THE NATIONAL DRAWING MASTER.

THE
NATIONAL
DRAWING
MASTER.

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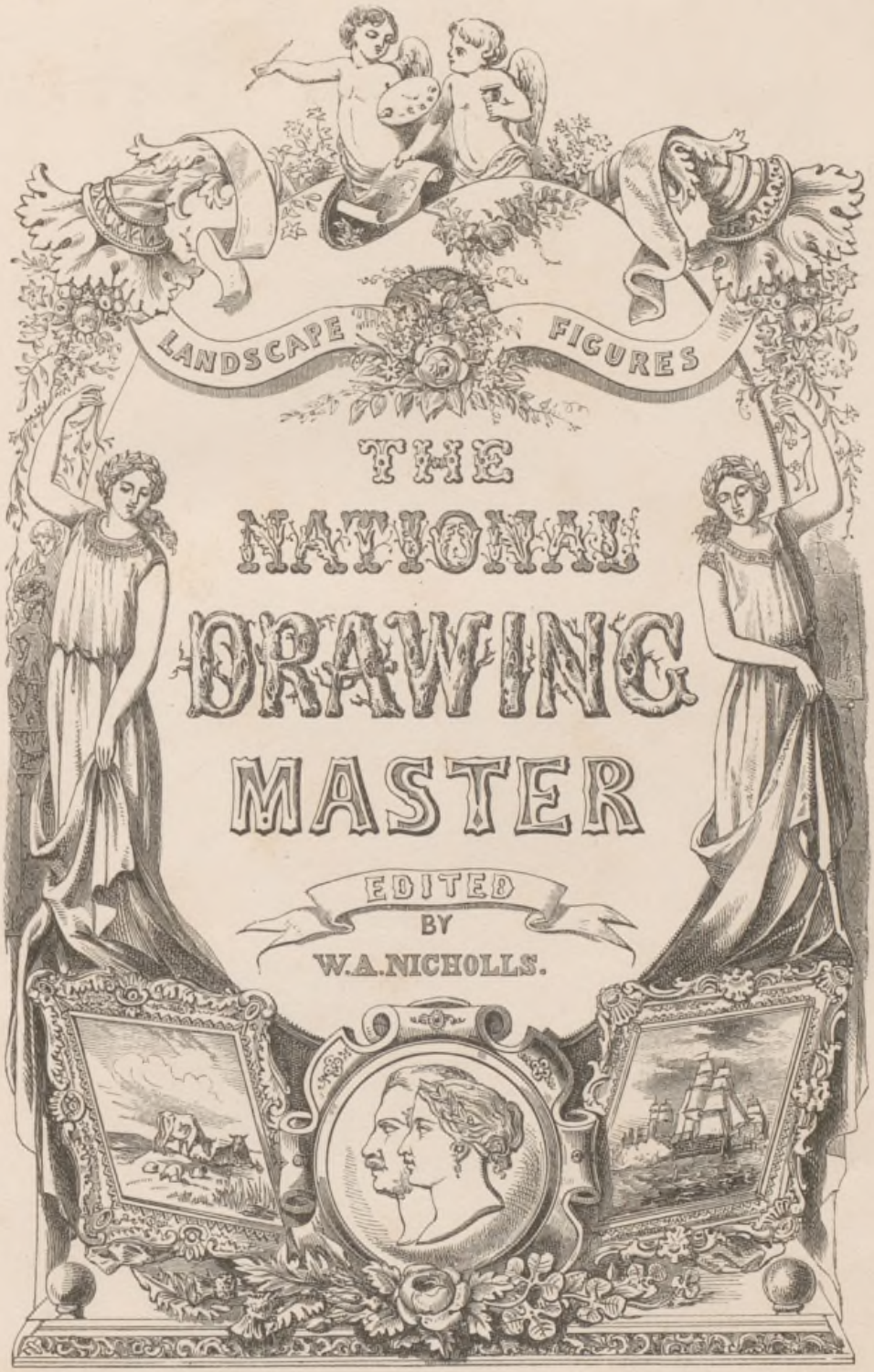
THE

NATIONAL DRAWING MASTER.

