinds of corn might form the subject of a similar lesson; whilst such subjects as leaves, ferns, wild flowers, and garden flowers would provide ample material for further subjects.

Distribution
of
Seeds.



LESSON XXXV.

SEEDS AND THEIR DISTRIBUTION.

An extremely interesting lesson may be given on the subject of the different methods by which the seeds of plants are distributed. Most children are familiar with the floating thistle-down and the dandelion seeds, but few perhaps enquire into the purpose served by their downy covering. Seeds of this type depend for their dispersion upon the wind, and are consequently supplied with the means of floating in the air to a considerable distance from the parent plant.

The seeds of the pansy are matured in a three-lobed pod which opens when ripe. Our illustration shows the pod open, but before the seeds are scattered. It will be observed that the seeds are packed very closely together, and when the pod dries and contracts the seeds are shot out to a distance of as much as ten feet. If a pansy pod be held before the fire so as to dry it artificially, the phenomenon may be observed at pleasure. The seeds of the pea are ejected by the curling of the pod as it dries, and these may be flung to a considerable distance.

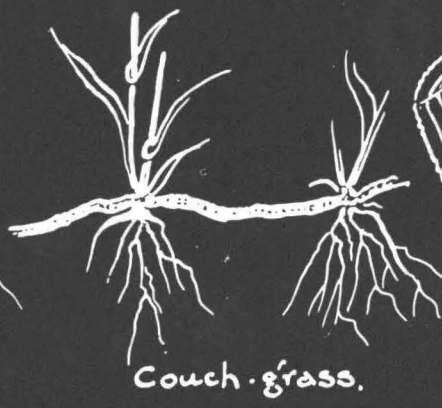
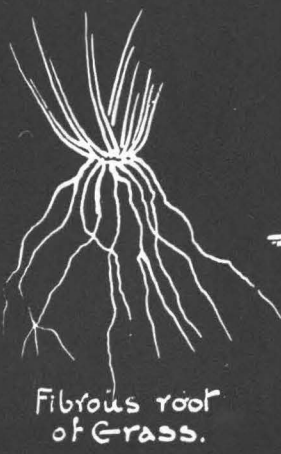
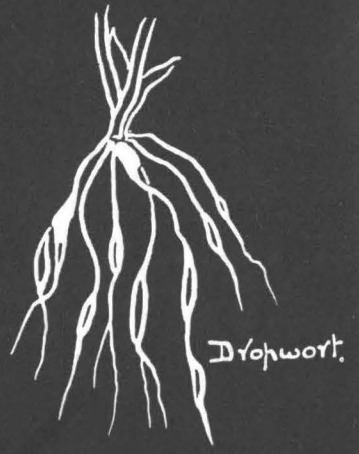
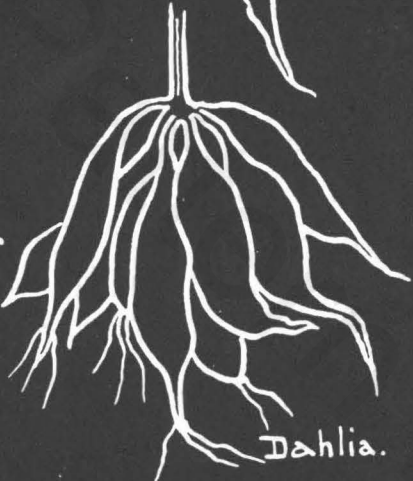
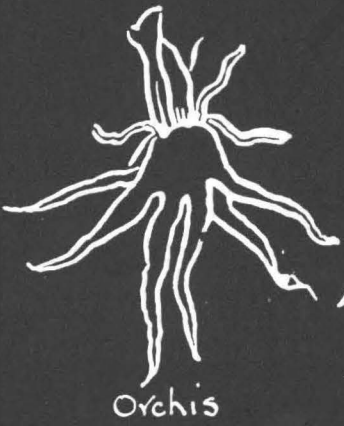
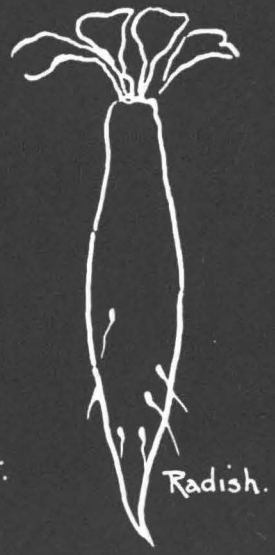
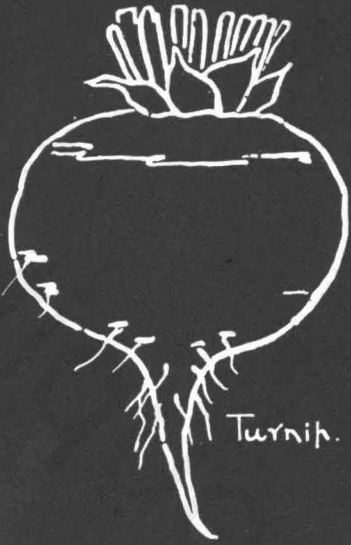
The wing-like expansions with which the seeds of the sycamore and the fir are provided ensure that they shall fall very slowly to the ground, and this enables them in their descent to be carried by the wind to a considerable distance from the parent tree.

In the poppy the openings in the capsule, or pod, through which the tiny seeds are distributed, lie round the top. From this cause the seeds are scattered only when a sufficiently strong wind is blowing to swing the plant rather freely from side to side; at each swing of the plant the seeds come out one by one.

The forget-me-not and the burdock are examples of hooked seeds; these depend for their dispersion upon passing animals. The hooks are so formed that they attach themselves readily to hairy or woolly surfaces, and when once attached they have a very considerable power of retaining their hold.

It may be asked what is the purpose of this distribution and the provision made for carrying it out. The explanation is that as each single seed requires for its perfect development and growth a space similar to that occupied by the parent plant, it is essential that the area over which the seeds are distributed should be very considerable. If all the seeds of the pansy were deposited immediately around the root of the parent plant, it is evident that few, if any of them, would stand any chance of arriving at maturity. Thus, the power of seed distribution is one of the provisions made by nature to ensure the survival of each species of plant.

Roots.



LESSON XXXVI.

FORMS OF ROOTS.

Allied to the two previous lessons, and in some degree complementary of them, a lesson might be given on the functions of roots, and their structural peculiarities.

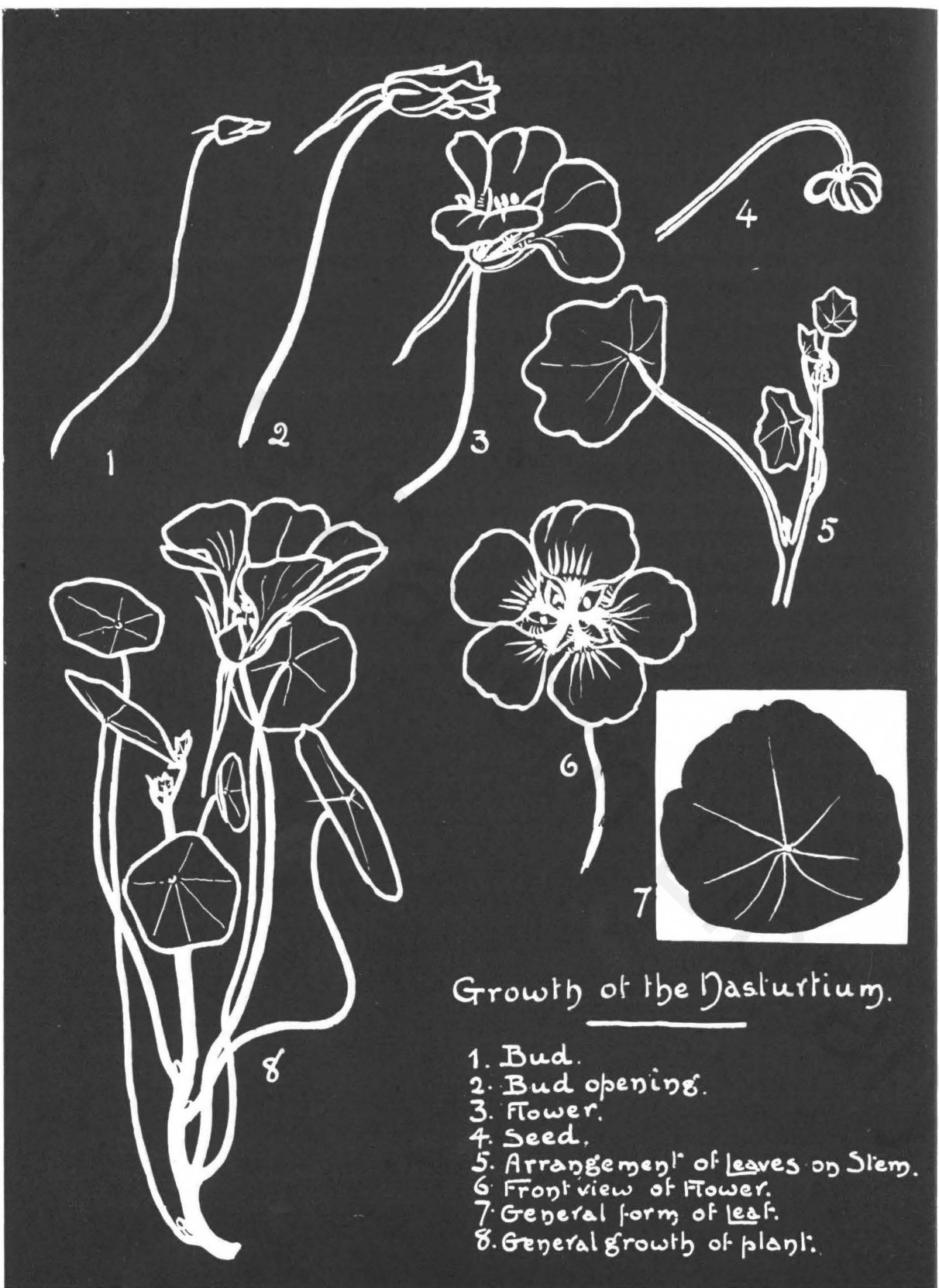
The root of a plant serves two important purposes :—

1. It serves to support the plant in its natural position, and so ensures that it shall have the best possible chance of obtaining the light and air necessary to promote its growth.
2. It acts as a medium for the absorption of plant food from the soil; transmitting this food to the tissues and fibres of the plant.

The process of *osmosis*, by which the plant food is extracted from the soil, is in itself very interesting. When two liquids are separated by a membrane which is permeable to both, there is a tendency for the liquids to penetrate the membrane and to intermingle. In the case of the roots of plants, the liquid in the soil and the sap in the root are separated by the skin, or covering tissue, of the root, and through this skin is carried on the process that ensures a supply of nourishment to the growing plant. It will thus be seen that the plant food in the soil can be absorbed only when it is in a state of solution; hence the necessity for an adequate supply of water, if the plant is to be saved from starvation.

The figures on Plate XXXVI. illustrate some of the typical forms assumed by the roots of common plants; and different descriptive terms are employed to distinguish between them. Thus the root of the turnip, and that of the round variety of radish, are *napiform*; that of the carrot *conical*; the long variety of radish, when it tapers towards both ends, is called *fusiform*. The root of the orchis, which bears some resemblance to a hand with the fingers outstretched, is called *palmate*; that of the common potato is *tuberous*; while the root of the dahlia is a *fasciculated*, or tufted, form of tuberous root. The root of the dropwort is *nodulose*, or knotted; that of grass is *fibrous*, in reference to the number of slender branches or fibres of which it is composed. The fibrous root of the couch grass springs from a subsidiary running stem which throws out fresh fibres at intervals; the plant supported by each set of fibres being capable of maintaining an independent existence. The root of the mistletoe is *parasitic*, for it derives its nourishment from the sap of the plant upon which it grows. In the figure shown a section has been taken through the branch of an apple tree, so as to disclose the arrangement by which this process is carried on. It will be seen that the root of the mistletoe lies mainly between the bark of the tree and the wood; and that the latter is penetrated at intervals by the tributary shoots.

The bark which protects the tree is utilised for the same purpose by the parasite; whilst the suckers perform their function of robbing the tree of its sap. An interesting phase of the subject of root study is a comparison of the size and disposition of the root branches in relation to the amount of work required to be done by them.



Growth of the Nasturtium.

- 1. Bud.
- 2. Bud opening.
- 3. Flower.
- 4. Seed.
- 5. Arrangement of leaves on stem.
- 6. Front view of flower.
- 7. General form of leaf.
- 8. General growth of plant.

LESSON XXXVII.

THE NASTURTIUM.

Plate XXXVII. gives a series of illustrations suitable for a lesson on the life-history of the nasturtium, a familiar garden flower. Figs. 1-4 show the different stages through which the flower passes from bud to seed. Fig. 5 illustrates the manner in which the stems are joined one to another; Figs. 6 and 7 show the *self-form* of the flower and of the leaf respectively; while Fig. 8 illustrates the general growth of the plant.

Lessons such as this may be made the medium for teaching very many useful facts in connection with plant life generally; and they are especially valuable when actual specimens of the plant are used to illustrate the different stages of growth. A distinguishing feature of the nasturtium or Indian cress is the spurred calyx, to which attention may be directed even in the least developed bud.

Diagrams 3, 6, and 8, show the method of drawing the figures to which they respectively refer. It will be noticed that the flower is composed of five petals, which in plan are more or less circular in form, and are geometrically arranged within a larger circle (see Diagram 6). This regular arrangement of the petals should be borne in mind, even when the flower is viewed in profile, as in Figs. 3 and 8, for it suggests the principles by which the figure may be most intelligently drawn.



Diagram 3.

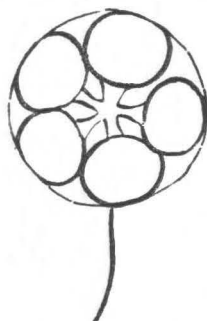


Diagram 6.



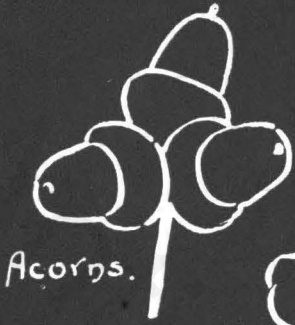
Diagram 8.

If Figs. 3 and 8 be compared, the former will be found to conform less regularly than the latter to the typical shape, the nearest petal being very much twisted out of position. Accidental variations such as this should, however, be disregarded in making the preliminary sketch; the general form and arrangement of the figure being of paramount importance.

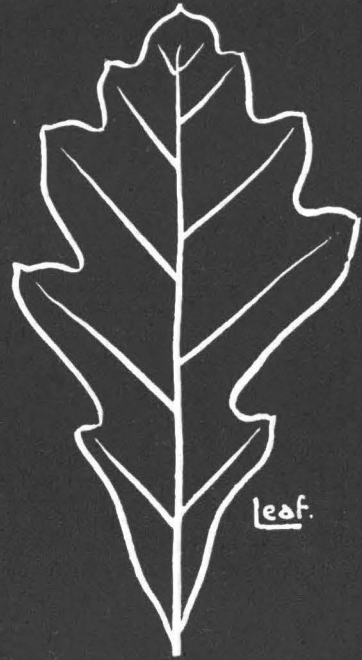
The nasturtium will be found a most appropriate plant for use in elementary lessons on either nature study or design; the freedom of growth, the variety of form in the buds and flowers, the ornamental seed, and the curling tendency of the stems, providing an infinite fund of suggestive form and arrangement.

Attention should be paid to the little buds springing out between the branching stems, and giving to the plant its characteristic appearance of vitality and growth. Children should be taught to study the growth of plants such as this, noting their times and seasons, the rapidity of their development, the variation of form through which the embryo bud passes as it changes into full bloom, and many other interesting facts which the subject suggests.

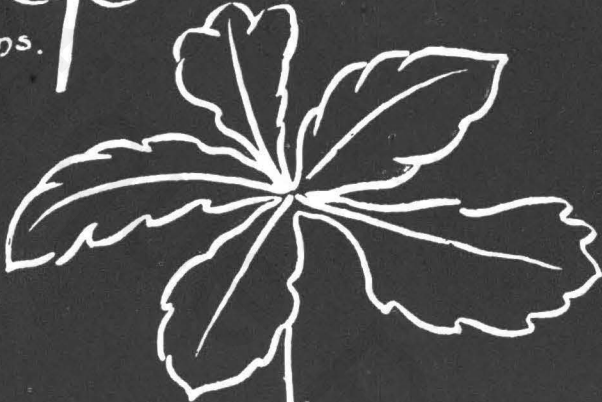
Growth of the
Oak.



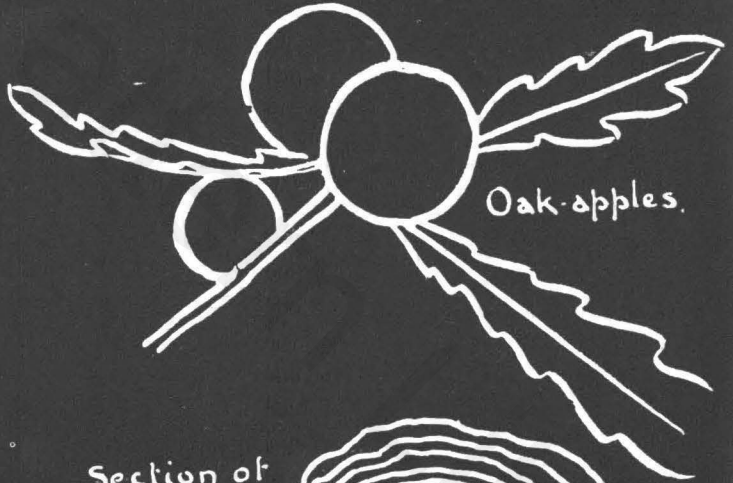
Acorns.



leaf.



