



HARDING'S LESSONS ON DRAWING

A CLASSIC APPROACH

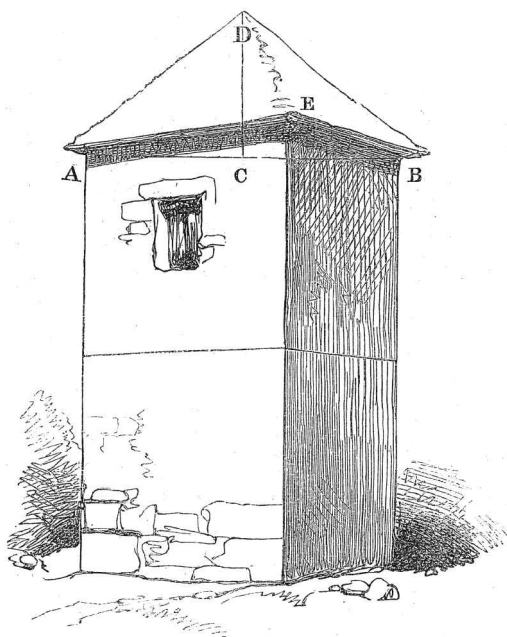


J. D. HARDING

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A Classic Approach

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PREFACE TO THE FIRST EDITION.

THE power either to draw, or to appreciate Art and Nature, is, and must be, the result of education. This truth, although now more generally acknowledged than formerly, is by no means so universally acknowledged as it should be, in order that the human mind may progress in Art, as it does in every other pursuit.

This power is still falsely considered to be an inborn faculty, which, if not possessed in some remarkable degree, is not present in any valuable degree. Were this true of the power to draw, it would be true of every other faculty. Orators, poets, and writers would monopolise language; science, mental and material, would belong only to philosophers; and music would be the exclusive inheritance of Handels, Haydns, and Mozarts. To argue that those who have shone as orators, poets, philosophers, or musicians, have faculties denied to all the rest of mankind, would be absurd; nor would it be less at variance with truth to insist that painters of genius only can have the necessary power to draw.

The faculties of the mind called into action by the practice of Art, belong to all men in some degree—they are the same as those employed when the mind essays any other mental acquisition; but as each pursuit exercises and improves one faculty, or set of faculties, more than another, so the study of Art, besides demanding the exercise of such as are necessary to other pursuits, employs those which are more peculiarly necessary to its own particular attainment. It should, therefore, be esteemed as an important coadjutor with other pursuits, for it co-operates in the development of every mental faculty and feeling, and especially helps to bring into life and activity such as, without its aid, would lie dormant or unknown. If this be admitted (and I think it can scarcely be denied), then it may be fairly asserted that no mind can be fully developed but by its assistance.

If any additional evidence be required in proof of this, we have only to turn to Nature, which has obviously been fashioned for our enjoyment, else why the pleasure derived from its contemplation? why the gratification in seeing that Art has fixed its transient beauties? In Nature are to be found the sources of all the pleasure we derive from the colour, form, character, and combination of objects. Individuals who are not made acquainted with the beauties of Nature through the medium of Art, acknowledge, indeed, their existence as an undeniable fact, but those only who have

studied Art, are conscious how they abound on all sides, or can be fully alive to their influence. It is one thing to acknowledge the existence of beauty ; it is another to feel its power. Those who have not studied Art, see as through a glass darkly the beauties which the Creator has spread around in exhaustless abundance, and are but faintly conscious of their ameliorating effects on the mind and feelings. A portion only of the charms of Nature can be realised ; the rest, for those who are ignorant of Art, have been all but created in vain. Need more be said to induce the adoption of the study of Art as an essential requisite ? It is surely a conclusive argument in its favour, that, by its study, the feelings become refined, and the mind awakened to a new sense and new powers, by which it can estimate what has been done by a beneficent Creator for its gratification, and can find occasion to be grateful for the bounty which has supplied such stores of refined and elevating enjoyment.

A strong argument in favour of the study of Art may be deduced, not only from its growing diffusion and general employment, apart from what is shown in the higher walks of painting and sculpture, but in its application to manufactures of every kind, and as an adjunct in conveying just and correct ideas on many important branches of knowledge.

There never was a time when Art was so much in request for the embellishment of what ministers to our physical wants. We breathe an atmosphere of Art : objects, whether of small or great utility, now teem with every beauty the imagination can contribute. If we acknowledge its advantage in these respects, we cannot doubt its high importance, nor overrate its value in conveying ideas, and in thus quickening the march of mind. Scarcely a publication is now issued and not illustrated. Does not Art, whilst gratifying the feelings, penetrate the intelligence, and fix its own truths on the mind with a power beyond the reach of words ? The press daily affords its millions of proofs of these facts ; spreading in all directions communications of vast commercial importance in no other way communicable, and thus creating and extending sources of wealth among the nations. Those geographically remote are made proximate by a language which leaps the barriers of differing tongues, and speaks what can be universally comprehended.

It would be useless to multiply arguments in favour of the study of Art ; what more than the foregoing considerations could enhance its value,—what less could do it justice ?

J. D. HARDING.

3, ABERCORN PLACE, ST. JOHN'S WOOD.

PREFACE TO THE SECOND EDITION.