STUDY OF CATTLE.



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THE

NATIONAL DRAWING MASTER,

ON A NEW PRINCIPLE

GREATLY FACILITATING

SELF-INSTRUCTION IN LANDSCAPE AND FIGURE DRAWING;

FROM THE ELEMENTARY TO THE HIGHER BRANCHES OF

ART IN PENCIL AND COLOR;

AND CONTAINING EVERY VARIETY OF RULES,

WITH SEVERAL HUNDRED

ILLUSTRATIONS AND COPY STUDIES.

ALSO

THE PERSPECTIVE OF NATURE,

A NEW AND EASY SYSTEM OF PRACTICAL PERSPECTIVE, COMBINED WITH

RULES FOR SKETCHING FROM NATURE.

BY

W. A. NICHOLLS.

"WE CAN SAFELY RECOMMEND IT."—*Art Journal.*

SECOND EDITION.

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INTRODUCTION

IN ordinary cases, introductory remarks to a new work on Drawing are unnecessary; but when the work professes, as this one does, to advance a novel system of self-instruction in Drawing, a few prefatory words, explanatory of the basis of the system and the utility of the work, may be considered requisite.

The system, then, is based on the assumption that—as "use is second nature"—the careful and attentive self-instructing student may readily render himself a good draughtsman by means of such rules and guide-lined Drawing Copies and paper as are contained in this work; since the employment of those materials will enable him constantly either to imitate his copy forms with fidelity, or to detect and rectify erroneous imitations—and, therefore, in addition, will enable him to attain by degrees a *habit* of correct drawing, under any circumstances, both with respect to *figure and landscape objects*.

Hence, without the assistance or supervision of a professional teacher, on assiduously studying Drawing in perfect accordance with the above indicated system, the student will *speedily* acquire the power of habitual unconstrained correctness of delineation; for, as his pursuit will be an imitative process, the acquisition of that ability must soon follow such constrained undeviatingly correct practice as will attend his mode of studying Drawing.

But, to afford himself the opportunity of testing the progress he makes in acquiring this power, and to lead himself to rely thereon as early as possible in his studies—which it is most desirable he should do, if his aim be to attain great proficiency in art—the student should occasionally alternate the imitation of his guide-lined copies, with those of non-guide-lined copies similar to those to be found in this work.

And the materials which this work contains, besides being perfectly adapted for the purposes of the self-instructing student, are, of necessity, equally adapted

to qualify unpractised governesses and tutors to become *efficient* TEACHERS of DRAWING: whilst these circumstances, combined with the very moderate price of the work, constitute it one adapted for all classes.