Sapling



Oak apples.

Section of
Wood.



LESSON XXXVIII.

THE OAK.

We have already studied the form of the acorn in Lesson XVI., and of the oak-leaf in Lesson XXIX., and we now turn to a consideration of other features of the tree. The group of acorns should be drawn as shown in Diagram 1, each separate acorn being drawn according to the principles which were explained in Lesson XVI. For the method of drawing the self-form of the oak-leaf refer to the diagram on page 59. Diagram 2 explains the method of drawing the sapling; note that the young leaves have not yet all developed their full character, this being attained only when they arrive at maturity. In the figure of the sapling the seed and root are given with a view to showing the method of germination. Diagram 3 shows the method of drawing the group of oak apples. The section of the wood is given in order to show the annual rings by which the age of any particular tree may be estimated.

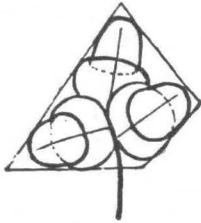


Diagram 1.



Diagram 2.

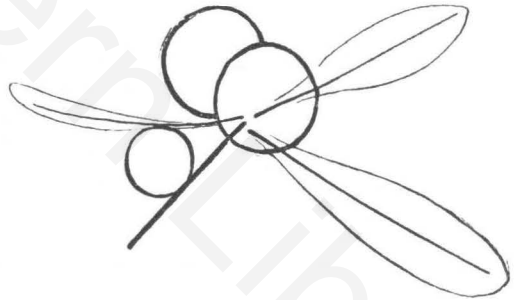
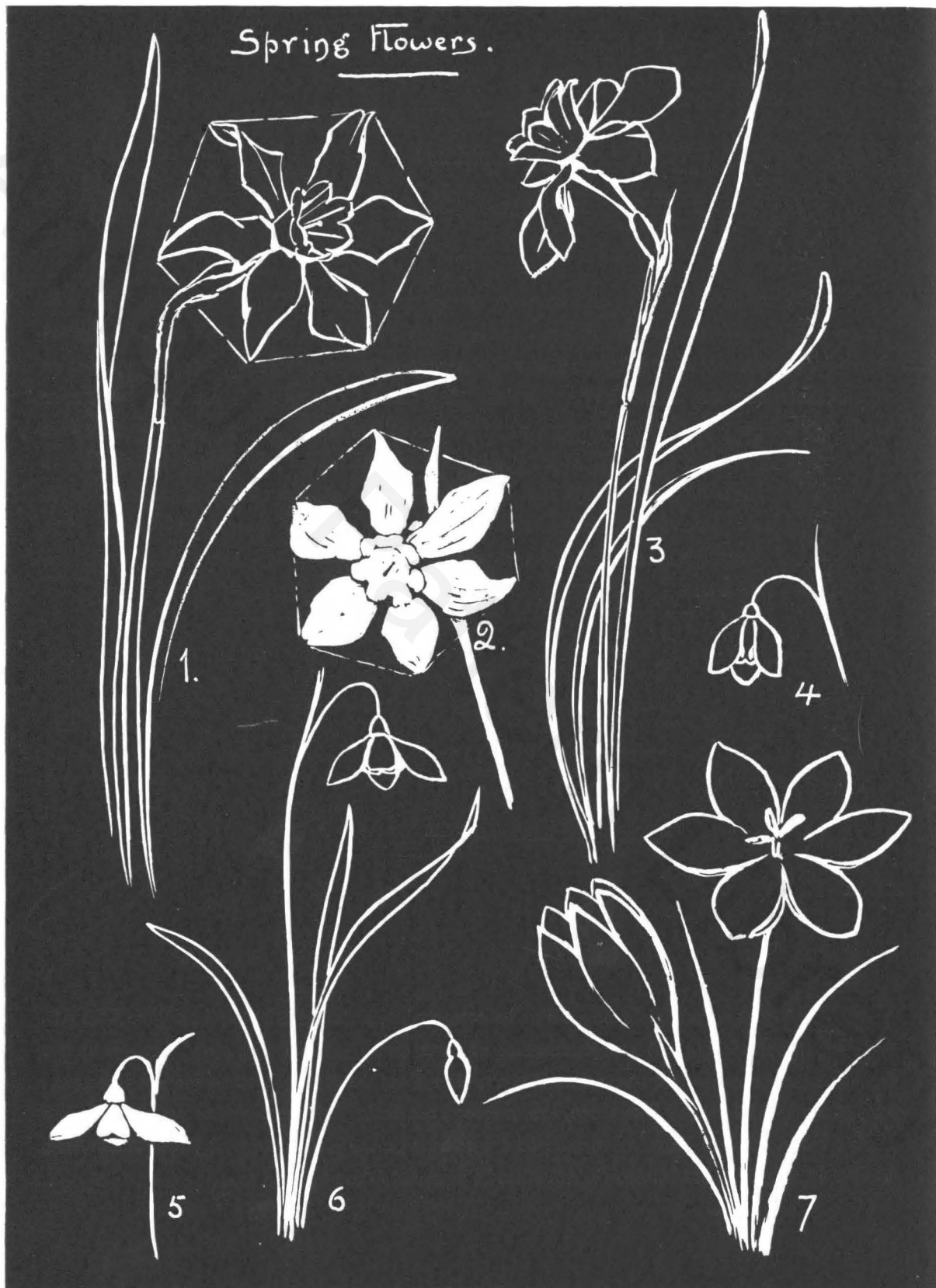


Diagram 3.

The figures on this plate might well be compared with those of the hazel on Plate XXXIII., with a view to bringing out the peculiarities of form and growth in each case. Perhaps no tree supplies a greater number of wants than the oak; its various uses would therefore form an interesting subject for consideration. The acorn, the branches, the trunk and the bark are useful, each in a different way, the first being a favourite food for the pigs, the second supplying rails and fencing, the third being the best of timber, and the last being used in the tanyard.

Spring Flowers.



LESSON XXXIX.

SPRING FLOWERS.

On Plate XXXIX. figures are given of three of our most familiar spring flowers, the narcissus, the snowdrop and the crocus. Very many of the spring flowers have leaves of a ribbon-like form, the graceful curves of which lend themselves readily to the construction of simple ornamental figures.

Diagrams 1, 2 and 3 show arrangements based upon the material supplied by Plate XXXIX. Before attempting to arrange the flowers and leaves in conventional figures such as these, the student should make himself quite familiar with their natural growth. In drawing the leaves in Figs. 1, 3 and 6 on Plate XXXIX., he will observe that the curl of the leaf exposes first one side and then the other to view; considerable care will be required to represent this feature faithfully. Figs. 2 and 5 are given as exercises in the use of the brush and tempera.



Diagram 1.

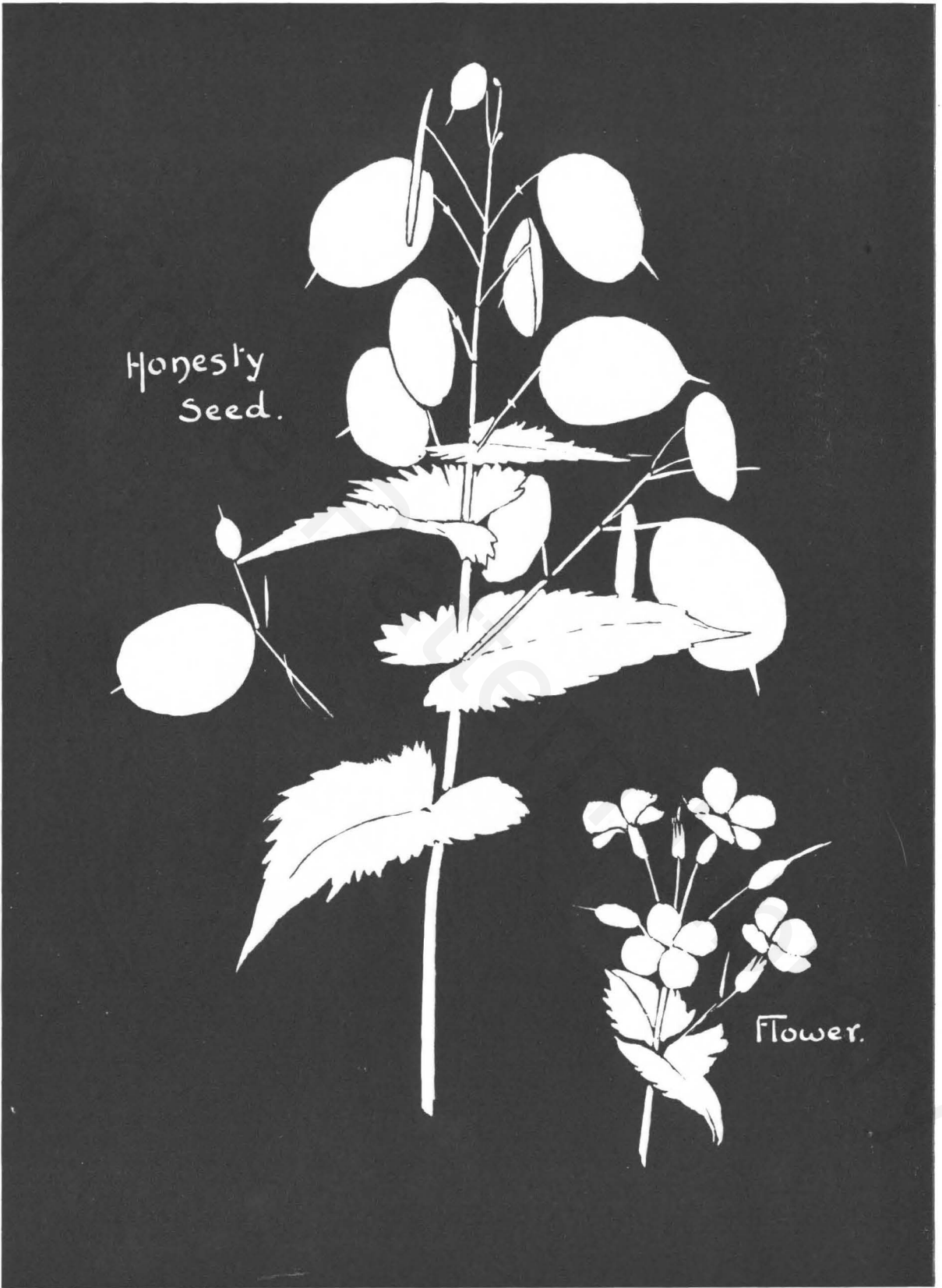


Diagram 2.



Diagram 3.

When the student has practised Figs. 1, 2 and 3 until he feels quite familiar with their principles, let him attempt an arrangement such as that shown in Diagram 1. He is advised to use these diagrams as suggestions rather than as copies, and to try to rearrange their elements on new principles. He might, by way of variety, arrange the narcissus on a symmetrical plan similar to that of the snowdrop in Diagram 2. These conventional arrangements are best carried out in tempera as here shown, for they thus provide exercise not only in the drawing of curves, but in the pleasing distribution of masses of light and shade—an essential feature of good design.



Honesly
Seed.

Flower.

LESSON XL.

MASS DRAWING.

On Plate XL. we give a more advanced exercise in the use of the brush with tempera. In most of the previous brush exercises the form represented has been expressed negatively, that is by surrounding it with a background of tempera; the advantage of which method was discussed in Lesson XXVIII.

In the figure before us the positive method of representation has been adopted, the forms being expressed in white, and the blackboard being used as a background. The student who has worked carefully at all the preceding lessons should be able to make a fair copy of these figures without using construction lines; but, for those who require them, Diagrams 1 and 2 show the way to set out the proportions of the copy.

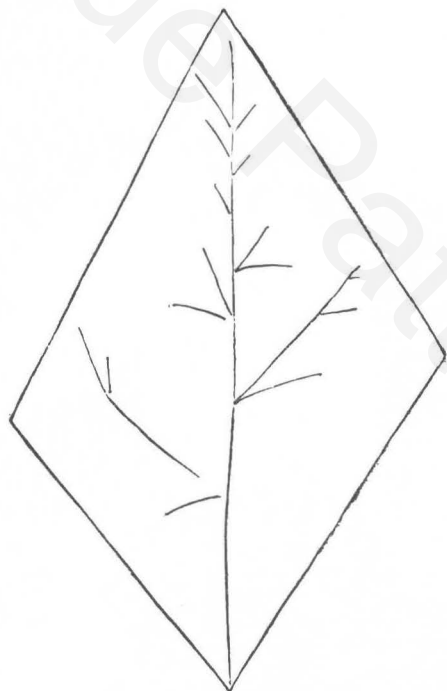


Diagram 1.



Diagram 2.

One of the principal difficulties in exercises of this character lies in the representation of those parts of the figure which lie one in front of the other. The best method is to represent first those portions of which the spectator has an uninterrupted view.

Thus, the bottom leaf in each of the two figures would be drawn before the stem which lies behind it; and the stem itself may be indicated in sections, each visible portion being one section. This is best shown in the lower portions of the stem in the smaller figure. Of the five seeds nearest the top of the larger figure, two are very much foreshortened, and these offer considerable difficulty. The one on the left lies in front of another seed, and should therefore be drawn before it; the one on the right lies beyond its own stalk, which should therefore be drawn before the seed itself. These suggestions should be a sufficient guide as to the order in which each section of the figure ought to be drawn.

laburnum.



Flower. side view.

Flower
front view.

Seed
pod.

LESSON XLI.

MASS DRAWING.—*Continued.*

Plate XLI. illustrates a spray of laburnum, a study which will tax all the student's ingenuity unless he proceeds methodically. Let him commence by practising portions of the subject, such as are illustrated in Diagrams 1-4. By this means he will gather that the leaves, which at first sight appear devoid of arrangement, are in reality grouped in sets of three, and that each group of leaves has its own stem growing out from the main stem. If, now, he draws faintly in position the main stem and these subsidiary stems, he has taken the first step towards overcoming the difficulty of the figure. In drawing the groups of leaves let him bear in mind the remarks made in the previous

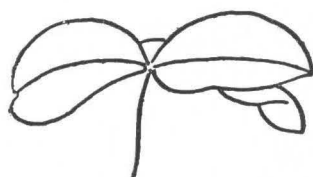


Diagram 1.



Diagram 2.

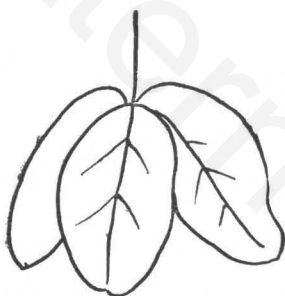


Diagram 3.

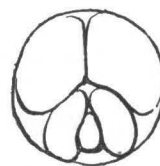
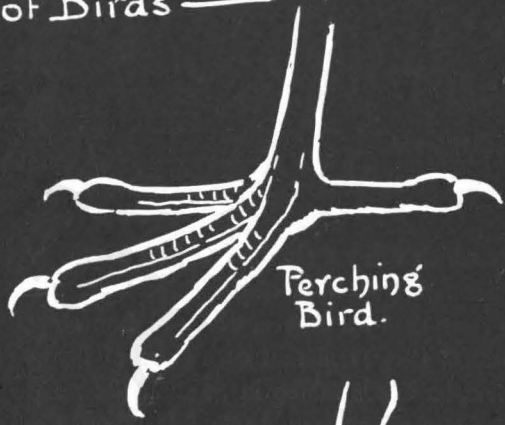


Diagram 4.

lesson as to drawing the nearest first, the outlines between leaves being represented by leaving a narrow margin uncovered by the tempera. In preserving this outline the student need not insist on too great regularity, as slight breaks in the line only add to the effectiveness of the drawing. Having represented the leaves, the position of the main line of the spray of flowers should be faintly indicated, and three or four of the most prominent blooms put in at intervals along it. By dividing up in this way he will find the difficulty of obtaining a satisfactory result minimised. He should endeavour to represent each separate petal by a single stroke of the brush; and in order to do this effectively he must take the trouble to practise from the details given until he is familiar with the form of each part of the flower.

Feet and Beaks of Birds



LESSON XLII.