THE demand for another Edition of "The Lessons on Art," has tempted me, by the opportunity thus afforded, to change the form of the work to one which I hope will be found more portable, and, therefore, more convenient. I have also been desirous of supplying it at as small a cost as possible, consistent with its practical utility, so as to bring it within the reach of a larger number of persons.

This new Edition is accompanied by an entirely new set of Drawings, and whilst I have preserved the original plan of the book intact, I have made such additions and changes as will, I hope, be found to increase its usefulness as a practical work. That I may still more effect this, which has been my especial object in laying it before the public, I propose soon to follow it by another, and a smaller part, which shall serve the purpose of a Guide or Companion, so that together, the two may present to the Pupil and the Teacher something like a comprehensible digest of the initiatory steps to Art.

My desire is not more to aid those who learn than those who teach Art. The very great favour with which the former Edition has been received by both, and the large extent to which its principles have been acknowledged and adopted, have encouraged me to take every pains to increase its utility, and to render it worthy of becoming confirmed in public estimation.

INTRODUCTION.

As the "Lessons on Art" differ so widely from any other work of the kind yet offered to the public, some explanation may be required of the objects sought to be attained by them, in order that teachers may judge of what is here intended to aid them in their attempts to impart instruction, and to enable parents and the public to comprehend what benefit may be derived from Art if properly studied.

But, before entering on this explanation, it will be desirable to say a few words on what has been generally wanting in works of this kind, and also on what has hitherto impeded the proper study of Art, so that it may be understood why the great advantages it offers, and the new powers its proper study would confer, have so rarely been realised.

Lessons, such as have been ordinarily offered for the pupils' use through the medium of lithography (my own among the number), have been but seldom accompanied by verbal instruction; and, although consisting of single objects, and therefore appearing to the eye to present but little or no difficulty, are by no means found so easy as they appear. Nor is this to be wondered at. Before the hand can transcribe forms easily and truthfully, especially such as are circular, the mind must possess some simple machinery, to aid the hand to execute, and the eye to judge accurately. There must be some simple elements into which all forms, however complicated, may be resolved, as a primary condition, on which hangs the power to draw well; or even to draw at all. If the mind must be trained before it can direct the hand in drawing any single and familiar object accurately, how much more preparation is requisite to draw various objects in varied combinations? Without such preparation, drawing is a hopeless effort—with it, an improving exercise of the best faculties of the mind; and if difficulties attendant on drawing objects singly, be multiplied in proportion as the objects are numerous, what reasonable expectation can there be that, ere these are mastered, and the mind has become familiarised to them, an attempt to colour can be successful? None—absolutely none.

One great impediment to a more extensive acquisition of Art is the mistaken belief that peculiar faculties are required. But the giant barrier to be overcome is

the extraordinary demand that those who take up Art shall in a short time be made capable of producing complete works of Art in *colour*, such as can only be effected, and ought only in reason to be expected, from accomplished painters. Every solid and future advantage is sacrificed at the shrine of present gratification. This mischief is attended by a train of evils; it nullifies the efforts of the teacher, who could and would be useful to his pupil; his own time, and that of his pupil, are wasted in their united attempts at impossibilities—the one suddenly to impart a power which the other has not been allowed time to acquire, and never will, but through the ordinary steps of elementary knowledge. This is a costly error in every sense, and involves an irreparable loss of *time* and money. The fallacy of these expectations, to say nothing of all their other attendant mischiefs, which I refrain from enumerating, might be readily made apparent.

Drawing is an art immeasurably more difficult than penmanship, although the latter is but drawing forms with a pen instead of a pencil; yet, to attain even a legible handwriting, much more an elegant one, years of tuition are submitted to, and it is deemed satisfactory if a progressive improvement be periodically manifested. So also with the living and dead languages; in fact, with every other branch of education except drawing. A power, the sole acquisition of those who have devoted to it years of study, is demanded of youth, before the intervening steps have been seen, studied, or even thought of.

If I can succeed in convincing parents of these truths, I shall have effected one-half my object in this work. The mischief I complain of is wide-spread, of which all teachers and many parents can bear witness. All the solid advantages and enjoyments which Art is calculated to afford, are lost sight of or overlooked. A proper study of it exercises and assists to mature the reasoning, the perceptive, and the reflective faculties of youth, developing and preparing these, the best powers of the mind, for more efficient exercise on any other subject; and, should the pencil in after life be no longer required, which is barely possible, there will be not only no wasted hours to regret, but occasion of thankfulness for the valuable service it has rendered, the enjoyments it has supplied, and the many collateral advantages it has furnished.

In approaching the study of Art by the initiatory steps contained in these Lessons, I set aside altogether the question whether those who would use them possess either taste or genius. If all other branches of education depended on the decision of this question, and on their affording amusement to youth, Latin and Greek would indeed be dead languages; arithmetic and mathematics in danger of becoming unknown; Art and science extinct. We boast of many scholars, who began by wishing the classics any fate but a pleasant one, and to whom a general conflagration of classic authors would have proved intense enjoyment. I banish therefore the question of innate love; as in all other cases, it is unnecessary (certainly if it show itself it is

always an advantage), because Art can be acquired to as useful a degree as language, by all possessing average intelligence. My object in this work is not to amuse, but to instruct, to train the mind with the hand; not to show how time and talents may be lost or wasted in pretty pastime, but how their value may be increased by another means for rightly employing them. Truths of Nature are placed before the mind of the pupil, and their imitation before his eyes, by methods of ready attainment, and such as are adapted to the comprehension of youthful minds and powers. The exercise of the reason is invited, so that the youths may be convinced that what is presented is true, and being thus prepared, they may finally become their own teachers; for this is, or ought to be, the end of all education. Few will have studied Art, and not have occasion to test its value. It is hardly possible to imagine any position into which the chances and changes of life may throw a youth, where his pencil will not be of equal importance to him as his pen; so often, indeed, as to be beyond the belief of those who have not been taught by experience its worth and its universal applicability.