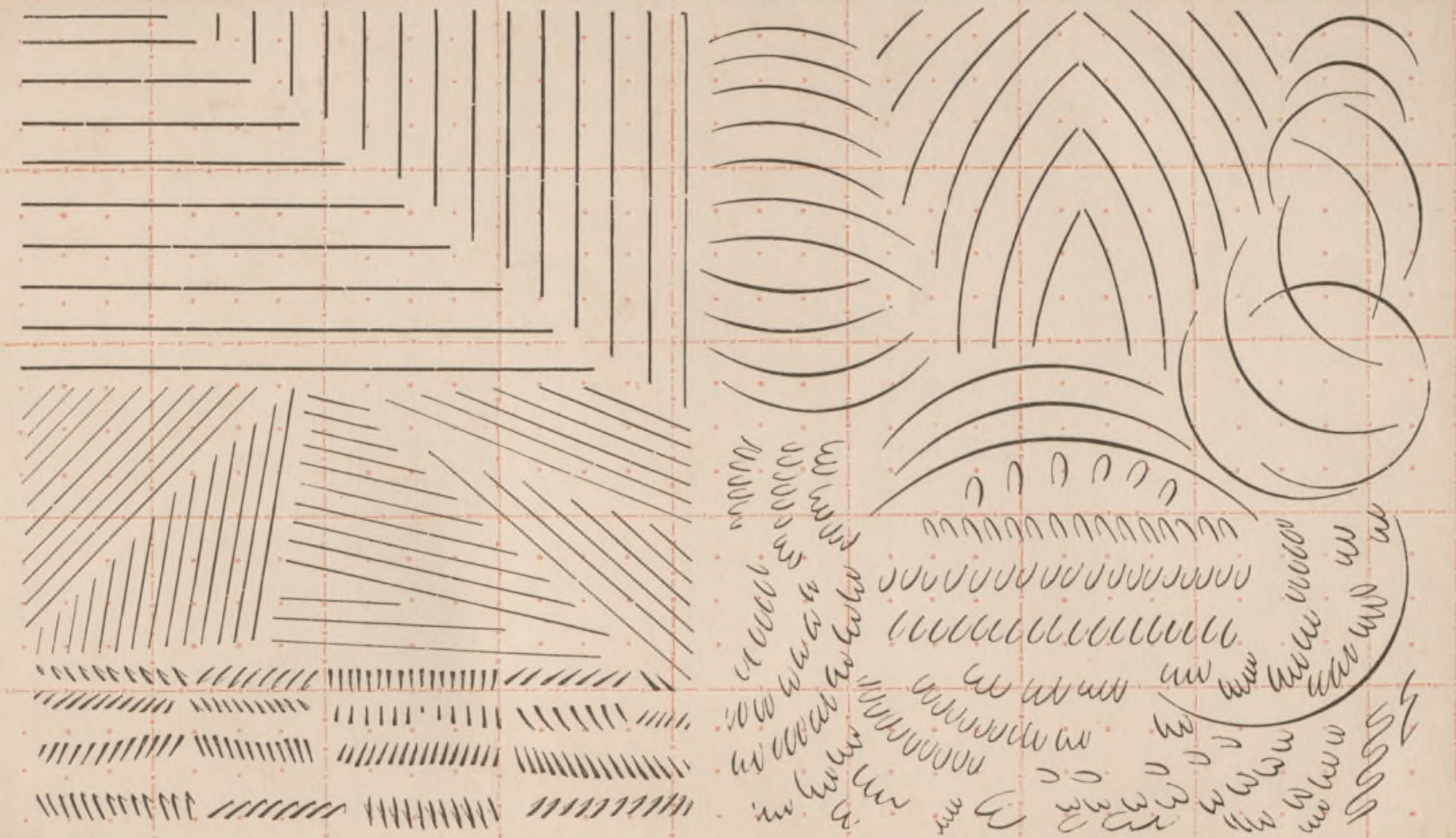
Thus the work will tend greatly to render the universal attainment of practical skill in Drawing most feasible, and is, therefore, calculated to promote the extension of the national correct culture and appreciation of Art, to the advancement of the welfare of society—for society benefits as the correct culture and appreciation of Art progress.

With regard to the copies the work supplies—as previously intimated, and consistently with the peculiar capabilities of its system of instruction—they embrace landscape, figure, animal, marine, and poultry representations derived from Nature; in the production of which the utmost pains have been taken to ensure their being *duly* progressive, and so attractive as never to prove wearisome studies.

The Rules accompanying the copies point out the various matters which should be attended to, in the study of the different branches of Drawing, relatively to the proper holding of the pencil and brush, and to the higher and more complicated processes required to be employed for the successful prosecution of finished Pencil Drawing and Water Color Painting.

The portion of the work devoted to Perspective develops a new system of Perspective, far more simple, correct, and easy to acquire than are the ordinary systems. However, before attempting to study this portion closely, it will be advisable for the student, after having read its first lesson, page 89, then to peruse the first twelve paragraphs of its tenth lesson, as they contain a brief summary, showing the simplicity of the system, and the readiness with which its principles and details may be mastered.