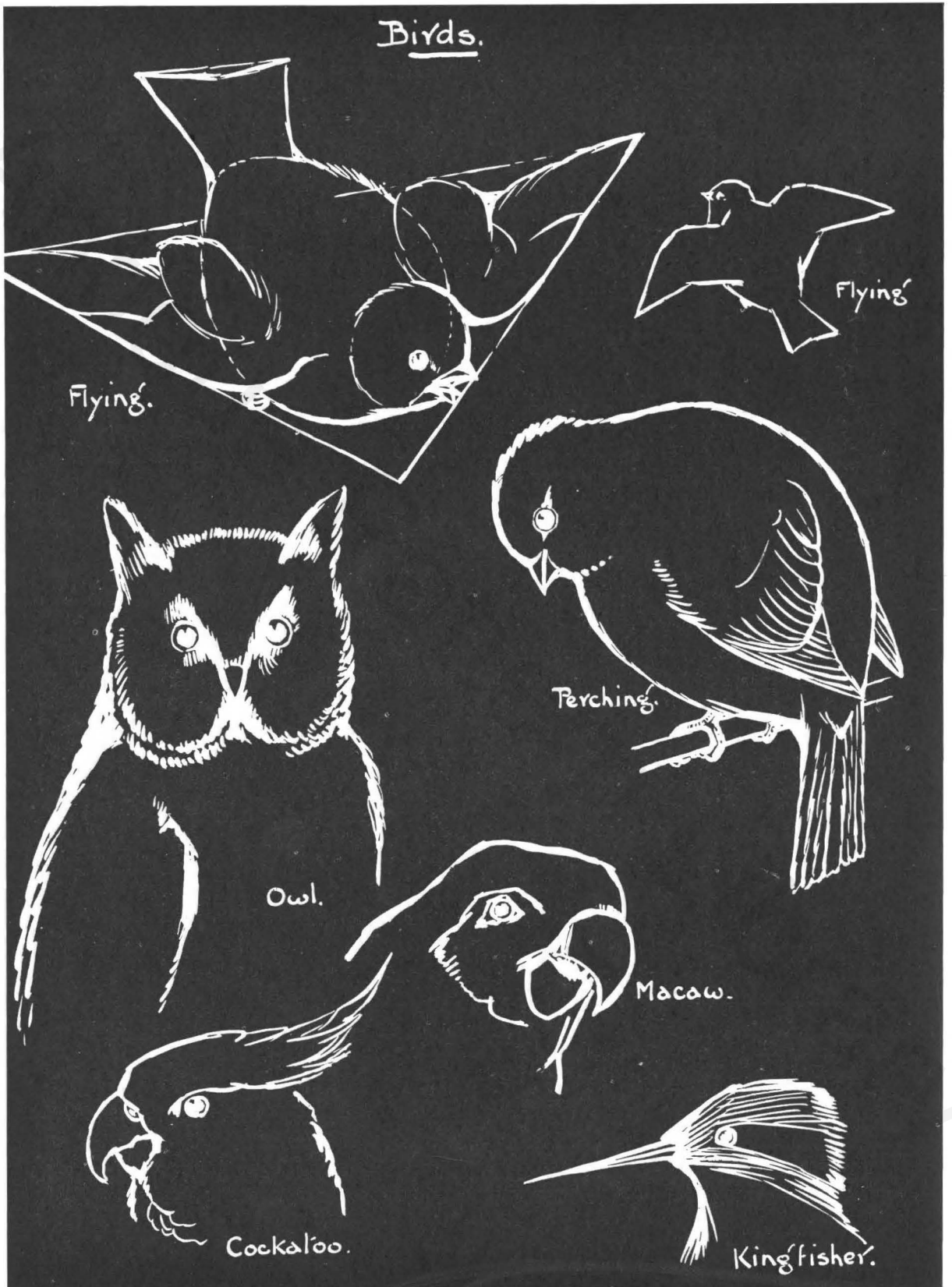
FEET AND BEAKS OF BIRDS.

Before attempting to draw complete figures of birds it is advisable that the student should carefully study some of the characteristic differences which exist between the members of different species; and in no way can he get a better notion of these differences than by comparing the form of their beaks and feet. It will be found that in all cases the beaks and feet of birds are formed in just such a manner as best enables them to obtain their food. On Plate XLII. a few typical figures are given which will sufficiently illustrate the leading idea which should be adopted as a means of classifying different types of birds.

Looking first at the feet, we observe four widely different types. The perching bird has three toes in front and one behind; the climbing bird has two before and two behind, and this difference enables him to cling to the branches of trees with equal tenacity in whatever position he may be. The swimming bird is provided with webbed feet by means of which he is able to propel himself, as with oars, through the water; the running birds, of the ostrich type, have short feet with no claw behind; in fact, just the feet which exactly suit their mode of life.

Turning next to the beaks, we find that the birds which live on other animals have strong hooked beaks; and we should find that the feet of such birds are suitably provided with long, sharp talons, in order that the bird may more securely hold his prey. The beak of the wading bird is long, and is well adapted for the fishing habits of its owner; while that of the swimming bird is equally well suited to its purpose of groping among the mud for insects and grubs.

These differences in the beaks and feet are not the only distinctive marks which indicate the habits and character of birds; thus the wings of the running birds are small and are not well adapted for flying, while those of the carnivorous birds are long, enabling the bird to overtake its prey. It is by paying attention to points such as these, and by making himself familiar with typical examples of each species, that the student will lay the best foundation for success in the drawing of any bird he may attempt. For the necessary information he should refer to some good work on Natural History; by preference to a well-illustrated book. It must be understood, then, that the student cannot hope to be successful in drawing any particular kind of bird unless he has first made himself familiar with its habits and characteristics; and should he attempt to draw before a class any bird which he has not studied in this way, he will run the constant risk of being pulled up by a pupil whose observation of the particular species has been more careful than his own. Let the student begin, then, by paying attention to the different kinds of beaks and feet, for these are the features in which the differences are most essential. When he has made himself quite familiar with this phase of his subject he may safely proceed to the drawing of the bird itself.



LESSON XLIII.

BIRDS.

In studying the general conformation of birds, the lessons learnt in connection with shells and plant life may be usefully applied ; that is, we may safely seek the general shape by referring back to the vital principle from which it originated.

All birds have been developed from eggs, and we find the trace of this origin more or less strongly marked in the form displayed by the fully-developed species. Thus, in the first figure on Plate XLIII., it will be seen that the "egg-form" serves as its basis, although the extended wings and the tail tend to obscure this form to the casual observer. This common feature may serve, then, as a useful starting point in drawing a bird. In the first figure on Plate XLIII. the student will begin by drawing the oval, and then he will lightly sketch in the triangle which marks the position and proportions of the wings. Having next indicated the size and position of the head, he will

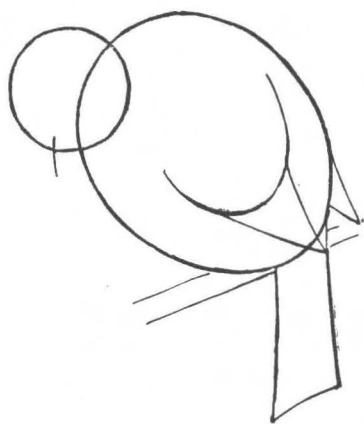


Diagram 1.



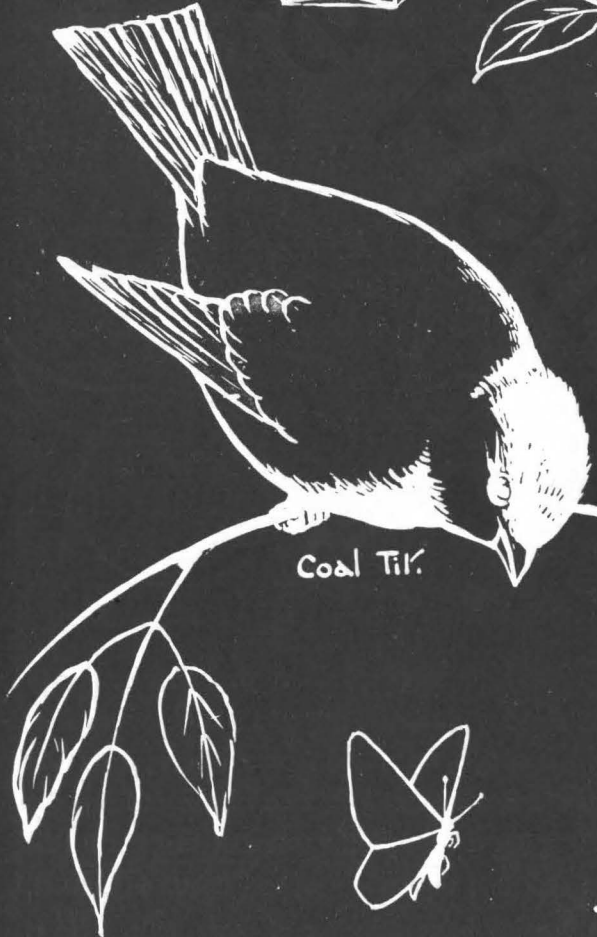
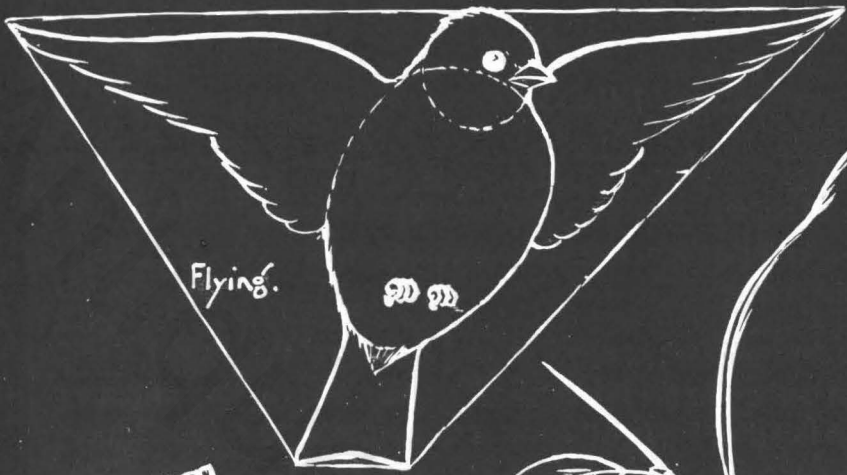
Diagram 2.



Diagram 3.

proceed to break up the spaces as shown in the sketch, bearing in mind that the lines employed in an exercise of this kind are appropriately free and sketchy, in order to suggest the feathery nature of the subject. The second figure shows how, by a few strokes, a flying bird may be suggested ; and this example is sufficiently elaborate for a drawing of a bird seen at a distance. Diagram 1 explains the plan to be adopted for the perching bird, Diagram 2 that for the owl, and Diagram 3 that for the cockatoo. In each case let the student seek first the basic form and lightly indicate it, the elaboration of this preliminary stage of his drawing being a matter of degree only. He is advised, however, not to carry elaboration beyond the point suggested by these examples, or his work will lose in force what it gains in detail.

Birds.



LESSON XLIV.

BIRDS.—Continued.

On Plate XLIII. flying birds were shown in two positions, each below the eye level; on this plate a flying bird is shown above the eye level. Draw it as before, by first indicating the oval and next the triangle, and the circle for the head, and then carry it to completion. In drawing the wings observe the distinction between their upper and lower edges, the former being single curves, the latter consisting of a series of successive shorter curves. Care must be taken to place the bird's eye correctly, and to make it the right size, not only in this but in every figure attempted, for there is no feature which is more likely to endanger the life-like appearance of the sketch if it be carelessly done. The bearded tit and the coal tit are given as exercises in detail work; they must be commenced as shown in the respective diagrams, and the details introduced with a firm stroke when the

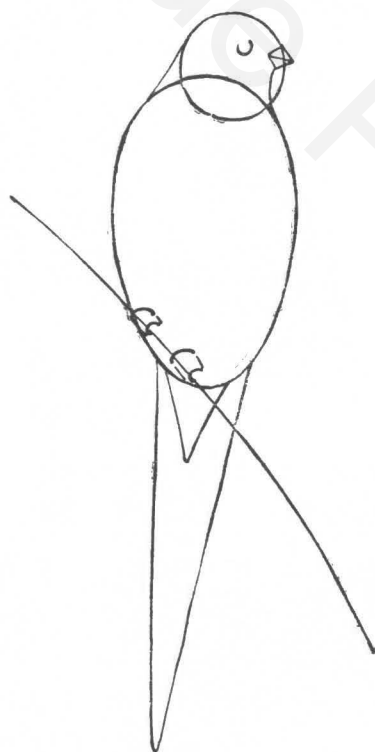


Diagram 1.

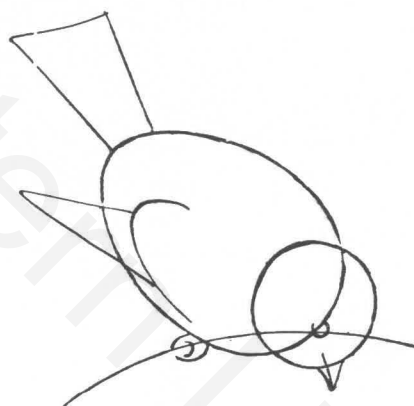
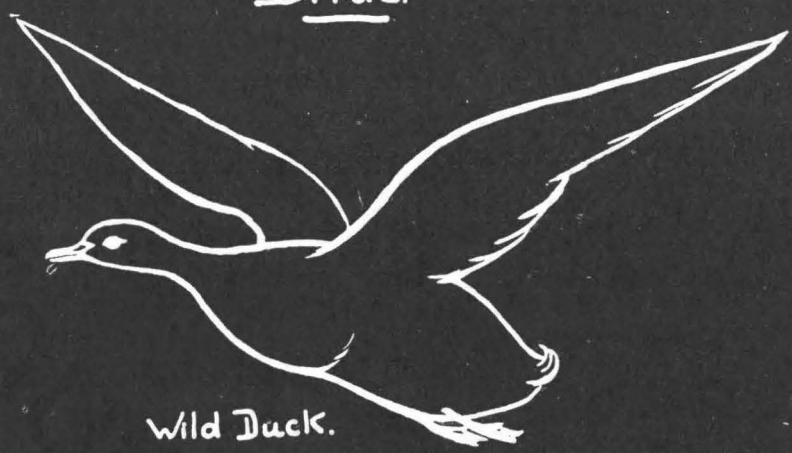


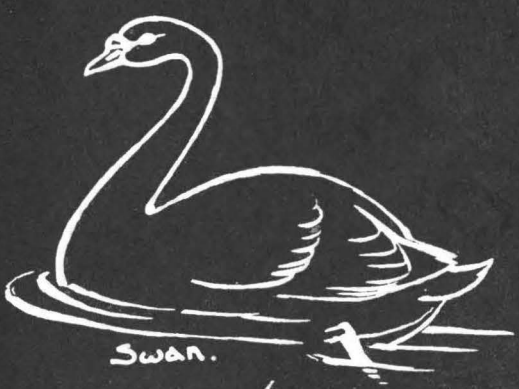
Diagram 2.

proportions have been satisfactorily obtained. In the coal tit the dark portions of the bird, from which its name arises, are here necessarily indicated lighter than the rest. This is owing to the limitation which blackboard drawing imposes upon the student; he is compelled to make the emphatic strokes heavier, and consequently whiter than the rest, even although they are darker in the natural example. He is advised, however, frankly to accept the position rather than to attempt a compromise by shading. Having established a conventional method of expression by means of white lines on a dark surface, let him abide by it, for any variation of the method only renders it less intelligible to his pupil, on whose behalf the entire system has been devised.

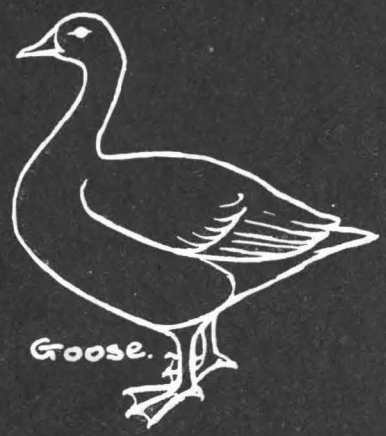
Birds.



Wild Duck.



Swan.



Goose.



Heron.



Gull.

LESSON XLV.

BIRDS.—*Continued.*

Plate XLV. gives five examples of water-birds, drawn in outline; and Diagrams 1–5 indicate the methods by which they are to be reproduced. The amount of detail introduced into the figures on this plate should be sufficient for all ordinary purposes of school work. Examples such as these, if



Diagram 1.



Diagram 2.

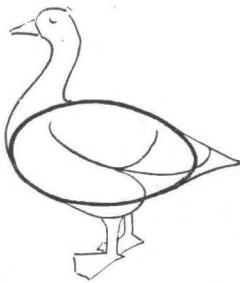


Diagram 3.



Diagram 4.

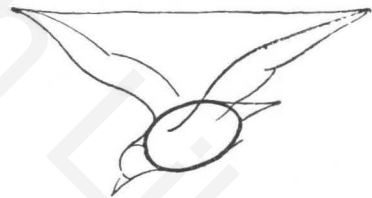


Diagram 5.

carefully drawn, would serve very well as drawing copies for the Upper Standards. They should be drawn step by step before the class, the teacher taking care to see that the preliminary sketch is correctly drawn by his pupils before proceeding with the details himself. Although the examples are small, the student is advised to practise each to a large scale; and, in making similar drawings for the purposes of instruction, to draw them with firm lines which are distinctly visible to the entire class.

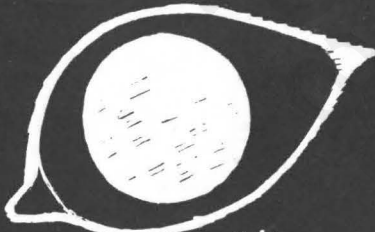
The Cat.



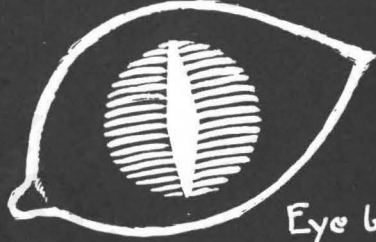
Claw at rest



Claw in use



Eye at night.



Eye by day.



Mass form
of Cat.

LESSON XLVI.

THE CAT.

The drawing of animals on the blackboard offers greater difficulties than any of the previous exercises; for the varying forms which an animal assumes as it moves about give little assistance to the eye in forming a general idea of the animal's shape. A flying bird may often be seen floating through the air with wings extended and motionless; but every movement of an animal involves a change in its appearance. Added to this difficulty is that of representing the texture and character of the animal's coat, without which it would lose much of its individuality. While the feathery coverings of birds almost all comply with a certain general formation, the skins of animals offer an infinite variety of surfaces for consideration. Thus it is impossible to lay down a single general rule to guide the student in drawing all animals; each example must be treated according to the difficulties which it presents. The student will, however, find it an advantage to begin by studying those animals which are most familiar, such as the cat, dog, horse, cow and sheep; for by this means he will establish standards of comparison to guide him in drawing any new animal he may attempt.



Diagram 1.