Added to the desire to effect the objects already explained, I here offer to the teachers of drawing aid analogous to that which a teacher of language derives from a grammar, thinking that my experience of many years of tuition might assist in diminishing their labours, and at the same time in making them more effective. Written instructions accompany the graphic examples, to which the pupil can refer in the absence of the master, and be better prepared for his recurring visits; and the interrogatories of the master will enable him immediately to ascertain whether the Lesson has been wholly or partially understood; not whether it has been drawn, but whether it has been comprehended.

These Lessons may, perhaps, also be useful to private governesses, whose pupils, residing at a distance from a town, are not within reach of public teachers.

The objects I have had in view in this work need no apology, and should the theory and practice presented, be found in other hands as efficient as they have in my own, I shall continue to add other Sections on other subjects of progressive difficulty, and adapted for those pupils who, having accomplished the Lessons herein contained, will be worthy of working in a wider field, and finally will have acquired the enviable power of drawing from Nature herself.

To this end, which has always been borne in mind, reference to Nature is continually made throughout these Lessons; and a knowledge of the initial principles of perspective imparted by a simple method, which obviates the harassing and cumbersome complexities and terminology of that science, hitherto so repulsive and bewildering to youth.

LESSONS ON ART.

PREPARATORY OBSERVATIONS.

THE examples contained in this Number consist of certain elementary forms, which, though but rarely seen in naturally organized bodies, are yet very generally found in all the works of man, and constitute a standard by which you may estimate the obliquity, curvature, or irregularity of lines. As these forms will be frequently referred to in the future Numbers, and where their practical application will be more fully developed, it is necessary, therefore, that you should not only learn to draw them correctly, but also with facility, and from memory.

However simple these Lessons may appear to you, they are, notwithstanding, the bases on which your future knowledge must rest; they should, therefore, be most carefully studied and completely acquired, otherwise the future development of their principles cannot possibly be clearly comprehended. The order of instruction is regularly progressive: your first Lesson is preparatory to the second, the second to the third, and so on. Each, in the order given, should be thoroughly mastered before you attempt the next, that you may be able to call to mind and draw the example directly that it is referred to, and form a clear mental perception of it.

No attempt could here be made to point out to you the various errors into which you are liable to fall, any more than the author of a grammar could anticipate your various misapplications of its rules. Here, as in the grammar, it is stated to you what is to be done, and how. Your tutor, if you have one, will judge of your performances, and will point out any errors which may have escaped your less practised observation. He will also see that you comprehend the Lesson, and are able to draw the whole from memory, without either referring to the example or the written instructions connected with it. If what is thus done should be wrong, he will examine whether you are able to discover the errors, and can yourself make the necessary corrections, not from the eye, but from a positive knowledge of the subject. No Lesson can be said to be really learned, unless this can be done.

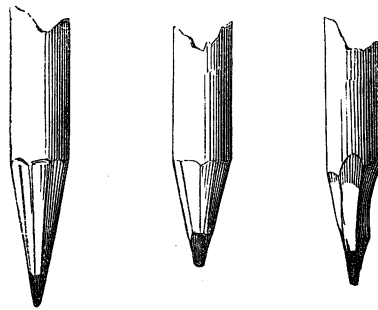
The instructions annexed to every Lesson should be carefully read over, before any attempt be made to put them in practice; and every Lesson should be well

learned before you attempt the one following, as the instructions contained in the previous Lessons will not be repeated, it being always supposed that you have acquired them perfectly, and in the order in which they are presented.

It is a good plan for some one to read aloud to you the written instructions, whilst you examine the drawing to which they refer; and, doing this alternately for another, both you and a fellow-pupil, will learn at the same time, more rapidly and with less fatigue.

You should be furnished with a straight and a triangular ruler, and a pair of compasses, to be used only when you have first tried each Lesson by the eye, and as here recommended. The object is, first to exercise your eye, and then to set before it rigid accuracy, from the production and contemplation of which your hand and eye will become accurate, without the aid of mathematical instruments.

ON CUTTING THE PENCIL.



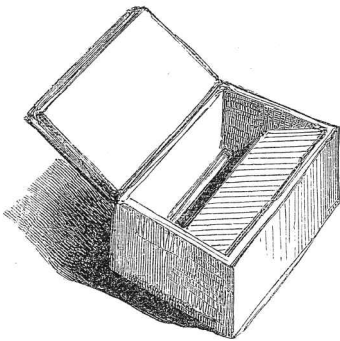
BEFORE you enter on the study and practice of the Lessons, I must teach you how to cut your pencils. In proportion as your pencil is soft or hard, so does it require more or less the support of the wood. To obtain that support, you must cut your pencil, with a *sharp* knife, evenly all round, as you see in Figs. 1 and 2; the hard like Fig. 1, the soft like Fig. 2. If you attempt to cut with a blunt knife, you will find that you break the lead continually; and if, after many fractures, it is at length cut like Fig. 3, which is the usual form given by young hands, it breaks again and again, wherever the wood is too weak to support the lead; it cannot, therefore, be used firmly, or with the required pressure for the deeper tones of colour.