In conclusion, the author begs to offer again, in this second edition of his work, his best thanks for the kind encouragement received by him from correspondents during the progress of the work; and trusts that now it is completed, its possessors will find it throughout in every way worthy of the flattering encomiums which have been bestowed upon it, both by self-instructors and teachers amongst every class of society.



SECTION 1.

GENERAL REMARKS—EXPLANATION OF THE SYSTEM—OUTLINE DRAWING—THE PENCIL TO BE USED—METHOD OF HOLDING THE PENCIL, HAND, ELBOW, AND WRIST—PREPARATION BEFORE PROCEEDING TO DRAW—DIRECTIONS WHILST STUDYING DRAWING—LESSONS ON COPIES I. TO IX.

The pursuit of the Art of Delineation is replete with gratifications and advantages of the highest order. It leads its votaries to an intimate knowledge of the wonderful variety and beauty of form and appearance exhibited in the multifarious productions of Nature, awakening in the mind ennobling emotions, and elevating the thoughts "from Nature up to Nature's God."

It is the province and privilege of the artist to search out and perceive that which, in a physical aspect, is captivating to the eye; to him, therefore, the earth is infinitely richer in objects that charm the sight, and are suggestive of a corresponding admiration, than it is to the generality of his non-professional brethren; for, looking upon everything with a cultivated taste, scarcely anything can present itself to his gaze without manifesting some peculiarity, or perfection, of form, or colour that delights him.

During the exercise of his vocation in seeking for the beautiful, his fancy, also, is ever being fed with attractive images; and when his pleasing task merges into that of imitation, he cultivates an occupation of the purest and most engaging description, repaying the toil it entails a thousand-fold—affording him invaluable reminiscences of what he has seen —and which oftentimes becomes, in sickness as in health, available as a means of honourable and lucrative professional exertion, although not originally pursued for other purposes than those of recreation.

The art may be divided into two branches, definable as outline and finished drawing. The lessons contained in this section of instructions refer principally to the former branch. The first two, upon the preliminary method of proceeding to be adopted in imitating the ensuing guide-lined drawing copies, should be carefully studied in their order—as should all lessons occurring throughout this work—both by self-instructors and the teachers of others, until they become perfectly acquainted with each lesson, that loss of time in referring back for rules may be avoided.

LESSON I.

ON THE PRELIMINARY METHOD OF PROCEEDING TO BE ADOPTED IN IMITATING THE GUIDE-LINED DRAWING COPIES.

THE principle on which the "National Drawing Master" system of instruction is based, requires that what is represented within a particular *red guide-line square* of either of its accompanying copies, and upon a particular part of that square, shall be imitated upon the corresponding spot of a sheet of drawing paper which is ruled with intersecting red lines precisely like those on the copy.

To imitate a copy line according to the system; firstly, select one of its ends, and note carefully whether it lie nearer to a particular red dot existing within a square of the copy, or nearer to a specific portion of the red boundary line of a square.

Secondly, if the selected end of the line lie nearer to a particular red dot than to any portion of red boundary line, then note how far it lies from that dot: or if it lie, on the contrary, nearer to a specific portion of red boundary line than to any red dot, observe, in that case, its exact distance from such portion of red boundary.

Thirdly, seek the place, on the drawing paper, corresponding with the position that the selected end of the line occupies on the copy, and, when found, denote it by a slight mark.

Fourthly, repeat the last described process, with regard to the other end of the copy line; and having placed two marks on the drawing paper to represent both ends, draw a faint sketchy line or slight representation of the copy line, from one to the other mark, somewhat thus.....; and test the correctness of its position after the manner described in the following lesson. When it has been ascertained that its position is correct, depict a firm line over it in accordance with the rules given in the succeeding lessons.

LESSON II.

ON TESTING THE CORRECTNESS OF PROCEEDING.