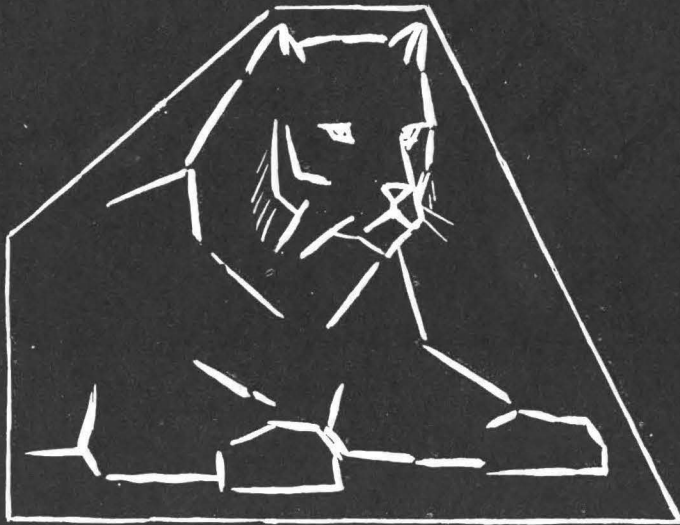
Diagram 2.

On Plate XLVI. are given a few details of the cat; these should be practised and the facts they illustrate should be memorised. In drawing the first figure begin as shown in Diagram 1. When the general proportions have been thus indicated let the details be firmly but freely drawn, taking care to emphasise the important parts, such as the eyes, mouth and ears. Diagram 2 indicates how to begin the second head, which is somewhat more difficult from the fact that it offers a three-quarter view.

In the complete figure of the cat it will be observed that the mass method has been resorted to, in order to bring out the general proportions. This might have been achieved by drawing an outline of the general shape and drawing in the cat with the brush. The student may practise both methods, and he may then attempt the same figure in pure outline with the chalk. After practising the cat the student should next attempt the dog, using any good illustration as an example. He will here find more scope than in the case of the cat, for the different kinds of dogs show greater variations than do those of the cat.



Lion.



Tiger.

LESSON XLVII.

THE LION AND TIGER.

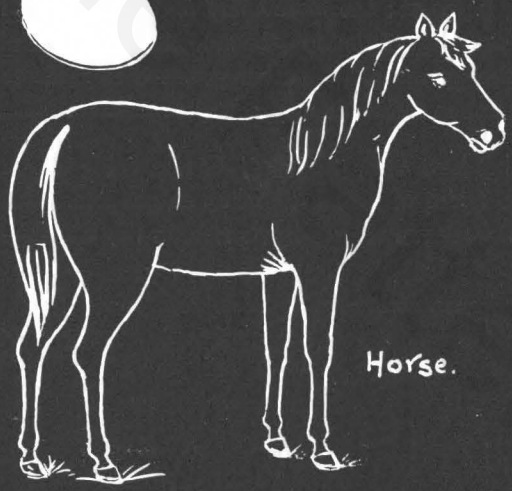
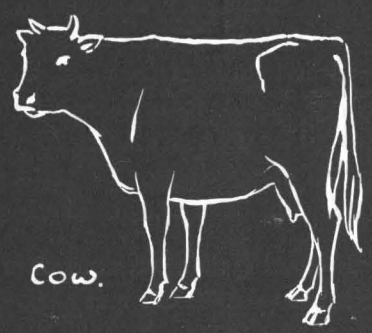
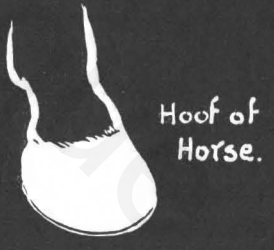
The figures of the lion and the tiger on the opposite plate are given together in order to emphasise the value of contrast in making drawings of animals. The massive character of the lion's head and shoulders, as compared with those of the tiger, are brought out by a comparison of the rectilinear spaces which contain the figures. Diagram 1 suggests the preliminary step in drawing the lion; which, in the plate, is carried to completion. This method of sketching in the salient lines of the figure should at all times be followed; so that the characteristics of the animal may appear, even in the earliest stages of the work. As a general rule, a drawing such as that of the tiger will be sufficiently elaborate for ordinary explanatory purposes; the more complete study of the lion being better suited for use as a drawing copy. In the study of the lion, the student should carefully observe the method of representing the masses of shaggy mane. No attempt has been made to represent single hairs, the effect being obtained by suggestion rather than by actual expression.

In drawing the tiger, short, firm strokes have been employed, the aim being to obtain correct proportion between the different parts of the figure with as little effort as possible. The angular appearance which results from this method of work can very easily be remedied by a little subsequent elaboration.



Diagram 1.

In selecting further illustrations of animals from which to practise, the student should bear in mind that figures in profile are easier to draw than those which are foreshortened; also that animals in repose are easier than those in motion. As a rule he should select, as copies, illustrations which contain comparatively little detail, in order that he may be better able to devote attention to the general characteristics of the animal. Animals of similar appearance may sometimes with advantage be practised together, as the slight differences can then be given their due weight more easily.



LESSON XLVIII.

THE HORSE, THE COW, AND THE SHEEP.

On Plate XLVIII, three familiar animals are brought together. The student should begin by practising the heads of the three animals given at the top of the plate, following the method shown in Diagrams 1-3. He will observe that the lines of the cow's head are angular, those of the horse,



Diagram 1.



Diagram 2.

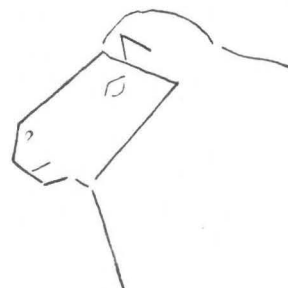


Diagram 3.

curved, while the sheep's head combines the peculiarities of both. Having practised the heads, let him turn next to the hoofs, which are here shown in mass.

Diagrams 4-6 show how to begin drawing the entire figures of the respective animals to which they refer.

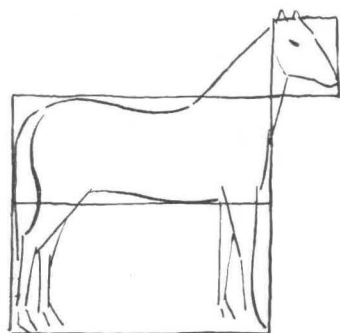


Diagram 4.

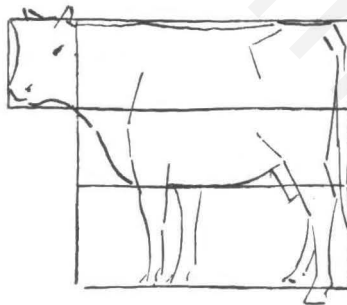


Diagram 5.

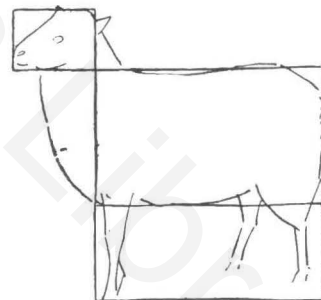


Diagram 6.

The rectangular spaces which enclose the figures furnish a very easy means of comparing the relative proportions of the three animals. The horse's head will be seen to be well above the line of its back; that of the cow is below, while that of the sheep, again, is slightly above. The legs of the horse are long in proportion to the depth of its trunk, those of the cow and sheep being comparatively short. The general lines of the horse are curved, those of the cow straight and angular, while the lines of the sheep are more or less obscured by its woolly coat. All these peculiarities should be carefully noted in making the drawings, for by this means alone can the distinctive character of each animal be realised and expressed.

Comparison of
Elephant and
Giraffe.—



Giraffe.

Small head.
Long neck, which en-
ables it to reach its
food.

Elephant.

Heavy head.
Short neck.
Trunk serves same
purpose as a neck.

LESSON XLIX.

THE ELEPHANT AND THE GIRAFFE.

The two animals brought together on Plate XLIX. offer a contrast so complete that they might well serve as the subject for a useful object lesson. The children should be encouraged to compare each separate feature of the elephant with the corresponding feature of the giraffe, and they should thus be led to see how, in spite of the great discrepancies observed, each animal is appropriately furnished with just such limbs as fit it for the life it has to lead. On the plate we have set out a verbal comparison of one feature by way of suggestion, and each part of the animals might be treated in a similar way.

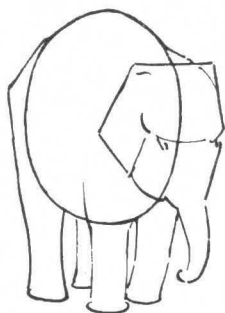


Diagram 1.



Diagram 2.

The animals are here placed in a more difficult position than any of those on preceding plates. No fixed rule can be laid down which will guide the student in drawing every example, for the reason already explained in Lesson XLVI.; but he should try to recognise simple forms wherever they occur, for they may be made of service in rapidly obtaining the required proportions of the figure. Diagrams 1 and 2 suggest an application of this idea. The body of the elephant in the position here shown suggests the form of an ellipse; therefore commence by roughly sketching an ellipse, and then proceed to make the necessary additions for the head and legs. In the giraffe no such preponderating form is observable, though the trunk is somewhat elliptical in shape. Care should be taken in both animals to make the feet appear to rest upon the ground. A method of ensuring this is shown in Diagram 2, where the rectilinear figure on the ground fixes the place of the feet of the animal.

Fishes.



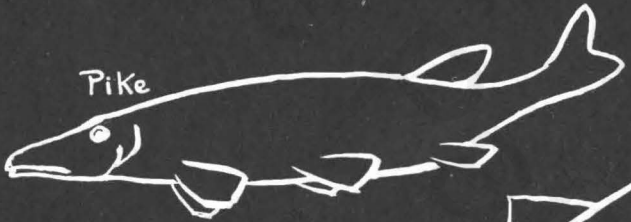
Shark.



Flying fish.



Sword fish.



Pike



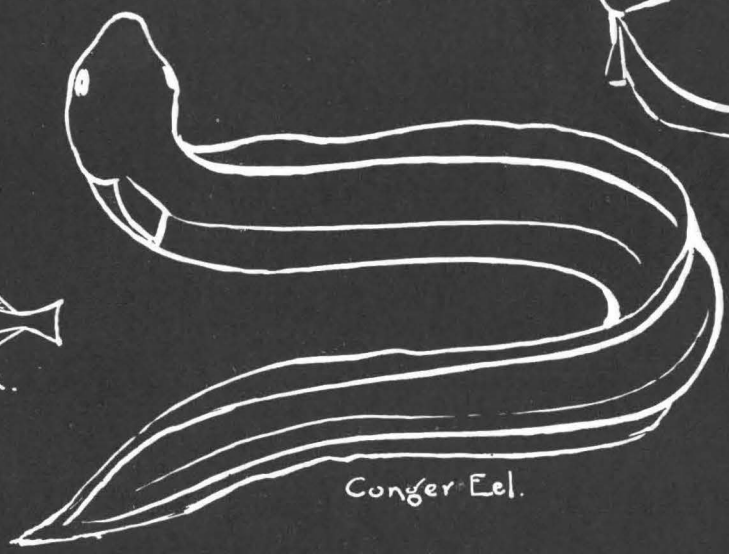
Salmon.



Turbot.



Stickleback.



Conger Eel.

LESSON L.

FISHES.

The beautiful curves to be observed in many different fishes make them extremely valuable as examples for elementary drawing copies. On Plate L. we have brought together a few interesting examples, the characteristics of which should be familiar to every child. The shark turns on its back before attacking its prey, and in the plate it is represented in the act of turning.

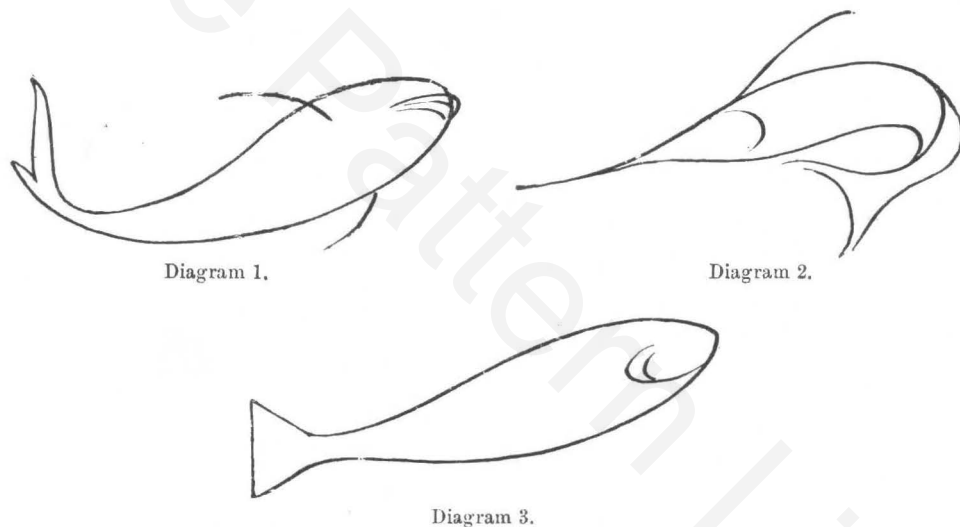
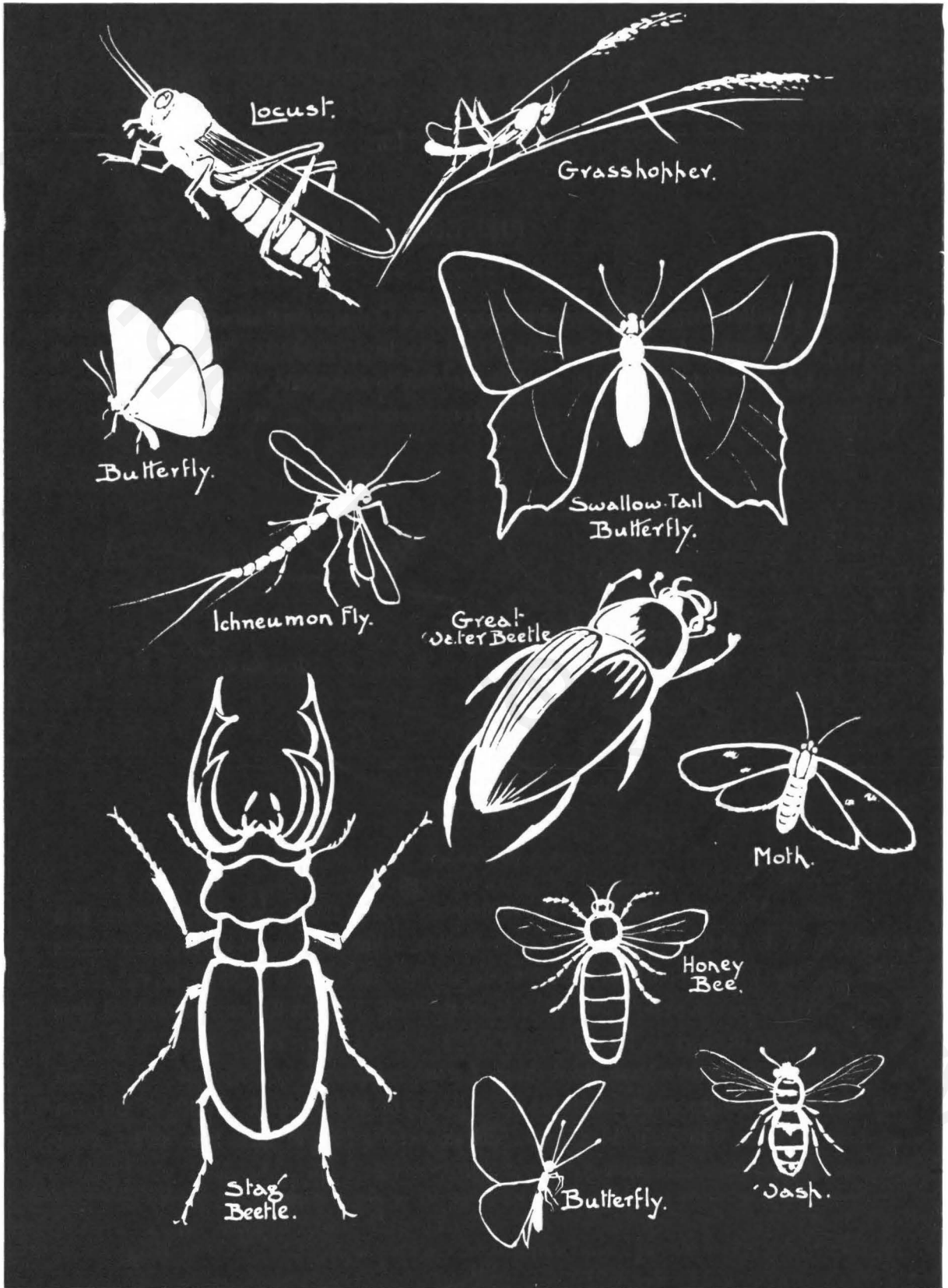


Diagram 1 shows the lines which should first be drawn in this figure. It will be seen that the general contour of the fish consists of a single continuous line, if we except the two short strokes which mark the end of the tail; the student should therefore draw it in a single stroke, and should then rub out the portion at the mouth which is not required. Diagram 2 shows the essential lines of the sword fish: here, again, the outline may be drawn with very few strokes of the chalk. The same remark applies to the salmon, the drawing of which is explained by Diagram 3. Notice that the scales are sufficiently suggested by indicating only a very few of them. In all fish studies great care must be taken with the position, shape, and size, of the fins; as these have an important influence upon the general character of the drawing.



LESSON LI.

INSECTS.

Plate LI. gives examples of some of the commoner insects. Here, as in the case of previous subjects, the value of comparison is illustrated. The figure of the locust may be compared with that of the grasshopper, the water-beetle with the stag-beetle, the wasp with the honey-bee, the moth with the butterfly, and so on. This method of teaching by comparison is a useful means of stimulating the faculty of observation; and, in the case of insects, it is, moreover, very essential that children should be taught to recognise the different species, and to discriminate between those which are harmless and those which may be injurious. The forms and colours to be observed among insects are extremely varied and beautiful; although their small size prevents their obtaining the amount of attention they deserve. The swallow-tail butterfly is an extremely suitable figure for a drawing copy,

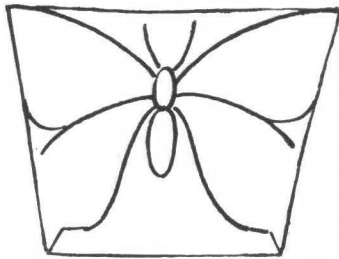


Diagram 1.