It must be observed, that no pencil appears to be the same at all times ; this arises from the nature of the paper, whether hard or soft, smooth or rough, or the condition of the atmosphere, which affects it materially. The same pencil on smooth or rough, moist or dry paper, will mark as if four different pencils had been used ; the softer and darker degrees of lead are weaker, and, from their very nature, yield more readily than the harder varieties.

Chalk is in some important respects preferable to the lead pencil. Among its chief merits are its greater depth of colour, and the possibility of seeing whatever is done with it in any light, because it does not shine like the lead pencil. As, however, its operations cannot easily be effaced, and are more frequently altogether ineffaceable, it is not adapted for beginners. I therefore recommend you to delay its use until you have acquired some considerable command over your pencil.

For general use, the best chalk is the glazed conté, as it works very freely, and every varied tone of colour may be produced with it, although much depends on the paper. The best white paper for the purpose is certainly glazed blotting-paper, of a moderate thickness, rather thin than thick. Place the piece you draw on, on other paper ; for, if you have wood underneath, you may as well have hard paper. The object sought is a smooth and slightly yielding surface, one on which you can produce tender or forcible tones of colour without the risk of breaking your chalk by the too great resistance of the paper, or of tearing up the surface of the paper by its too little resistance.

A great objection to the use of chalk is often, and with reason, the dirty condition into which the hands are brought by cutting it, and not only the fingers and hands, but through them the paper ; both that and the drawing are in consequence often spoiled. The most convenient mode I know of for obviating these discomforts is to



use a small box, like the annexed cut, which contains a file so placed as to incline inwards. On this you rub your chalk from one end to the other, at the same time turning it in your fingers so as to obtain a perfectly conical point. During the operation, all the chalk absorbed by the file falls to the bottom of the box, and is prevented from escaping by the closing of the lid. Thus the hands, the paper, the table, and whatever may be around,—all are kept clean. In proportion as you place your chalk in the direction of the file, will you have a long and fine

point ; in proportion as you hold your chalk more upright, will the point be more stumpy. After renewing your point you will find on it some portion of the dust occasioned by the filing, which is easily removed by the application of soft paper, a piece of cotton, soft leather, etc. etc.

ON HOLDING THE PENCIL.

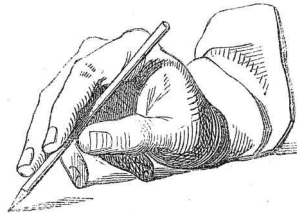


Fig. 1.

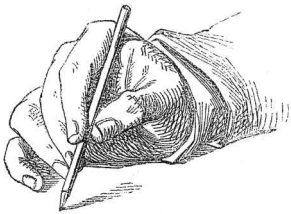


Fig. 2.

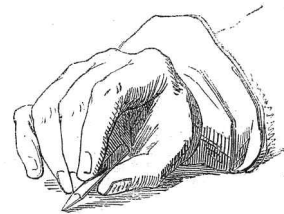


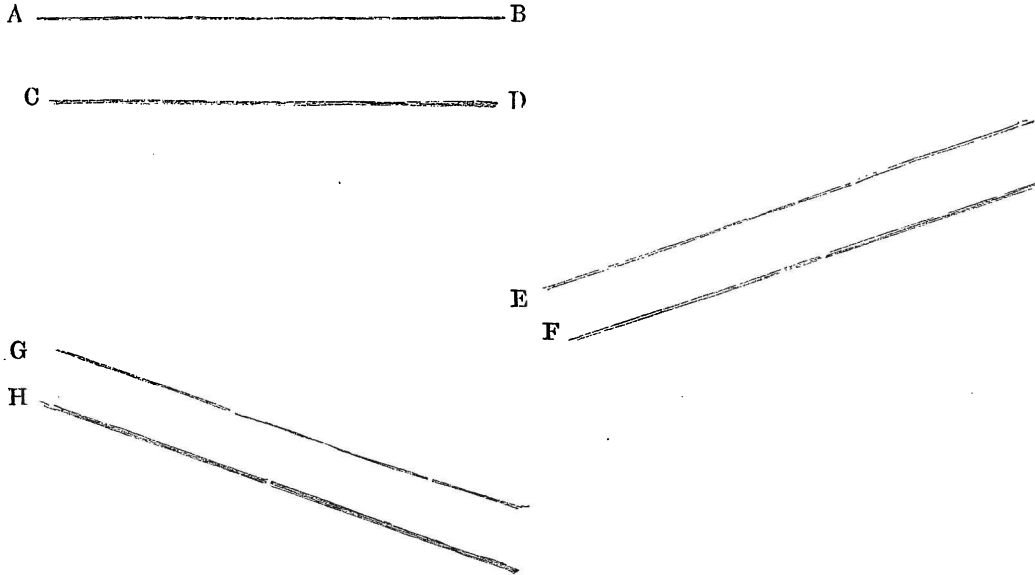
Fig. 3.

BEFORE you attempt to put your pencil to the paper, I must teach you how to hold it properly, so that you may be able, eventually, to use it dexterously and effectively.