Two marks, with a sketchy line between them, having been made on the drawing paper, that representative line should be compared with the copy line; when, should it appear that the copy line lies parallel (that is, even) with a red boundary, and that *the representative line* does not lie similarly even with the red boundary line near to which it should be sketched in on the *drawing paper*, it will be evident that the sketched line is wrongly placed, and should, therefore, be altered in position.

Or, supposing that the representative line prove correct as respects its lying even with a red boundary; yet, should the comparison show that the copy line crosses through a specific portion of any red boundary (as, for instance, through a red dot contained therein, or underneath one, or half way, and so forth, between two red dots contained in it), and that the representative line does not cross through a red boundary on the drawing paper, as the copy indicates that it should, the representative line must still be wrong, and the error in its position ought consequently to be rectified.

Further, should the copy line run through a particular red dot existing *within* a square, or run above one, or between any two particular dots that are within any square; and the comparison before referred to should demonstrate that the representative line does not take a course on the drawing paper identical with that which the line to be imitated takes on the copy, the position of the representative line would still require altering.

The constant application of this plan of testing correctness of proceeding on first learning to draw, will be found highly conducive to progress. Its use, in conjunction with that of the guide lines, is effectually to prevent the eye from being deceived, whilst engaged in rudimentary practice, and becoming habituated to incorrect copying; the legitimate assumption being, that if the organ be not allowed then to err in its perceptions, it must soon become accustomed, under all circumstances, to estimate aright the respective lengths of lines, and their distances from each other. Nevertheless, the progress that can be made by a learner will entirely depend upon the amount of care that he exercises during the time of study; therefore, *attention* and *judgment* must be brought into play, as much in learning to draw through the medium of the National Drawing Master system, as through that of any other system.

LESSON III.

ON OUTLINE DRAWING.

Outline drawing is that branch of the art of delineation which refers only to the representation of the lines that compose forms, every object having a form which is composed of, and can be represented by, simple lines.

These lines may be of three kinds, that is, straight, curved, and what may be termed *composite*: whilst each description of line must have its characteristics, or a particular direction, length, and relative position; the distinguishable form of an object resulting from that circumstance.

A straight line, is a line without a bend or break in it, as represented in Fig. 1.

Fig. 1. Fig. 2. Fig. 3. Fig. 4.

A curved line, is a line that either forms a circle; or part of a circle as in Fig 2.

A composite line (shown in Fig. 3) is a line which is, in fact, a number of indentations or small, straight, and curved lines combined, such as should be used to represent the indented outlines of the stems, branches, and foliage of trees, of picturesque old buildings, and all objects having similar rough jagged outlines.

The direction of a line is the position it occupies with regard to the earth's surface.

Firstly, the direction of a line is *horizontal*, when the line lies above the surface of the earth, with every part of it existing at an equal distance therefrom; or when it lies upon the earth's surface; but in both cases perfectly parallel (that is even) with an imaginary straight line, that may be supposed to run, as represented in Fig. 4, or through the pupils of a person's eyes, when the head is held perfectly erect.

Secondly, when a line runs, as line *b*, Fig. 1, or so as neither to lean to the right hand nor to the left, its direction is *vertical*.

And thirdly, the direction of a line is *oblique*, when it is neither horizontal nor vertical. See lines marked • Fig. 1.

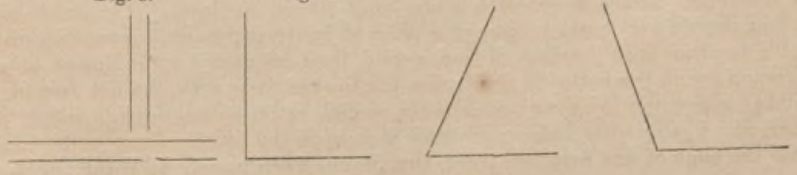
But a vertical line is very commonly termed a *perpendicular* line, and an oblique line, a *diagonal* line: though the precise technical signification of a perpendicular line—is any line which lies at a right angle with any other line; and of a diagonal line—is a line crossing through the centre of any square figure, and extending from one corner of the square to the opposite corner.