Diagram 2.

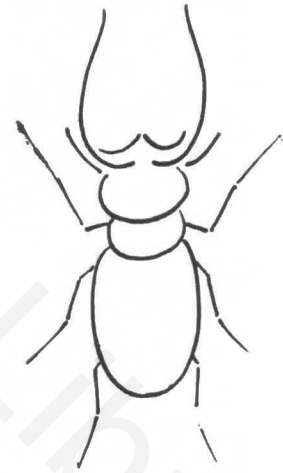
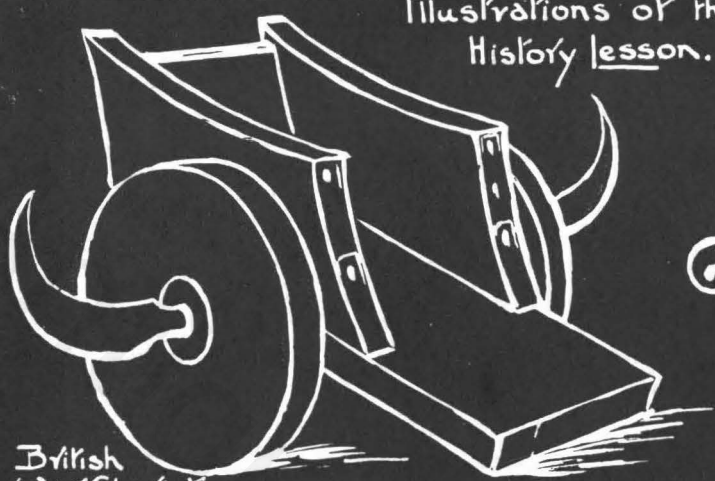


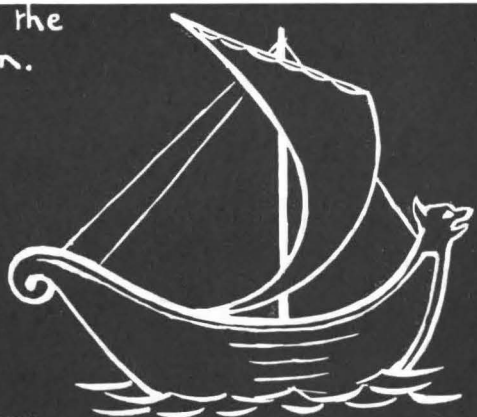
Diagram 3.

and would also furnish good practice in colouring. Diagram 1 shows how to commence the drawing, while Diagrams 2 and 3 illustrate the method of drawing the water-beetle and the stag-beetle respectively. The other figures should be treated in a similar manner, their main proportions being first indicated, and next their most important lines. In this and the following plates the chalk and the brush are used in conjunction, the chalk for the lines and the brush for the broader masses. By this method the greatest amount of variety can be obtained.

Illustrations of the History Lesson.



British War Chariot.



Saxon Ship

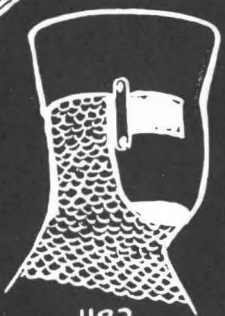


Planks Genista

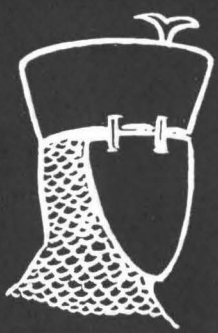


Richard I.

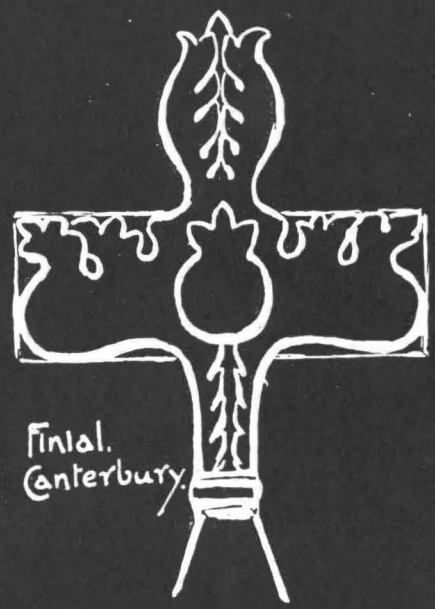
Helmets.



1192



1203.



Final Canterbury.



Fire-place at Boothby Pagnell.

LESSON LII.

ILLUSTRATIONS OF HISTORY LESSONS.

The figures on Plate LII. are such as might be used in a History or a Reading lesson to illustrate points requiring graphic explanation. It is not suggested that the whole of the figures should be employed in a single lesson, but they are given as typical subjects appropriate for illustration, and as showing suitable methods of treatment. If figures such as the war chariot or the ship be skilfully drawn, they may be used afterwards as drawing copies, and the information gleaned in the History lesson will thus serve to stimulate the interest and application of the pupils when they come to make the drawing.

The British war chariots played an important part in the defence of these islands against the invasion of the Roman legions. The Anglo-Saxon ship shows how, in very early times, our ancestors displayed skill in design, the ship fashioned in the form of a sea monster being an excellent example of appropriate ornament. The "planta genista," or Spanish broom, is of interest as having given its name to a line of English sovereigns. The three helmets shown are intended merely as types, and might well be supplemented by many other varieties. The finial from Canterbury Cathedral and the old fire-place should suggest to the student a large field for study. No better practice could be

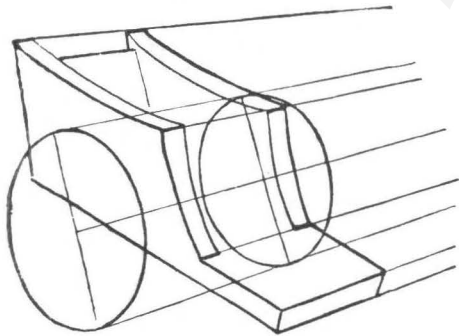


Diagram 1.

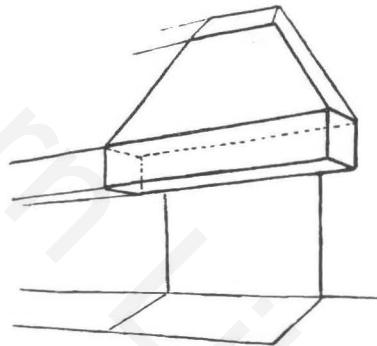
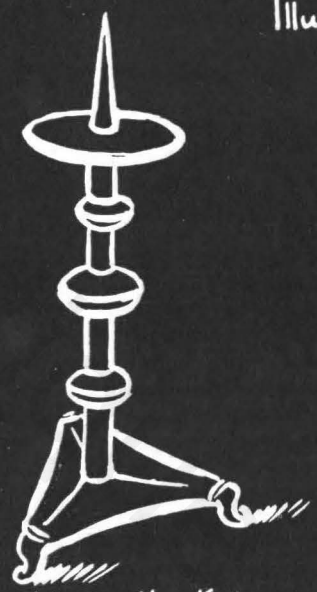


Diagram 2.

suggested for children who have made good progress in drawing than that they should find for themselves subjects among the architectural features of the district in which they live. Such exercises, besides giving excellent practice in drawing, serve the additional purpose of arousing an intelligent interest in one of the most fascinating and useful applications of art, and they can hardly fail to be of service to the children in whatever occupation they may afterwards engage.

The subject of heraldry might also be suggested as providing a suitable field for the teacher's activities. Here, again, the forms to be observed will be found to possess not merely pictorial effect, but they may at the same time be made to serve as a useful vehicle for imparting much historical knowledge. Diagrams 1 and 2 show the salient lines of the war chariot and the fire-place respectively, the other figures being left to the student's ingenuity.

Illustrations of the
History lesson.



Old Candleslick.



Old Lichgate
at Beckenham.



Croyland
Bridge.



Couvre-feu.

LESSON LIII.

ILLUSTRATIONS OF HISTORY LESSONS.—*Continued.*

On Plate LIII. are given further illustrations of miscellaneous historical subjects which combine pictorial effect with useful information. The feature of the ancient candlestick which will at once strike the student as peculiar, is the spike, which has in later years been superseded by a socket. The candle was impaled on the spike instead of being inserted in a socket, as at the present day. The old lich-gate, again, serves as a reminder of an ancient custom connected with the burial of the dead. The corpse was deposited at the gate of the churchyard on its way towards the grave, and the canopy was provided as a protection from the weather; the word *lich* signifies a corpse, and hence the name was applied to gates where provision was made for the observance of the above-mentioned custom. The bridge of Crowland, or Croyland, in Lincolnshire, has the distinction of being

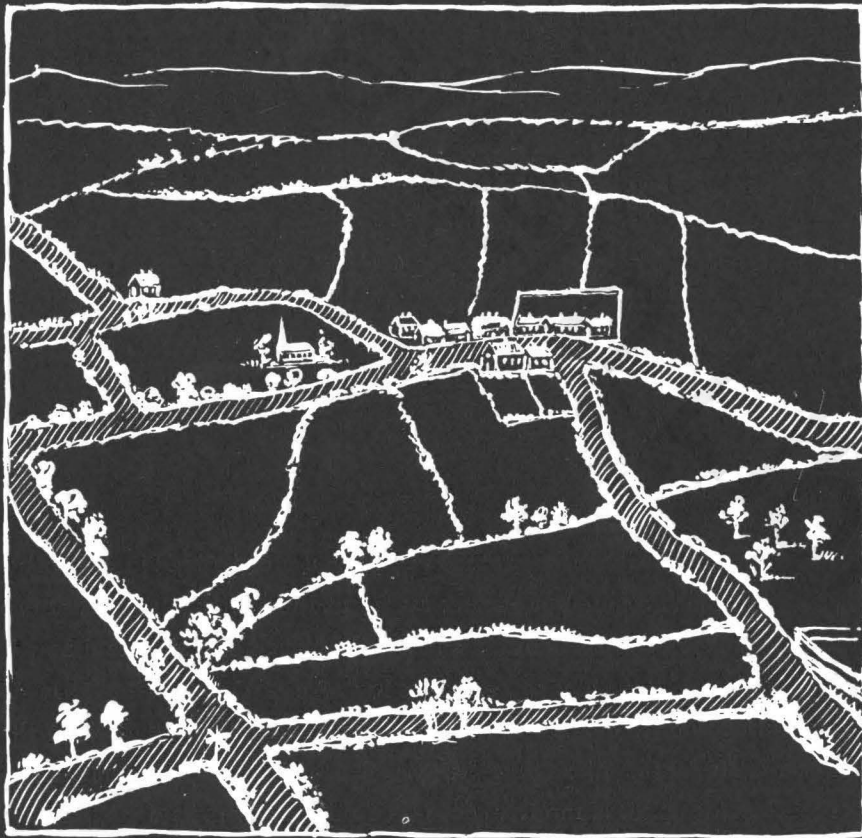
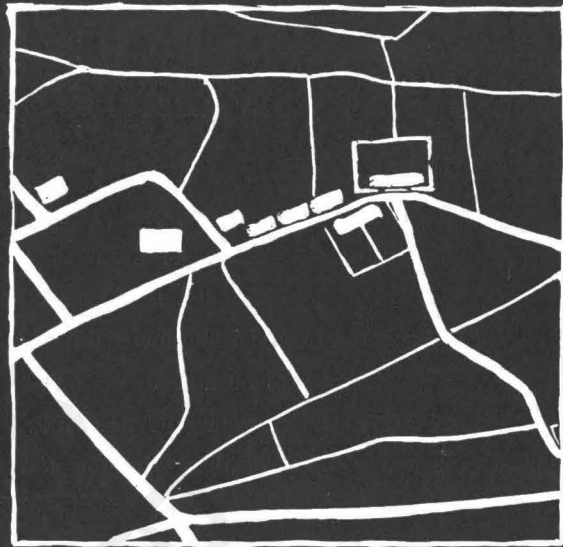


Diagram 1.



Diagram 2.

the oldest and, at the same time, the most extraordinary structure of its kind in the country. It is triangular, being built at the meeting-place of three roads; and was originally intended to serve as a means of crossing the two drains which here met and mingled their waters. The drains have long since disappeared, but the bridge remains as an interesting relic of early building. It dates from 860 A.D. and its union of three in one has been supposed by some to typify the idea of the Trinity. The *couvre-feu* dates from the fifteenth century, and is interesting in connection with the Norman custom to which this piece of furniture owes its name. Diagrams 1 and 2 illustrate the salient lines of the lich-gate and the *couvre-feu* respectively.



Bird's-eye view developed from Plan.

LESSON LIV.

PLANS AND BIRD'S-EYE VIEWS.

The difficulty which young children experience in realising the meaning of a map or plan is largely due to the fact that in their everyday life they have never been called upon to regard their surroundings from an elevated position. Their views of their own environment have been confined to what can be seen from a very low altitude; and, consequently, they conceive of trees, houses, hedgerows, and fields, as lying one beyond the other, the nearer objects hiding the further ones from view. They have in fact regarded their surroundings only as seen in elevation; and have consequently formed but vague and inaccurate notions of the extension of the surfaces across which they may have looked. Any simple expedient which will assist in bridging over this very real difficulty is therefore of value to the teacher.

The figures on Plate LIV. illustrate how a plan may be made more intelligible to young children, with very little effort on the part of the teacher. In the bird's-eye view the lines of the distant hills are faintly indicated in order to throw back that portion of the subject, and so to convey the idea of a receding plane. The introduction of trees and hedges along the roadsides, and the representation of buildings in elevation instead of in plan, provide a connecting link between the child's actual knowledge and the facts which it is desired to teach.

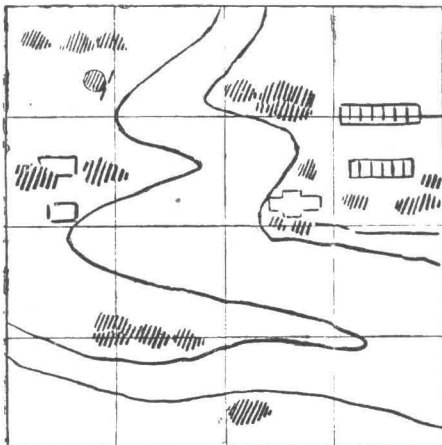


Diagram 1.

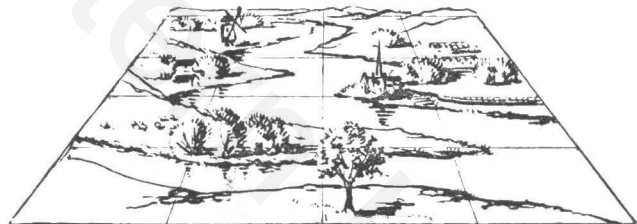
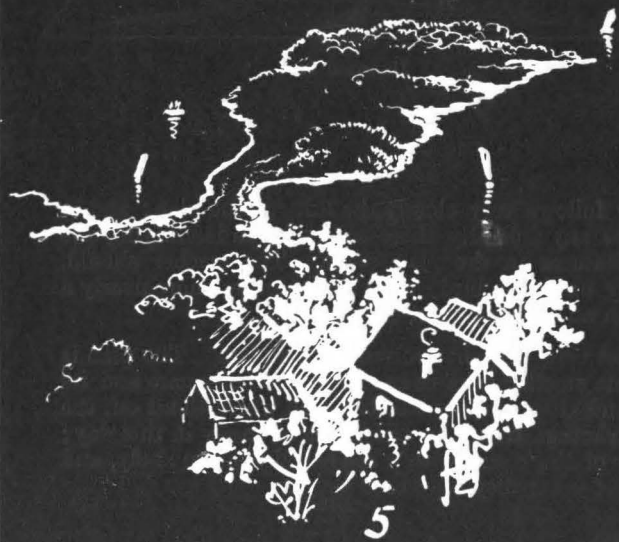
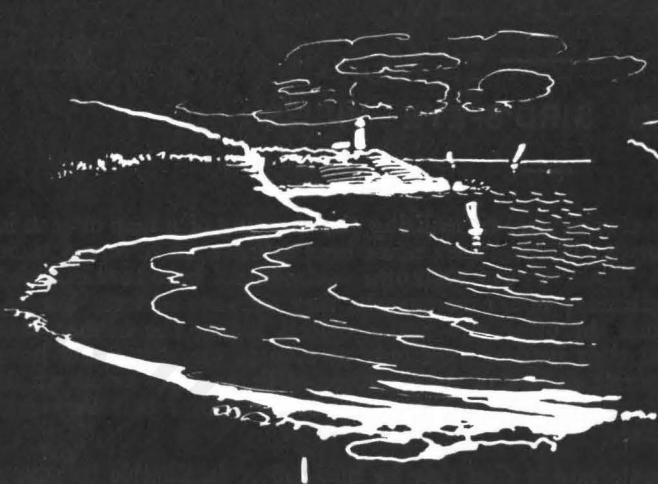


Diagram 2.

It will be observed that the bird's-eye view follows very closely the lines of the plan; and in the early lessons this is advisable; for it eliminates any difficulty there might be in identifying the features in the view with the corresponding features in the plan itself. The teacher should, however, gradually reduce this artificial similarity until the bird's-eye view becomes more nearly a representation of what would actually be seen from an elevated point of view.

Diagrams 1 and 2 show how a fairly correct view may be evolved from a plan. The plan is enclosed in a square which is then sub-divided into smaller squares as shown. The square and its sub-divisions are now represented perspectively, and they serve as the basis on which to set out the bird's-eye view. The teacher will find much advantage from the treatment of maps in this way; as his pupils will more readily realise the features of the country they are called upon to study, and so will carry away a more realistic mental picture of what they have been taught.

Geographical Terms.



LESSON LV.

GEOGRAPHICAL TERMS.