Fig. 1, here given, shows how the pen is held ; a position of the hand to which you are accustomed, and in this position you may be apt to hold your pencil ; but however well suited to the pen, it is fatal to the use of the pencil, because you can, when thus holding either instrument, only make lines in one direction. Now in drawing, you require to make lines in every possible direction ; hence then, you must hold the pencil in the way here shown by Fig. 2—that is, between the first and middle fingers and the thumb, bringing the latter down so low as to be nearly as low as the tips of the fingers. Allow the third and little fingers to come forward, and not to be turned back towards the palm of the hand, as they are when writing. When thus holding the pencil, you may soon learn to draw lines with facility in any direction ; the motion being made with the fingers only, or with the whole hand from the wrist.

I add also another mode (Fig. 3), adapted to the use of a short pencil. When thus holding it, you are able to draw more readily long horizontal or curved lines ; and now, you not only obtain the motion of the fingers, but of the whole arm from the shoulder. This affords great freedom in the use of the pencil, and forms of every variety are comprehensively grasped.

LESSON 1.



YOUR first step in Art is, to acquire the power to draw straight lines, such as are given in all the Lessons of this Number. These consist mostly of three kinds : horizontal, as **A B**, **C D**; oblique, as **E F**, **G H**; and perpendicular, as **L M**, in Lesson 2. The horizontal and oblique lines of this Lesson must be drawn with your elbow close to your side ; but before you essay to draw them, place dots for each extremity, first putting down the one on the left.

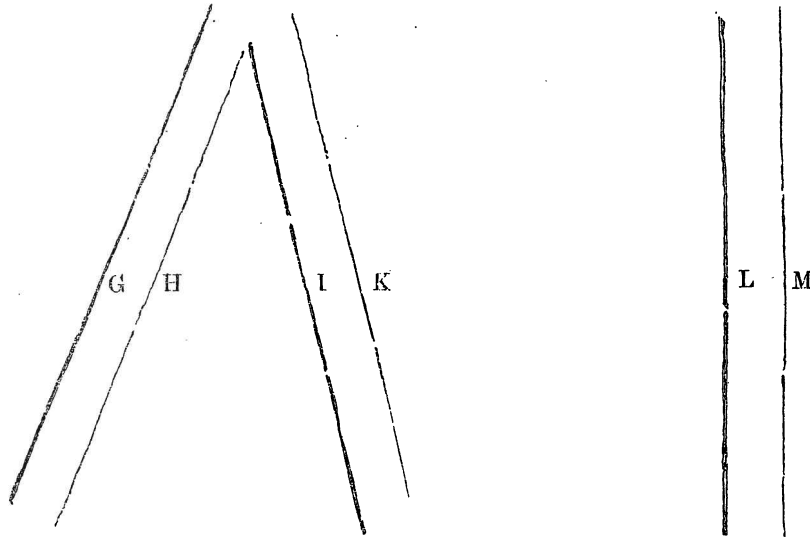
Place a dot on the left hand at **A**, and another on the right at **B**. In doing this, you are obliged to reflect on two things : first, on the distance of **B** from **A**, so that the line may be of the required length ; and secondly, that **B** may be level with **A**, so that the line required may be horizontal. Thus you obtain a *mental* perception of the line required ; and, in proportion as you obey these conditions, and thus obtain a true *mental* perception, so will your hand obey its dictates, and draw the line accordingly, truly or falsely. Clear mental perception of what is to be done, previous to any operation of the hand, is the characteristic and important principle on which this work is framed, and to this I must claim your especial attention, as your success depends on its being in all cases implicitly followed.

If, when you have drawn the line **A B**, you find that, instead of being horizontal, it slopes in some way, your mental observations must be repeated, and another dot for **B** must be placed above or below the one first placed, according as you find the line you have made slopes either upwards or downwards. When drawing the second line, you study it *mentally*, and *mentally* compare it with the first ; this is the great

object. Having placed dots for **C** and **D**, and having assured yourself, as well as you are able, that you have formed a right judgment, draw the second line **C D**, and if you deem it to be correct, draw it firmly, and then rub out the first, but not before. Each pair of lines must be made as they are here represented, parallel to each other—that is, they must be equally distant from each other at every part. Take care always to draw the upper line first, and whilst drawing the lower, allow the eye to regard that first drawn, so as to keep their separation equal everywhere. In this manner all future Lessons must be practised.

It is also most essential that you observe to draw the lines in the order in which I have instructed you. For example, if you find yourself anywhere directed to draw a line indicated by **A B** or **C D**, it is to be drawn from **A** to **B**, or from **C** to **D**, as the most convenient mode of doing it, the most likely to insure its correctness, and to make your hand skilful. In this respect, you must follow the instructions rigidly.

LESSON 2.



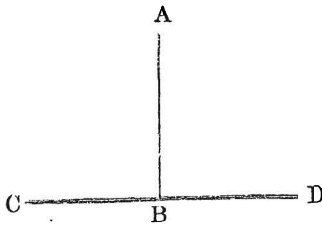
In drawing the oblique lines **G H I K**, and the perpendicular lines **L M**, of this Lesson, your elbow must be placed away from your side, for **G H** but little, but for **I K** and **L M** as far apart from the side as possible. The dark and left-hand lines should be first drawn. It would be very difficult, if not impossible, for you to draw such lines as long as are given in this Lesson without a break; they should, therefore, be divided into such lengths as are here seen, taking care, after each break, to continue the line in exactly the same direction, whether oblique or perpendicular.