The length of a line, so far as respects a straight line, is the extent to which it runs in one direction, without deviating from it in the slightest degree. The length of a curved line, is the extent to which it runs before it becomes a part of a fresh circle. The length of a composite line is determined by the extent to which it proceeds, *generally* in one direction, without decidedly changing its course.

The relative position of a line, is the exact position in which it lies, or stands, with regard to the other lines that are combined with it in composing the outline of the object to which it belongs. In relative position, therefore,

Firstly, one line may lie, or stand, *parallel* with another line; that is, all the directly opposite points of the two lines may exist equally wide apart from each other throughout the whole length of the lines, as represented in Fig. 5.

Fig. 5. Fig. 6. Fig. 7. Fig. 8.



Secondly, one line may lie, or stand, as in Fig. 6, at a *right angle* with another line; that is, as one line forming one portion of a corner of a square floor *lies*, with respect to the line forming the other portion of the same corner; or as a vertical line *stands*, with respect to the surface of the earth, or to any horizontal line lying beneath it.

Thirdly, one line may lie, or stand, as in Fig. 7, at an *acute angle* with another line; that is, the two lines may incline from their angle ends more towards each other than they could if they were to lie, or stand, at a right angle with each other.

Fourthly, one line may lie, or stand, at an *obtuse angle* with another; that is, the two lines may incline from their angle ends more away from each other than it would be possible for them to do, if they were to lie, or stand, at either a right angle, or an acute angle with each other; an obtuse angle being represented in Fig. 8.

Consequently, if we take a pair of open compasses, imagining the legs to be lines, and close them perfectly together, the legs will represent lines which, in relative position, are *parallel* with each other. If then we open the compasses again, *in the least degree*, the legs will represent lines which, in relative position, are at an *acute angle* with each other. If we continue opening them, they will continue representing such lines, until the legs become *exactly half as much separated* from one another as they can be placed,—when they will at *that one point* represent lines which, in relative position, are at a *right angle* with each other; and, next if we open the compasses, *ever so slightly more than half way*, the legs will instantly represent lines which, in relative position, are at an obtuse angle to each other, and will continue to represent the same, however much more we may separate them, unless we stretch the legs out into one united line; whilst the angle ends of the lines in each of the foregoing cases, will be at the junction point of the legs, and the relative position of the lines will remain the same, even if the lines or legs at any part of the length of either of them, be dissevered from their angle ends.

Also, whether the compasses are laid upon a table in any direction, or made to stand upon one leg, or both legs, or placed in any other position whilst employing them as above described, they will in every instance exemplify what has been stated, but in accordance only with the degree to which the legs are opened or shut, and not in connexion with any particular position in which the compasses are placed.

As the form of an object entirely depends upon the characteristics, or particular kinds, directions, lengths, and relative positions of the lines composing its outline, it is absolutely requisite that lines to be drawn to represent the outline of an object should be depicted, with especial reference to their characteristics, or the result will be imperfect, and therefore comparatively useless.

LESSON IV.

ON THE PENCIL TO BE USED FOR DEPICTING LINES.

To depict thick lines, a blunt-pointed F pencil should be used, and a similar pointed B or BB, for dark ones. If, however, light and dark places occur together in one line either the B, or BB, should be employed entirely, to be pressed very slightly upon the paper when light portions of the line, more heavily when darker portions, and with considerable force when very dark portions are to be delineated.