Plate LV. gives examples of illustrations suitable for use in explaining geographical terms to young children. In drawing figures such as these, their primary object should be kept steadily in view; and the point to be illustrated should be made the most prominent feature of the sketch. At the same time a little pictorial effect enhances the value of the illustration by making it more attractive, and easier for the child to realise. Fig. 1 illustrates a cape and a bay; the distant horizon and the few ships being introduced to convey the idea of water, while the broken character of the cliffs and the foreground suggests land. The lighthouse on the headland, and the rocks at its extremity, emphasise the relative danger and safety of the cape and the bay. Fig. 2 illustrates a lake. The vertical lines, and the ship with its complete reflection, suggest the stillness of the surface of the water, while the surrounding mountains account for the origin and existence of the lake. Fig. 3 illustrates an island, an islet, and a strait. Here, again, the distant horizon and the ships suggest the sea, while the shore of the island is strengthened in order to bring out strongly the meeting of land and water. Fig. 4 shows the crater of a volcano in eruption. The direction of the lines down the sides of the volcano suggests the flowing streams of lava. Fig. 5 illustrates a peninsula and an isthmus; the foreground has been introduced in order to give the peninsula the desired appearance of receding into the distance. Fig. 6 illustrates a promontory, its height being emphasised by carrying it considerably above the line of the distant horizon. In making sketches such as these the student will find it useful to employ both chalk and tempera; the chalk is invaluable for representing the faint lines in the distance, such as the horizon and the outlines of clouds. The brush, on the other hand, comes in very useful for the strong masses in the foreground. Side by side with the sketch it will be found useful to place the map or plan of the feature represented, in order that the pupil may be led to appreciate the relation which exists between them, as explained in Lesson LIV.

APPENDIX.

DESIGNS ON THE BLACKBOARD.

At different points in the foregoing pages attention has been directed to the desirability of devoting some amount of effort to the practice of original design on the blackboard. In many schools this branch of drawing is recognised as an important phase of the art instruction ; and the benefit which pupils derive from it amply repays any additional labour it may involve. The principal advantages attaching to this method of practising design are the freedom of line that it encourages, and the fact that the pupil learns to deal with large surfaces, and so develops breadth of treatment. His work is done, moreover, in an attitude which makes for physical development. On Plates LVI.-LX. are given a series of designs by boys between the ages of 14 and 16 years. The originals, of which these figures are direct photographic reproductions, are on an average 4 feet long by 2 feet 6 inches wide ; and the time spent on each design was from 2 to 3 hours. Some account of the method of work adopted may be of interest.

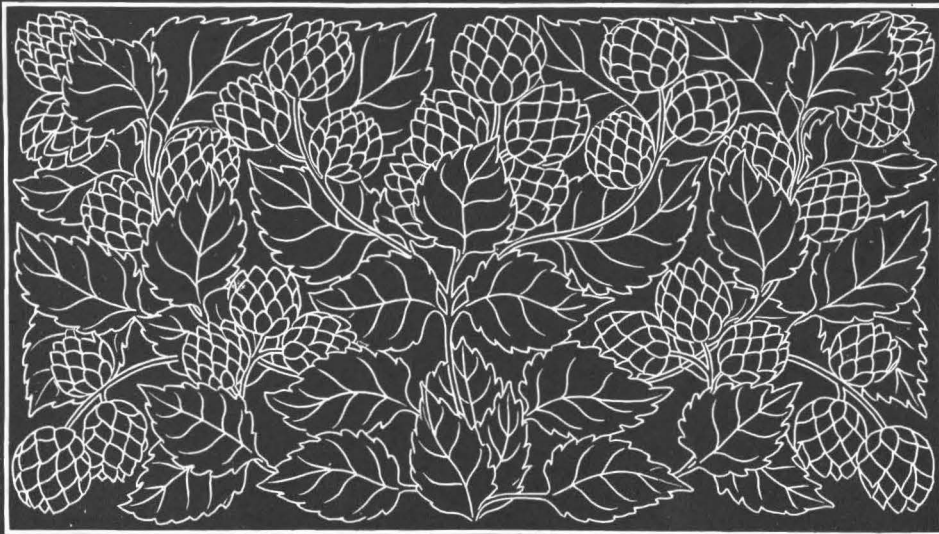
The boys are first trained to observe and to draw from actual plants and flowers, being continually called upon to notice the ornamental features and peculiarities which they display : by this means they acquire a store of useful forms based upon, or derived from, the plants they have studied. They are simultaneously drilled in different methods of arranging conventional curves, such as the spiral, the ellipse, the scroll, &c.

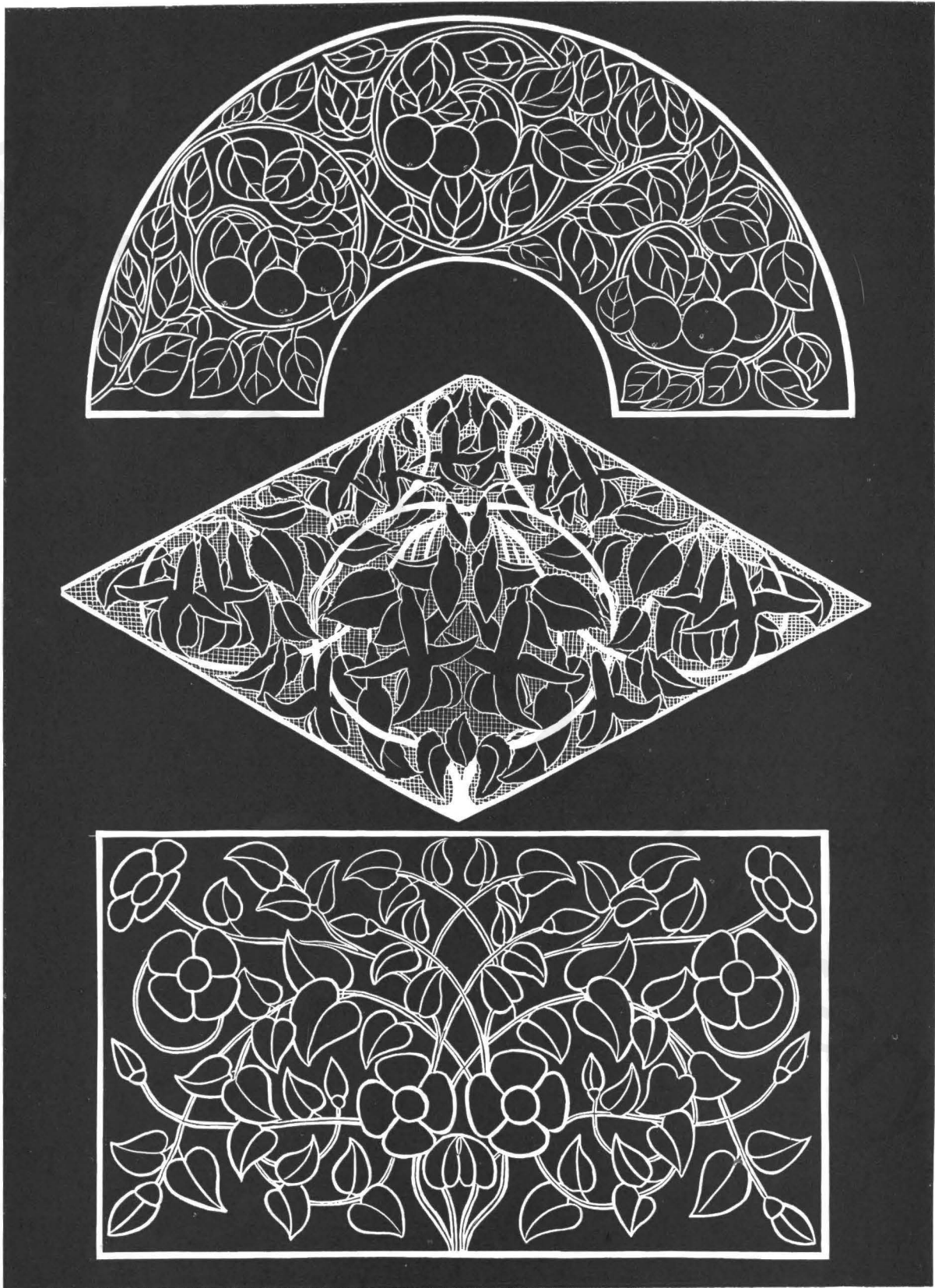
When the boys have reached the required degree of proficiency, the teacher prescribes a certain space, such as an oblong, a square, or a lunette ; and each boy is required to make an adaptation of a selected plant which shall agreeably fill this space.

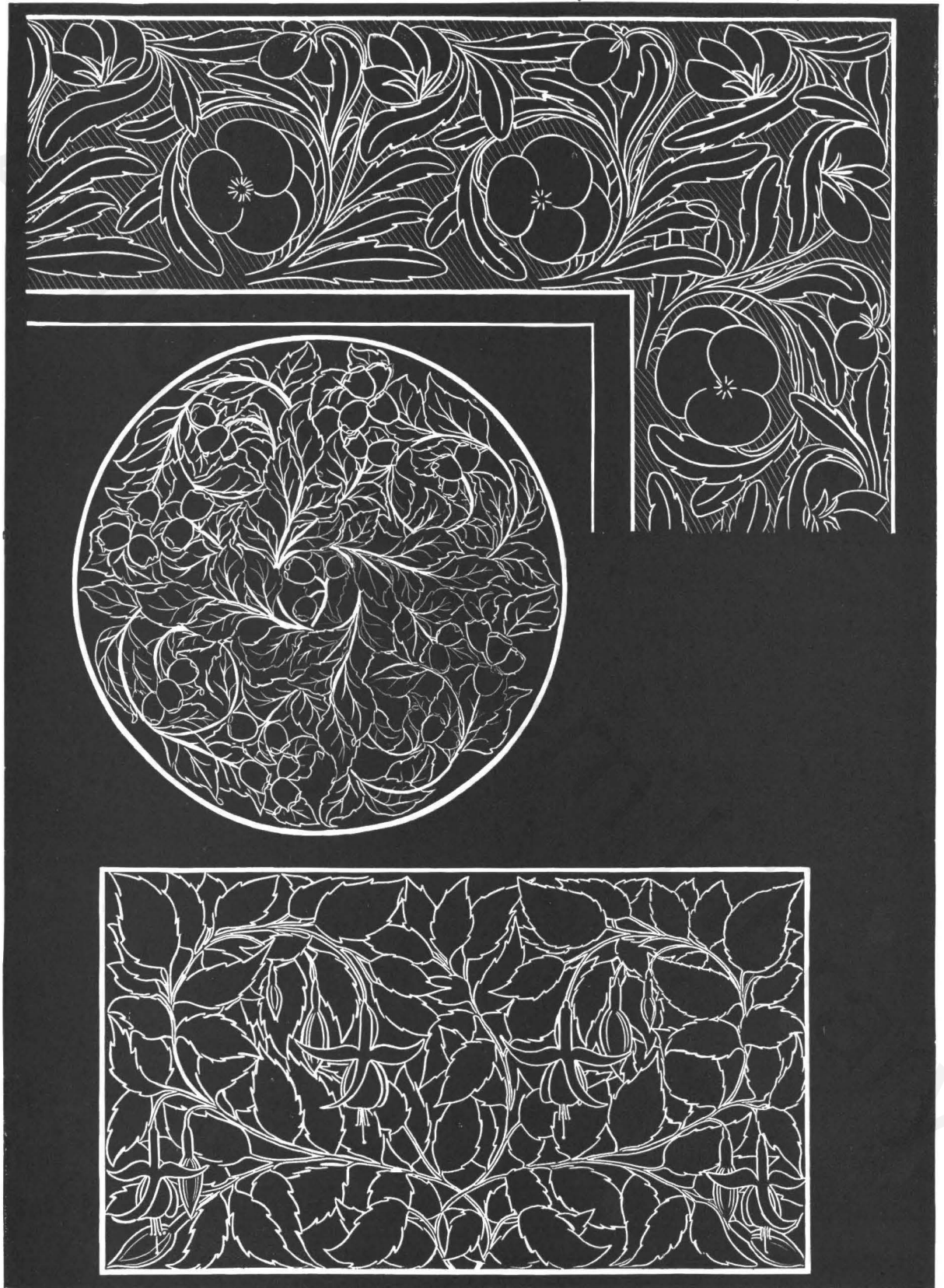
In making the design the general lines which serve as its foundation are first drawn ; the flowers, leaves, and other details, being added afterwards.

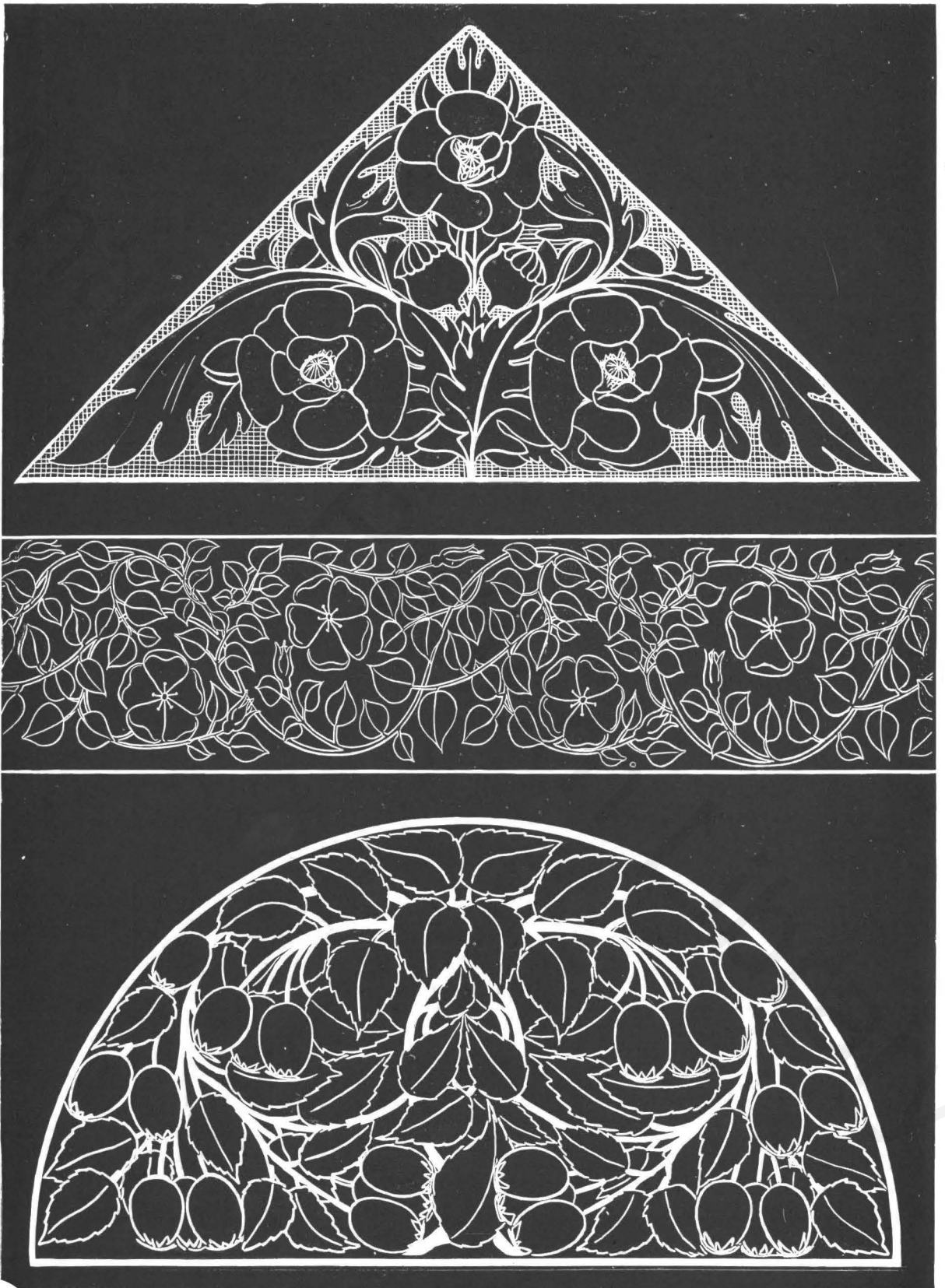
In the school from which the accompanying figures have been supplied, the Art Room is filled with a continuous blackboard running round three of its sides ; and the fact that the boys' drawings are thus exhibited side by side, is a strong incentive to each to put forward his best energies.

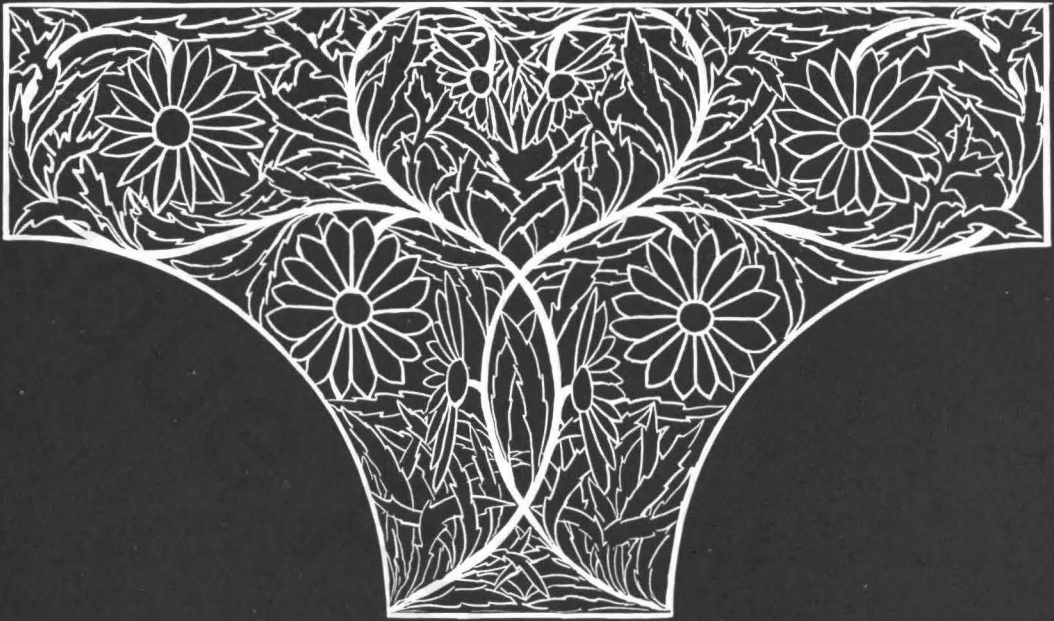
It may be necessary to add that the whole of the figures here shown are the exclusive work of the boys, both in idea and in execution ; the two designs shown on Plate LX. having been done as examination tests in the presence of His Majesty's Inspector.