In this, as in your preceding Lesson, dots must be first placed for each extremity of each line; and when the first for the upper extremity is placed, the dot for the lower one should be placed with reference to it, so that when both are united by the line afterwards drawn, it may be found to have the required direction.

When you can draw the lines composing these two Lessons firmly, with the pencil held so as to have its point a moderate distance from the ends of the fingers, as shown in Fig. 2, on page 4, you should then project it twice as far, and attempt to draw every line without a break, allowing then not only free motion to your hand, but to the whole arm.

These Lessons are learned when you can draw the lines firmly and unhesitatingly, either quite perpendicular or of any required slope.

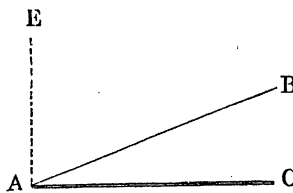
THE RIGHT ANGLE.



OF the straight, or right lines in the preceding Lessons, three kinds of angles are formed, by combining any two of them; and these are respectively called a right angle; an acute angle; and an obtuse angle.

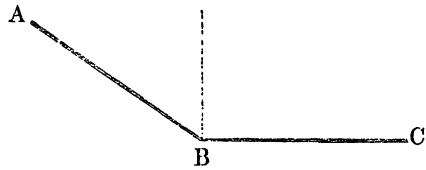
The right angle, as in this Lesson, is formed by a vertical line, BA , and a horizontal line, BD . The lines forming a right angle are mutually perpendicular to each other, though, when the one line is horizontal, the vertical one is usually called the perpendicular. The property of a right angle is, that on producing or extending either of the sides, as from B to C , the angle ABC thus formed is equal to the adjacent one, ABD . If AB be extended below CD in the same manner, it will be perceived that the divergence of the lines from the point B forms four right angles. It is hence obvious, that not more than four right angles can be formed about any point on a plane surface.

THE ACUTE ANGLE.



AN acute angle is less than a right angle; that is, the lines which form it are not so far apart as those forming a right angle: thus, any angle which is less than a right angle is acute. The acute angle is formed by an oblique line, BA , and a horizontal line, AC . The dotted perpendicular line, EA , which forms a right angle with AC , shows how much the acute angle BAC is less than the right one EAC .

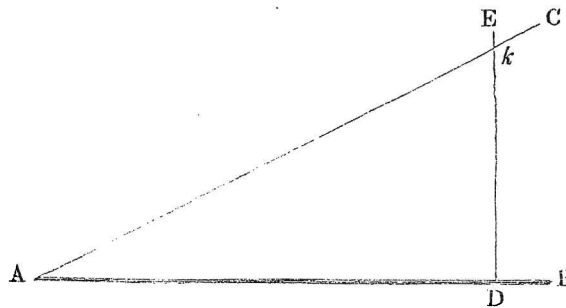
THE OBTUSE ANGLE.



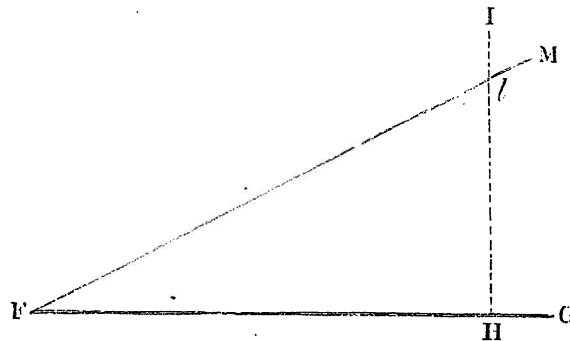
AN obtuse angle is greater than a right angle; that is, the lines which form it are farther apart than those forming a right angle: thus, any angle which is larger than a right angle is obtuse. It is formed by an oblique line, **A B**, and a horizontal one, **B C**. The dotted perpendicular line above **B**, which is at right angles with **B C**, shows how much larger the obtuse angle is, than a right angle.

The difficulty you have to overcome in these Lessons is, to draw one line perpendicular to another which is horizontal, so as to form a right angle; and also, having drawn a right angle, so to make any other angle, acute or obtuse, in any required degree, such as is here given, or such as may be given. All the observations made in Lessons 1 and 2, with regard to the position of the arm and hand, and the mode of drawing the lines also, must be constantly attended to. You should sit upright, and merely incline the head so that the eye, being distant from the paper, may enable you always to grasp the whole subject of the Lesson. It is a very great error to stoop so as to bring your eye near the paper; it is, besides, ungraceful and unhealthful.

LESSON 3.



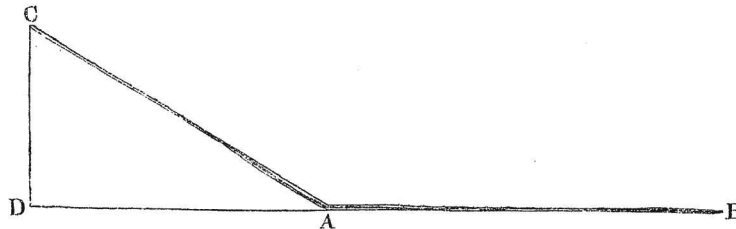
The Given Angle.



The Copy.