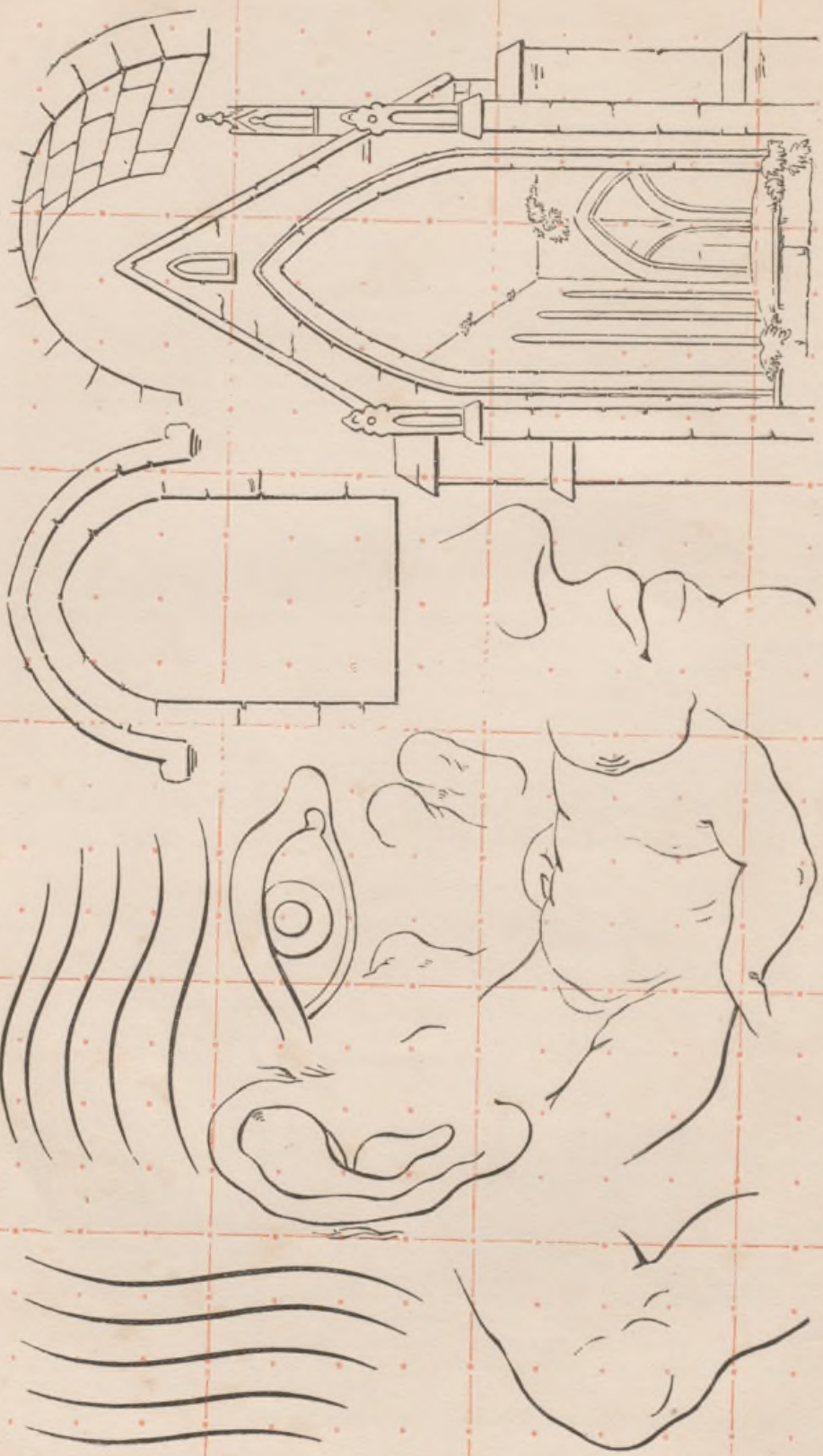
To depict light thin lines, a fine pointed F pencil should be used; and for dark thin lines a fine pointed HB pencil.

For a line partly thin and light, and partly thin and dark, the fine pointed HB alone should be employed, with merely a slight pressure upon the paper on delineating the thin and light portion of the line, but with the requisite proportionally heavier pressure on drawing that which is thin and dark.