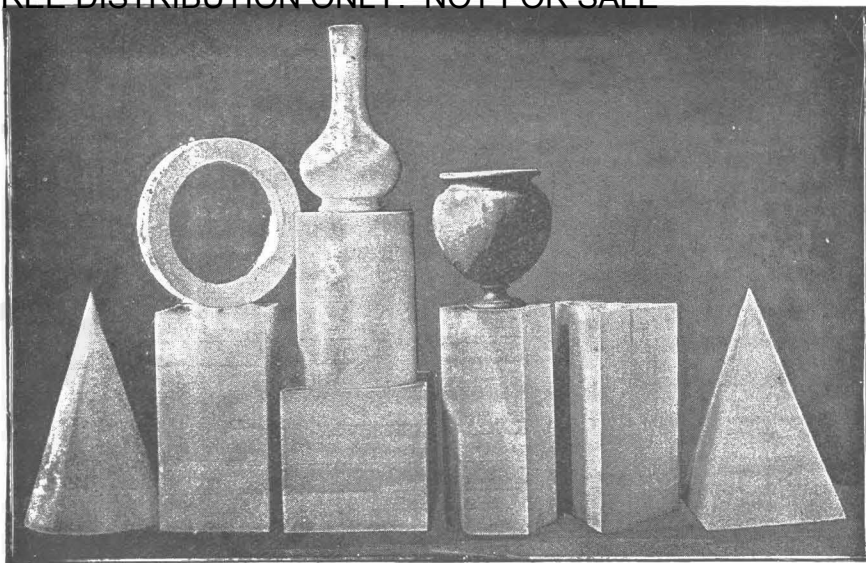












From a Photograph of one of the sets.

CUSACK'S SET OF 10 Drawing Models

(INCLUDING 2 VASE FORMS).

Perfect in shape; strongly made, in wood; and painted. Size: cube 10 in., and other Models in proportion, as shown in diagram. Made in two sizes, Large and Small. The Large size is the size for Schools of Art and Art Classes. The size prescribed by the Science and Art Department for the May Exams. The Small size is for Correspondence Students.

Large size, Price 42/- net.
Small size, Price 21/- net.

Carriage paid.

Packing Case and Packing Free.

CUSACK'S BLACKBOARD DRAWING. 3/6 net, post free 3/10.

The primary aim of this guide to Blackboard illustration is to enable the teacher to convey, with Chalk or Tempera, the most vivid impressions with **THE MINIMUM OF EFFORT**, and exactly **AT THE MOMENT WHEN REQUIRED**. The training which gives **CONFIDENCE**, which combines **ACCURACY** with **RAPIDITY**, and which, *therefore*, in no way **ENDANGERS DISCIPLINE** by keeping the teacher for lengthy periods with **HIS BACK TO HIS CLASS**, is the kind of training now eagerly sought after.

The two main classes of Blackboard illustrations, the **DIAGRAMMATIC** and the **PICTORIAL**, are fully dealt with; Common Objects, Plants, Animals, Birds, Fishes, Insects, Shell Forms, Original Elementary Design, Mass Drawing, &c., all receive ample consideration; and some happily-conceived hints are given upon the Illustration of History Lessons, Geographical Terms, Plans, and Bird's-eye Views, &c.

The Plates, appropriately printed in **WHITE** upon a **BLACK GROUND**, in imitation of **CHALK LINES** and **TEMPERA BRUSH-WORK**, will be found extremely helpful to Students preparing for the Examination in **DRAWING ON THE BLACKBOARD** as prescribed by **THE BOARD OF EDUCATION**.

CITY OF LONDON BOOK DEPOT, White St., and Finsbury St., Moorfields, London, E.C.

Perfect in shape; strongly made, in wood; and painted. Size: cube 6 in., and other Models in proportion, as shown in diagram.

Large enough for all School purposes.

These are the 4 new Models required by the new regulations of the Science and Art Department.

Price—Large Size, 16/- net; Small Size, 8/- net.

CARRIAGE PAID.

Packing Case and Packing Free.

CASTS FOR SHADING.

CASTS FOR SHADING.

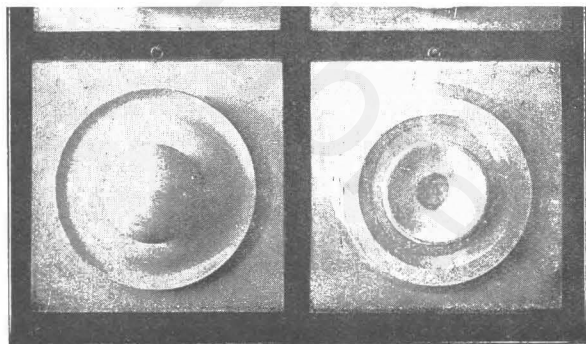
CUSACK'S set of

6 ELEMENTARY ROSETTE FORMS

(in Wood) afford the best possible practice for beginners in shading.

Price 12/- net, Carriage paid.

Packing Cases and Packing Free.



From a Photograph of the set of casts.

As it has been discovered that certain school stationers, having been asked to supply Cusack's Models, supplied other badly made Models and misshapen Vases instead, and as Professor Cusack holds himself directly responsible for the accuracy and perfection of all Models manufactured specially to his order, to prevent similar frauds in future Cusack's Models will not be obtainable through the trade generally, but will be supplied direct, **Carriage paid**, at the prices above quoted. All orders to be sent direct to the

CITY OF LONDON BOOK DEPOT, White Street and Finsbury Street, Moorfields, London, E.C.

BOOKS PUBLISHED BY PROFESSOR CUSACK.

- CUSACK'S ARITHMETIC.** For Pupil Teachers, Scholarship Candidates, and Certificate Students. 4/8 net, post free 4/10.
- CUSACK'S ALGEBRA. PART I, ELEMENTARY. NEW EDITION.** For Scholarship and Certificate Candidates. Price 2/6 net, post free 2/9. With Answers, 3/6 net, post free 3/10.
- CUSACK'S ALGEBRA. PART II., ADVANCED.** For Scholarship Candidates (Boys) and Certificate Students (Men). 3/6 net, post free 3/10.
- CUSACK'S LECTURES ON MUSIC (STAFF NOTATION),** 2/- net, post free 2/3. This Book comprises all the requirements in Staff Notation for Pupil Teachers of all years, Scholarship Candidates and Certificate Students. It deals very fully with Clefs, Minor Scales, Intervals, Modulation, Transposition from one Scale to another, and from one Time to another, and with the Metronome in a manner never before attempted in any text book on the subject.
- CUSACK'S COPY BOOKS.** ADOPTED BY THE SCHOOL BOARD FOR LONDON. Complete Series in 8 Nos., 1d. and 1½d. each. Over 10,000 Schools now use them.
- CUSACK'S WRITING BOOKS. (BLANK.)** FOR BLACKBOARD LESSONS. Ruled to match Cusack's Copy Books. 1d. each.
- CUSACK'S LEAD PENCIL COPY BOOKS.** FOR INFANT SCHOOLS. 8/- net per gross.
- NEEDLEWORK FOR STUDENT TEACHERS.** 3/6 net, post free 3/10. By AMY K. SMITH, Diplômée of the London Institute for the Advancement of Plain Needlework. Specialist at the Day Training College, Moorfields, E.C. With an introduction by the Lady Wolverton.
- CUSACK'S NEEDLEWORK DIAGRAMS.** By Miss A. K. SMITH. Pupil Teachers, according to year, about 3d. to 6d. Scholarship, 1/- net; Certificate, about 1/-
- CUSACK'S PHYSIOGRAPHY OR GENERAL ELEMENTARY SCIENCE.** 3/6 net, post free 3/10.
- CUSACK'S ELEMENTS OF LOGIC.** 2/6 net, post free 2/9. Prepared expressly to meet the requirements of Syllabus for Certificate Students. By S. BLOWS, M.A. Hons. Cantab., B.A. Hons., B.Sc., and Teacher's Diploma, London.
- CUSACK'S ELEMENTS OF PSYCHOLOGY.** 2/- net, post free 2/3. By S. BLOWS, M.A.
- CUSACK'S TONIC SOL-FA MUSIC QUESTIONS.** 1/- net, post free 1/2. By W. T. BEVERS, Inter. Mus. Bac. London University. For Pupil Teachers, Scholarship Candidates, and Certificate Students, together with the syllabuses, the Music Code for Schools, and hints on working the various exercises. Over Four Hundred Questions.
- CUSACK'S MAP DRAWING.** 2/- net, post free 2/3. Specially prepared for Pupil Teachers, Scholarship Candidates and Certificate Students, so as to enable them to produce Memory Maps neatly and quickly in the Examination Room.
- CUSACK'S MENSURATION.** 2/6 net, post free 2/9. For Pupil Teachers, Scholarship Candidates (Boys), and Certificate Students (Men).
- " We have long wanted a new book in this subject; the examples in the old ones are worn out."—W. DONE, P. T. Sch., Brighton.
- " It is exactly suited to the requirements of pupil teachers. The worked-out examples are so numerous and clear, and the explanations so full, that a student working with this book would hardly need any help from a teacher." E. SAMUEL, B.A., Pupil Teachers' School, Porth.
- CUSACK'S ATLAS OF THE BRITISH EMPIRE.** 1/- net, post free 1/2.
- CUSACK'S ATLAS OF EUROPE.** 1/- net, post free 1/2.
- CUSACK'S REPRINTS OF SCHOLARSHIP QUESTIONS.** All subjects classified. 10 years. 2/- net, post free 2/3.
- CUSACK'S REPRINTS OF CERTIFICATE ARITHMETIC QUESTIONS.** All classes. 12 years. 1/- net, post free 1/2.
- CUSACK'S OBJECT LESSONS FOR PUPIL TEACHERS. PART I.,** Animal World, 2/- net, post free 2/2.
PART II., Vegetable and Mineral World. 2/6 net, post free 2/9.
- CUSACK'S ENGLISH LITERATURE TEXTS FOR PUPIL TEACHERS:—**
- | | |
|--|--|
| <p>Gray's Elegy and Ode on the Spring, 1/- net, post free 1/1½.</p> <p>Gray's Bard and Ode on Spring, 1/- net, post free 1/1½.</p> <p>Goldsmith's Traveller, 1/- net, post free 1/2.</p> <p>Goldsmith's Deserted Village, 1/- net, post free 1/1½.</p> | <p>Cowper's Expostulation, 1/- net, post free, 1/2.</p> <p>Cowper's Task, Book IV., 1/- net, post free 1/1½.</p> <p>Pop's Essay on Man, Epistle IV., 1/- net, post free 1/2.</p> <p>Scott's Marmion, Canto VI., 2/- net, post free 2/2½.</p> <p>Milton's Paradise Lost, Book III., 1/6 net, post free, 1/8½.</p> |
|--|--|
- Each of these books contains a Life of the Author, Copious Notes and Explanations, Derivations of all important Words, Hints for Parsing all the difficult Words, and for Analysing all the more difficult Sentences, with Articles on Figures of Speech, Metre, &c.
- CUSACK'S REIGN OF QUEEN ANNE.** 1/- net, post free 1/2.
- CUSACK'S REIGN OF QUEEN ELIZABETH.** 1/6 net, post free 1/8.
- CUSACK'S TUDOR PERIOD.** 3/6 net, post free 3/10. By C. S. FEARENSIDE, M.A. Oxon., Honoursman in Modern History, with The Literature of the Period, by ARNOLD WALL, M.A. Lond.
- CUSACK'S ENGLAND UNDER STUART RULE.** By S. J. MADGE, F.R.Hist.S., 3/6 net, post free 3/10.
- CUSACK'S HISTORICAL GEOGRAPHY OF EUROPE. Period 1700—1789.** By P. W. RYDE, 2/- net.
- CUSACK'S CERTIFICATE HISTORY.** 3/6 net, post free 3/10. 1814—1848. Being the special period prescribed for Certificate Examination, July, 1903.
- CUSACK'S KINDERGARTEN DRAWING COPY BOOKS.** Series of 8 Nos. 2d. net.
- CUSACK'S KINDERGARTEN EXERCISE BOOKS.** Interleaved with Tissue. 4½d. net.
- PAPER CUTTING.** 1/6 net. A complete course of lessons on this useful and agreeable occupation. Illustrated with numerous diagrams. By FRAULEIN HEERWART, President of the International Kindergarten Association, only Gold Medallist Health Exhibition for Practical Kindergarten Teaching.

CITY OF LONDON BOOK DEPÔT, White Street and Finsbury Street, Moorfields, London, E.C.

CUSACK'S ART TEXT-BOOKS.

CUSACK'S FREEHAND—PART I, Conventional Forms—3/6 net, post free 3/11.

By following the course suggested in this book, the student will find that, by easy stages, he is obtaining a sound introduction to the **PRINCIPLES UNDERLYING THE BEST ORNAMENT** of past ages. He will be carefully grounded in the **ELEMENTS** of which **DRAWINGS** of **ORNAMENT** are **MADE UP**; be led on, step by step, to observe the **DECORATIVE** suggestions offered by **NATURE** through the medium of Plants, Shells, Birds, fancifully imagined creatures, as Dolphins, Centaurs, &c., and to the Principles underlying **ARRANGEMENT, DISTRIBUTION, &c.** In this introductory teaching, however, Principles and Methods are dealt with only so far as they are **DIRECTLY HELPFUL** in **DRAWING FREEHAND INTELLIGENTLY**, the more advanced laws of Ornament (irreducible to the Designer) being excluded. The **SOURCE** from which the ornamental forms are obtained—their use, material, history—is in most cases given, in a form possessing undoubted educational value; and a number of the Plates are **EXAMPLES** placed before Candidates **AT RECENT EXAMINATIONS**. The present Edition is supplemented by **34 PHOTOGRAPHIC REPRODUCTIONS OF ORNAMENT**, with **ANALYSIS** of each, and with a suggestion accompanying each plate as to the possible basis on which the ornament has been constructed. This fully meets the **RECENT CHANGE** made by the **BOARD OF EDUCATION** in the **METHOD OF EXAMINING FREEHAND** drawing.

OPINIONS OF EXPERIENCED PRACTICAL TEACHERS ON PART I.

"I consider Cusack's Freehand Ornament a very useful book, and the price remarkably cheap."—J. T. Cook, Art Master, Sheffield School of Art.

"I can honestly recommend Cusack's Freehand Ornament as a book that all Art Teachers should have. I think it is the best and cheapest book yet printed. The principles put forth in the beginning of the book are most helpful to Teachers and Students."

H. BORROWS, Art Master, Huddersfield School of Art.

"It is a most valuable work, certainly the best of its kind that has yet come under my notice."
JOHN FISHER, Art Master, Kensington School of Science and Art.

"This handsome volume is quite as excellent in its way as its two predecessors, 'Cusack's Shading' and 'Cusack's Model Drawing.' The latest production is a text book, with chapters on elementary principles and methods of freehand drawing. It is intended, and it is in every way suited, for teachers and students in public and elementary schools, for students in training colleges, and for elementary art students. An analysis of each of the 192 plates is given, and the different steps shown, so that by working on the lines suggested the student acquires a definite method of procedure. The designs are copied from the best artistic sources."—Schoolmistress.

CUSACK'S PHOTOGRAPHIC REPRESENTATIONS OF ORNAMENT.

Second Edition. 1/6 net, post free 1/8½.

34 plates, with analysis of each and instructions, being Supplement to Part I., but can be had separately.

CUSACK'S FREEHAND—PART II. Natural Forms:

Animals, Plants and Common Objects. 3/6, post free 3/10,

treats of **LEAVES** and **PLANTS** with **TYPICAL EXAMPLES**, and explicit instructions as to **OUTLINE, RIBBING** and **VEINING** of leaves, the **GROWTH OF THE STEM, &c.** **ANIMALS** are dealt with in a manner which will enable the student to intelligently give the **SURFACE SUGGESTIONS** of their **ANATOMY**, also the correct **FEATHERING OF BIRDS**. In furtherance of this idea **KEY DRAWINGS** of the Horse and Bird are added. **COMMON OBJECTS** include a wide range of well selected subjects, and the beginner is advised to draw from an **OBJECT** similar to that in the Plate under consideration, afterwards comparing the result with the example. The drawing required by **SCIENCE STUDENTS**, in answering Examination Questions, is not overlooked; numerous pieces of simple **APPARATUS** being given in a section to themselves.

CUSACK'S MODEL DRAWING—Second Edition. 3/6 net, post free 3/10.

This book contains over 200 explanatory diagrams and deals fully with many points never before attempted in a book on this subject, and but rarely even in classes. The letterpress is in each instance on the page opposite the diagrams to which it refers.

It includes descriptions of the best methods of drawing **THE SQUARE PYRAMID** and **THE CYLINDER**, with examples of **WRONG** treatment frequently noticed in the drawings of beginners fully criticised, and the **RIGHT** treatment, clearly and convincingly explained, alongside, for comparison, and contains valuable information as to **HOW TO TAKE MEASUREMENTS**. That stumbling-block to elementary students, **THE SKELETON CUBE**, is robbed of its terrors by illustrations of its gradual development from a solid cube. Each of the 14 Models prescribed for examination is similarly dealt with.