BESIDES knowing the names of the different kinds of angles, I would have you able to draw a right angle accurately, as by means of this you estimate the relative magnitude of all angles; that is, you can, without the aid of any mathematical instrument, make an angle equal to a given angle, or, in other words, draw from a point two lines which shall have the same degree of divergence, or separation from each other, as two other lines. Let BAC be the given angle: at any distance which may be judged most convenient from the angle A , take a point D (anywhere will do) on the line AB ; and from this point draw the perpendicular DE till it touches or crosses AC at E . This much being done as regards the given angle, now draw for your copy of it a line FG indefinitely, and on it fix the point F ; then mark as near as you can judge the length FH equal to AD , and from H draw a perpendicular for HI . Consider now the distance DE in the given angle, and mark off HJ in the copy equal to it; then draw through it from the point F the line FM , and the angle this makes with the line FG , viz. MFG , will be equal to the given angle CAB .

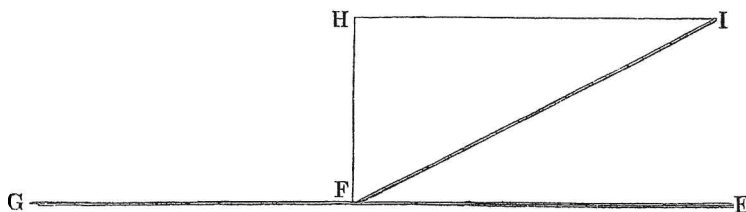
LESSON 4.



AN obtuse angle, like CAB , must be measured differently. Fix on the points A and B , and draw the line AB . Extend it to the left as far as D , and from D draw the perpendicular DC . Having fixed the point C at its required height from D , draw the line CA , and the obtuse angle you have thus obtained will be like the one here given, that is, if the distances from A to D , and from D to C have been accurately measured. Your eye only must be made the judge; mechanical measures, such as strips of paper or compasses, should not be used, except to prove how far your eye has been accurate.

Or an obtuse angle may be measured by the method shown in the following Lesson.

LESSON 5.



DRAW the line $G F E$. Fix on the point F , and set up from it a perpendicular equal to $F H$, then fix on a point for I , which must be level with H , and of the required distance from it, draw $I F$ and the obtuse angle required, $I F G$, is obtained. This mode equally obtains the acute angle $I F E$.

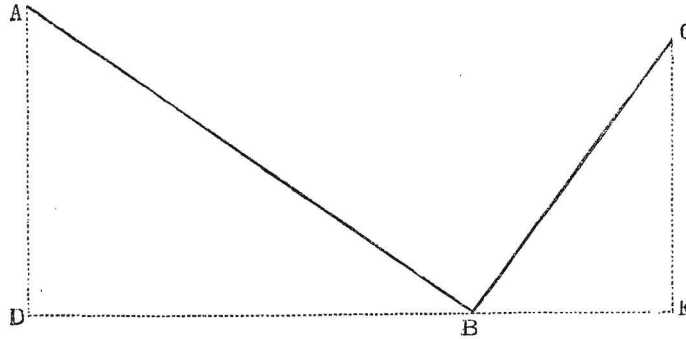
In examining what you have done, you will see that when lines have to be copied, which form acute or obtuse angles, they can only be copied accurately by comparison with a right angle, and that, to judge correctly of the obliquity of any lines, you must compare them with perpendicular or horizontal lines—these being the standards of comparison.

As all rectilinear objects* perpetually present to the eye angles of every variety, acute or obtuse, it is of great importance that you should be ready with some mechanical means of ascertaining, and of accurately imitating, the obliquity of lines; this power when completely acquired will render the following Lessons comparatively easy to you; indeed, without some such preparations, they would be with great difficulty practicable at all. Hence these are most important Lessons, and such as you will have constant occasion to practise and apply. To enable you to become adroit in measuring such angles, it is of great consequence that you always draw the lines in the order and in the manner directed. I cannot too much urge your attention to this. Any attempt to do them otherwise, or to copy the examples, regardless of the instructions accompanying them, is only wasting your time. In so doing you will make no more progress in Art than if you were sleeping,—in fact, merely copying the examples by the eye, without reference to the written instructions, is putting your mind to sleep; whereas my object is to keep it awake and active.

I have, in the next two following Lessons, supplied other examples for measuring angles.

* Objects composed of straight lines.

LESSON 6.

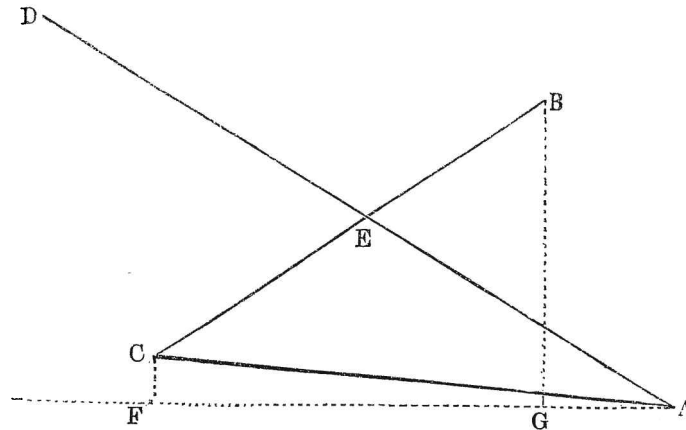


$A B C$ is the angle given ; $A B$ and $B C$ are lines which slope differently, and are of different lengths. The object is to imitate their length and their obliquity. In order to do this accurately, the horizontal line $D E$ must be drawn through B , and then perpendicular lines from A and C till they touch the horizontal line in the points D and E : thus the required right angles $A D B$ and $C E B$ are obtained.

To copy this Lesson, you first draw the line $D E$ of any length, then fix on a point for B ; then judge how far D is to the left, and E to the right of this. Having fixed these points, find the height of A perpendicularly above D , and draw $A B$; then the height of C above E , and, having decided on this, draw $C B$. If you have judged accurately of the distances of these points from each other, the required lines $A B$ and $B C$ and the angle $A B C$ will be accurate.

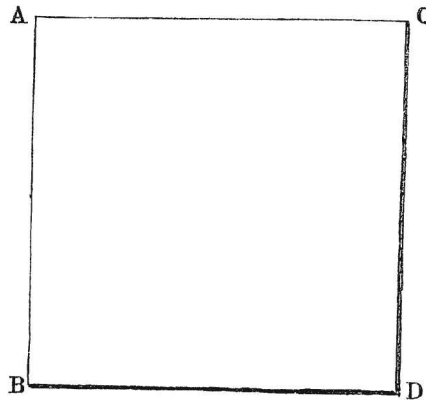
In the next Lesson you have a still more complicated figure, with more lines and angles. To obtain these, with the slope and length of the lines in their relation to each other, would be very difficult, unless by employment of the means I have already described. It is only necessary for you to apply these, in order to obtain the required angles accurately, when you will find it as easy to draw these lines as any others.

LESSON 7.



DRAW the horizontal line FA indefinitely, fix on the point A , and, at their required distances from it to the left, place the points G and F ; from these raise perpendiculars, and ascertain the points C and B , and then draw the lines CA and CB . Having done these, you obtain the line DA , by observing that the point E is midway between C and B , and that D is as far from E as E is from A . You have therefore merely to extend the line from D through E to A ; you may draw it, whether with a ruler or by hand, by beginning at D and proceeding through E to A .

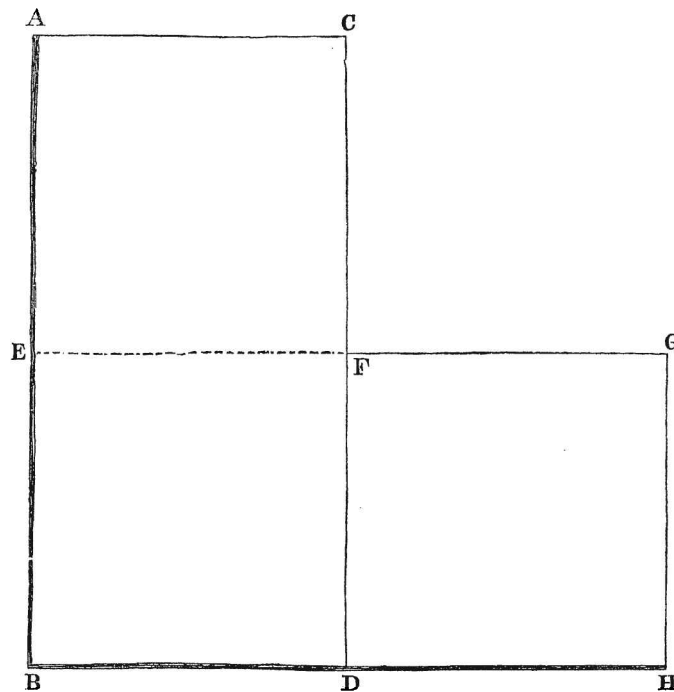
LESSON 8.



THE figure to which your attention is now called is a square; that is, it consists of four equal sides, and all its angles are right angles. In drawing this figure, you should be particularly attentive to make the first angle, ABD , exactly a right angle; for unless this be done, you will find it impossible, by the adaptation of the other lines, to make a perfect square.

The first line drawn should be **A B**, placing first a dot for **A**, and another for **B**, wherever you may think they should come, judging first of the perpendicularity of the line to be drawn, and then of its height. After having drawn this, you must fix on the point **C**. To do this, take care first that it be horizontally level with **A**, and secondly, that it be as distant from **A** as **B** is. You then draw the line **A C**. This mental process is the all-important pre-requisite on which your progress is based. It is the training of your mind to reflect before you act. You thus mentally see each line before you attempt to draw it. You then, in like manner, place a point for **D** under **C**, and level with **B**. Then draw **C D** and **B D**. When the four lines are drawn, you must carefully examine and compare them with each other, to see that the two lines, **A B** and **C D**, are both horizontal, of the same length, and parallel; and also that **A B** and **C D** are both perpendicular, of the same height, and parallel; and that all four angles are right angles.

LESSON 9.



THE figure which forms the subject of this Lesson, is of an oblong, **A B C D** composed of two equal squares, **F G D H**, to the right of it. This, with the square **E B F D**, makes another oblong, **E G B H**, equal to **A B C D**. These figures are called rectangular parallelograms.* Like the square, they have four right angles, and differ from it only in not having all their sides of equal length. The essential character

* The leaf of this Drawing Book is a parallelogram, and is rectangular—that is, all its angles are right angles.