Teachers and Students who are preparing for the examination in **DRAWING ON THE BLACKBOARD** will find this text-book invaluable.

"A book for students, and one of the most complete and perfect guides to excellence in this branch of drawing that has come under our notice. The subject is dealt with in a most exhaustive manner, and every conceivable position in which the usual models can be placed is shown. We cordially recommend the work."—Schoolmistress.

"Worthy of all praise. Far ahead of anything we have yet seen."—Schoolmaster.

"The result of several years' practical experience. Well adapted for its purpose."—Teachers' Aid.

"We have never seen a more complete book than this one, whether for the elementary teacher or the student going in for his certificates."—Arnold's Art Circular.

CUSACK'S HOW TO DRAW THE GEOMETRIC MODELS AND VASES, 9d. net, post free 10d.

Multum in parvo perhaps best describes this little guide. The space from cover to cover is literally packed with valuable hints, and abundant explanatory sketches; and doubts as to correct methods vanish like mists before the sun, as one Model or Vase after another is submitted to the search-light of expert criticism.

CITY OF LONDON BOOK DEPÔT, White St., and Finsbury St., Moorfields, London, E.C.

CUSACK'S SHADING, 3/6 net, post free 3/10.

This book contains 3 plates, full examination size, 20 finished plates, and 60 explanatory diagrams, and explains **METHODS OF SHADING** with **STUMP** and **POWDERED CHALK**, and with **PEN** or **PENCIL** by means of **LINES** or strokes. **FLAT** and **CURVED SURFACES** are dealt with, together with **RECEDING SURFACES**, **REFLECTED LIGHTS**, **CAST SHADOWS**, &c. The work includes the shading of **VASE FORMS**, **CASTS**, **GLAZED SURFACES** and **COLOURED SURFACES**, **DIFFERENT TEXTURES**, and **FRUIT** and **FLOWERS** from **NATURE**. **FINISH** is also discussed. **FULL-SIZED** subjects given at **RECENT EXAMINATIONS** are included. The descriptive matter is in each case on the page opposite the Plate described, and on the same page as the explanatory sketches.

"This is a good practical work on a difficult subject, and calculated to help students."—*Science and Art.*

"Students will find in this eminently practical text-book all that is needed to add interest and enjoyment to their work. The examples given by the artist are beautifully executed. The proper methods of shading are most clearly described. Admirably suited. The work is one of which both artist and publisher may well be proud."—*Schoolmistress.*

"A very helpful text-book.—And this work will be found especially valuable to all who are unable to attend art classes for direct instruction."—*Schoolmaster.*

"This is a splendid book. We do not wonder to find that it is selling well. We can honestly recommend it. When seen it will recommend itself."—

"The best text-book on shading that has yet appeared."—*Arnold's Art Circular. Teachers' Aid.*

CUSACK'S PLANE GEOMETRY, 3/6 net, post free 3/10,

treats the subject in a comprehensive manner, and in clear and convincing language. The **USE OF INSTRUMENTS** is carefully explained. **THE DEFINITIONS**, instead of being grouped together at the beginning of the book, are supplied as required; thus obviating the insertion of an opening section which the majority of students instinctively regard as uninviting.

The usual problems are adequately dealt with, and supplemented by notes on the **USE OF SET SQUARES**, **PLAIN** and **DIAGONAL SCALES**, the **PROTRACTOR** and **SECTOR**, &c. The **ELLIPSE**, **PARABOLA** and **HYPERBOLA**, **CYCLOIDS** and **SPIRALS** all receive due attention, in their proper places; and lessons on **FORMS OF ARCHES**, the characteristics of **GREEK** and **ROMAN MOULDINGS**, **GEOMETRICAL PATTERN DRAWING** and **GOTHIC TRACERY** add to the interest and practical nature of the work.

CUSACK'S SOLID GEOMETRY (For Science Subject I). 3/6 net, post free 3/10.

In this exhaustive Text-Book, the author has conveniently arranged the subject in **30 LESSONS**; each portion being suitable for one week's work. In the course of this series the whole of the subject receives adequate attention. After conveying a general notion of **PLANS** and **ELEVATIONS**, the question of **LINES** and **POINTS OF INTERSECTION** is discussed. The practical **PROJECTION** of **PLANE FIGURES** leads on to the **PROJECTION** of **SIMPLE SOLIDS**, and thus, by easy stages, profusely illustrated at every needful point, the student is enabled to obtain a mastery of the more advanced and intricate problems.

Throughout the work, continual reference is made to the patent **GEOMETRIKON** box, which contains everything necessary for verifying the truths underlying the various problems; and its use as an auxiliary to the Text-Book can scarcely fail to aid the **MEMORY**, and improve the quality of that **MENTAL TRAINING** which is admittedly one of the advantages attending the study of Orthographic Projection.

CUSACK'S PATENT GEOMETRIKON

(A Box of Apparatus for simplifying the study of Solid Geometry). 3/6 net, post free 3/10.

In the study of **SOLID** Geometry experience has shown that students who have actually handled representative planes, solids, &c., retain a more vivid and lasting impression of them than if their acquaintance had been made on paper only. In the latest Geometrical **SYLLABUS** of the **BOARD OF EDUCATION** it is recommended that "**MODELS** should be freely used, **ESPECIALLY** in **SOLID** Geometry." In the **GEOMETRIKON**, provision has been made for the student, under the guidance of the Text-Book (Solid Geometry), to work out for himself the methods and processes under consideration, and, by the tangible aids of machinery, **HINGED**, **PLAN** and **ELEVATION PLANES**; **SOLIDS**; **TRANSPARENT** Xylonite, and **OPAQUE** Carboard **PLANES**; auxiliary **DIAGRAMS** on Xylonite, Card, &c., to obtain such a firm grasp of the truths involved as eventually to be able to dispense with all such aids.

The whole is designed to illustrate all the essential principles of Science Subject 1, from the most elementary to the most abstruse.

"I cannot speak too highly of the idea of the Geometrikon; it is, I consider, the best thing of its kind that I have seen."

J. T. Cook, School of Art, Sheffield.

"I have carefully looked through 'Cusack's Solid Geometry,' and have decided to use it as a text book in this School. The 'Geometrikon' is a most useful addition to the book."—**JOHN FISHER**, Art Master, Kensington Government School of Science and Art, Berkeley Square, Bristol.

CUSACK'S PERSPECTIVE (Just Published), 3/6 net, post free 3/10,

will commend itself to all experienced Teachers as the **IDEAL TEXT-BOOK** for this branch. It contains a very full, clear, and carefully worded **INTRODUCTION**, a matter of paramount importance in a subject of this kind.

Everything is arranged to stimulate the intelligence of the student, and enable him to grasp **THE MAIN TRUTHS** embodied in the problems under consideration.

COMMON ERRORS in Perspective, gleaned from past failures, are marked out as pit-falls for the **AVOIDANCE** of the candidate.

A very useful **ANALYSIS** of Perspective drawings is introduced, **REVERSING** the process of original construction, in order to ascertain facts from the pictorial representation, instead of a pictorial representation from given facts.

SCIOGRAPHY, or the representation of **SHADOWS** cast by the sun and by artificial light, is lucidly dealt with.

AËRIAL PERSPECTIVE, as complementary to Linear, receives full consideration; as it relates to variations in **TONE**, **COLOUR**, and **DISTINCTNESS**.

No candidate whose watchword is "**SUCCESS**" can afford to dispense with this reliable guide. Obstacles are swept aside, and the path to the goal made direct and sure.

CITY OF LONDON BOOK DEPÔT, White St., and Finsbury St., Moorfields, London, E.C.

CUSACK'S SHADING, 3/6 net, post free 3/10.

This book contains 3 plates, full examination size, 20 finished plates, and 60 explanatory diagrams, and explains **METHODS OF SHADING** with **STUMP** and **POWDERED CHALK**, and with **PEN** or **PENCIL** by means of **LINES** or **strokes**. **FLAT** and **CURVED SURFACES** are dealt with, together with **RECEDING SURFACES**, **REFLECTED LIGHTS**, **CAST SHADOWS**, &c. The work includes the shading of **VASE FORMS**, **CASTS**, **GLAZED SURFACES** and **COLOURED SURFACES**, **DIFFERENT TEXTURES**, and **FRUIT** and **FLOWERS** from **NATURE**. **FINISH** is also discussed. **FULL-SIZED** subjects given at **RECENT EXAMINATIONS** are included. The descriptive matter is in each case on the page opposite the Plate described, and on the same page as the explanatory sketches.

"This is a good practical work on a difficult subject, and calculated to help students."—*Science and Art*.

"Students will find in this eminently practical text-book all that is needed to add interest and enjoyment to their work. The examples given by the artist are beautifully executed. The proper methods of shading are most clearly described. Admirably suited. The work is one of which both artist and publisher may well be proud."—*Schoolmistress*.

"A very helpful text-book.—And this work will be found especially valuable to all who are unable to attend art classes for direct instruction."—*Schoolmaster*.

"This is a splendid book. We do not wonder to find that it is selling well. We can honestly recommend it. When seen it will recommend itself."—

"The best text-book on shading that has yet appeared."—*Arnold's Art Circular*.

Teachers' Aid.

CUSACK'S PLANE GEOMETRY, 3/6 net, post free 3/10,

treats the subject in a comprehensive manner, and in clear and convincing language. The **USE OF INSTRUMENTS** is carefully explained. **THE DEFINITIONS**, instead of being grouped together at the beginning of the book, are supplied as required; thus obviating the insertion of an opening section which the majority of students instinctively regard as uninviting.

The usual problems are adequately dealt with, and supplemented by notes on the **USE OF SET SQUARES**, **PLAIN** and **DIAGONAL SCALES**, the **PROTRACTOR** and **SECTOR**, &c. The **ELLIPSE**, **PARABOLA** and **HYPERBOLA**, **CYCLOIDS** and **SPIRALS** all receive due attention, in their proper places; and lessons on **FORMS OF ARCHES**, the characteristics of **GREEK** and **ROMAN MOULDINGS**, **GEOMETRICAL PATTERN DRAWING** and **GOTHIC TRACERY** add to the interest and practical nature of the work.

CUSACK'S SOLID GEOMETRY (For Science Subject I). 3/6 net, post free 3/10.

In this exhaustive Text-Book, the author has conveniently arranged the subject in **30 LESSONS**; each portion being suitable for one week's work. In the course of this series the whole of the subject receives adequate attention. After conveying a general notion of **PLANS** and **ELEVATIONS**, the question of **LINES** and **POINTS OF INTERSECTION** is discussed. The practical **PROJECTION OF PLANE FIGURES** leads on to the **PROJECTION OF SIMPLE SOLIDS**, and thus, by easy stages, profusely illustrated at every needful point, the student is enabled to obtain a mastery of the more advanced and intricate problems.

Throughout the work, continual reference is made to the patent **GEOMETRIKON** box, which contains everything necessary for verifying the truths underlying the various problems; and its use as an auxiliary to the Text-Book can scarcely fail to aid the **MEMORY**, and improve the quality of that **MENTAL TRAINING** which is admittedly one of the advantages attending the study of Orthographic Projection.

CUSACK'S PATENT GEOMETRIKON

(A Box of Apparatus for simplifying the study of Solid Geometry). 3/6 net, post free 3/10.

In the study of **SOLID** Geometry experience has shown that students who have actually handled representative planes, solids, &c., retain a more vivid and lasting impression of them than if their acquaintance had been made on paper only. In the latest Geometrical **SYLLABUS** of the **BOARD OF EDUCATION** it is recommended that "**MODELS** should be freely used, **ESPECIALLY** in **SOLID** Geometry." In the **GEOMETRIKON**, provision has been made for the student, under the guidance of the Text-Book (Solid Geometry), to work out for himself the methods and processes under consideration, and, by the tangible aids of mahogany, **HINGED, PLAN AND ELEVATION PLANES; SOLIDS; TRANSPARENT Xylonite**, and **OPAQUE** Cardboard **PLANES**; auxiliary **DIAGRAMS** on Xylonite, Card, &c., to obtain such a firm grasp of the truths involved as eventually to be able to dispense with all such aids.

The whole is designed to illustrate all the essential principles of Science Subject 1, from the most elementary to the most abstruse.

"I cannot speak too highly of the idea of the Geometrikon; it is, I consider, the best thing of its kind that I have seen."

J. T. Cook, School of Art, Sheffield.

"I have carefully looked through 'Cusack's Solid Geometry,' and have decided to use it as a text book in this School. The 'Geometrikon' is a most useful addition to the book."—**JOHN FISHER**, Art Master, Kensington Government School of Science and Art, Berkeley Square, Bristol.

CUSACK'S PERSPECTIVE (Just Published), 3/6 net, post free 3/10,

will commend itself to all experienced Teachers as the **IDEAL TEXT-BOOK** for this branch. It contains a very full, clear, and carefully worded **INTRODUCTION**, a matter of paramount importance in a subject of this kind.

Everything is arranged to stimulate the intelligence of the student, and enable him to grasp **THE MAIN TRUTHS** embodied in the problems under consideration.

COMMON ERRORS in Perspective, gleaned from past failures, are marked out as pit-falls for the **AVOIDANCE** of the candidate.

A very useful **ANALYSIS** of Perspective drawings is introduced, **REVERSING** the process of original construction, in order to ascertain facts from the pictorial representation, instead of a pictorial representation from given facts.

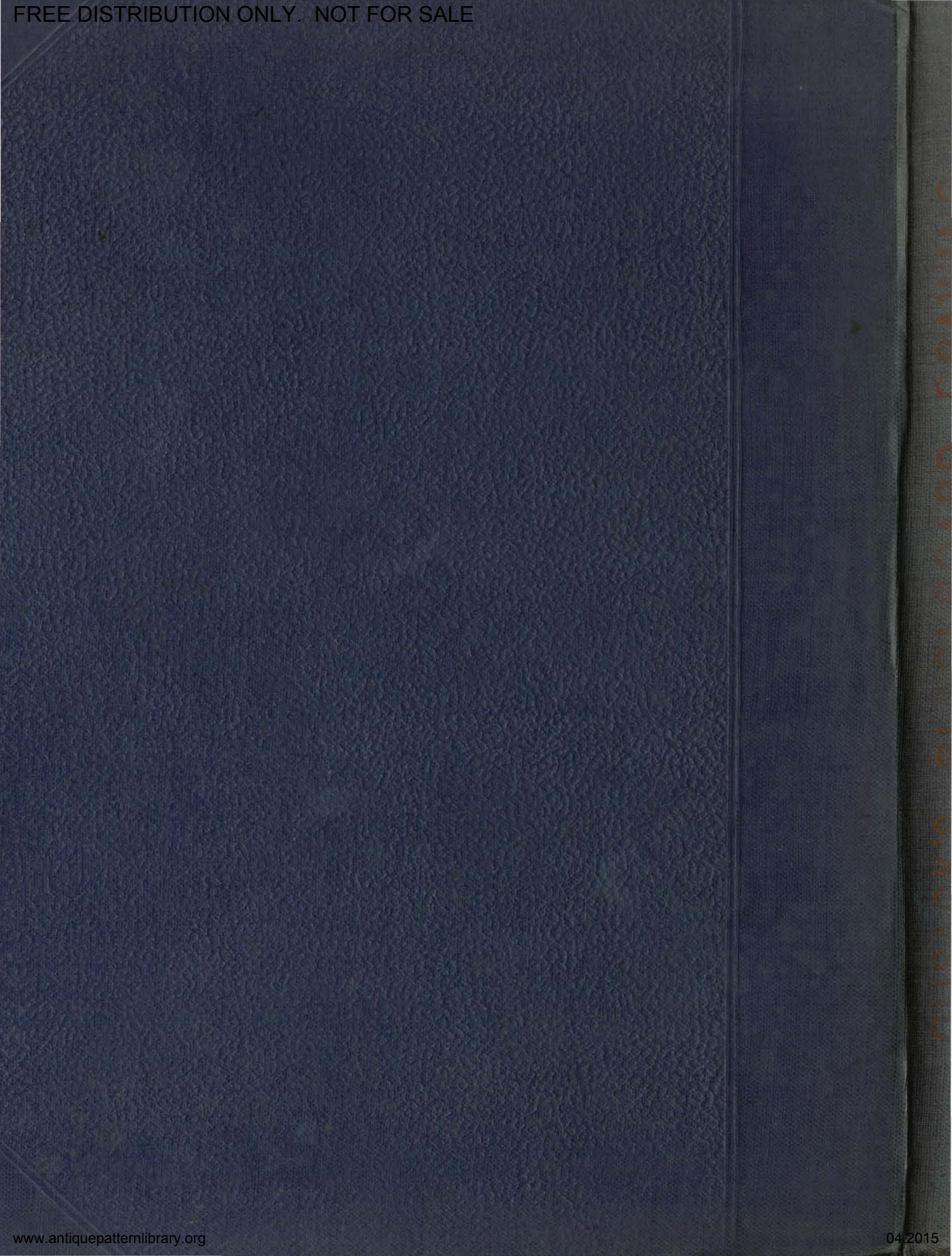
SCIOGRAPHY, or the representation of **SHADOWS** cast by the sun and by artificial light, is lucidly dealt with.

AËRIAL PERSPECTIVE, as complementary to Linear, receives full consideration; as it relates to variations in **TONE**, **COLOUR**, and **DISTINCTNESS**.

No candidate whose watchword is "**SUCCESS**" can afford to dispense with this reliable guide. Obstacles are swept aside, and the path to the goal made direct and sure.

CITY OF LONDON BOOK DEPÔT, White St., and Finsbury St., Moorfields, London, E.C.





LIBRARY OF THE
MUSEUM OF
ART AND
ARCHITECTURE
COLUMBIA UNIVERSITY