When a line should be a composite one, or diversified with thick and thin, and light and dark places to represent, for instance, the stems and foliage of trees, the outlines of old buildings, etc., a B, or BB, pencil only should be used. The point, however, should be flattened previously to use, on a piece of waste paper, until it appears as in Fig. 9: the thin light portions of line should then be drawn by means of the edge running round the flattened point, and the thicker parts with the flat face of the point; whilst the thick and dark parts should be produced through the medium of the latter, and a judiciously forcible pressure of it upon the paper.

Fig. 9.

To use the edge of the flattened point, the pencil, when placed upon the paper, should



be twisted round, in the fingers, until they experience a sensation as if the paper were being scratched; then should the portion of line to be drawn be light and thin, the pencil should be made to glide lightly and evenly along the paper; or, should the portion be dark and thin, the paper should be impressed by a sharp emphatic movement.

To alternate the use of the edge, and the flat face of the pencil, whilst delineating a line requiring the use of both, the pencil should be twisted round in the fingers without being removed from the paper, first on the edge, and then on to the face, or the reverse, as required.

Fig. 10.

The point of a pencil should always be cut smoothly, and of a tolerable length, as represented in Fig. 10.

LESSON V.

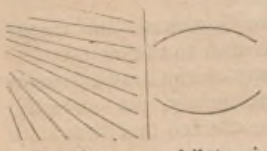
ON THE PROPER METHOD OF HOLDING THE PENCIL, HAND, ELBOW, AND WRIST.

Fig. 11.

The pencil should be held lightly, yet firmly, and steadily between the thumb and first two fingers (see Fig. 11); but with those fingers placed at about three quarters of an inch from the point, the tip of the thumb being retained the while against the side of the pencil, at not more than one inch and a half from the point.

On delineating a horizontal line,—a diagonal line, as indicated in Fig. 12, or a curved line, as in Fig. 13; the pencil should be held with its upper end directed continuously towards the right shoulder, whilst at the same time the right elbow should be held lightly against the side.

Fig. 12. Fig. 13.



On delineating a vertical line,—a diagonal line, as in Fig. 14, —or a curved line, as in Fig. 15; the upper end of the pencil should be directed entirely away from the shoulders, and the right elbow be held about one foot from the side.

Fig. 14. Fig. 15.

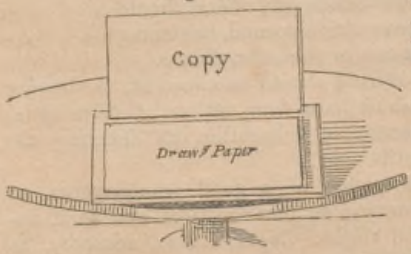
At all times whilst using the pencil, allow it to rest, as it were, upon the knuckle of the first finger, and keep the first and second fingers outstretched as much as possible. (See Fig. 11.) Also let the third and fourth fingers lie under the other two, and rest with the wrist firmly, but without pressure, upon the paper to afford support to the hand and pencil whilst employed in drawing.

LESSON VI.

ON THE PREPARATION NECESSARY BEFORE PROCEEDING TO DRAW.

Fasten your paper, so as not to shift about during use, on a drawing board, or similar flat surface, the corners of which are right angles; and place it on a table, in a position sloping towards you as you sit at work. If the sides of the table be straight, the board and paper should be placed parallel therewith, and be *kept so*, during the whole time of use.

Fig. 16.



Your copy should be fixed nearly upright upon the drawing board, and its top line constantly preserved in a horizontal position.

Should the copy not be more than one foot and a-half long, place it about one foot and a-half from the edge of the table; should it be longer, place it at a distance nearly equal to its greatest measurement.

It is better to work on a straight sided table than on a round table; but in case only the latter can be employed, the bottom lines of the board, paper, and copy, whilst being

used, should be placed and maintained in a perfectly horizontal position, and parallel with each other. See Fig. 16.

The angles at the corners of the drawing paper should be right angles, and the paper's opposite boundary lines be parallel, smooth, and straight, to furnish a guide to the eye whilst a horizontal or vertical line is being drawn on the paper.

LESSON VI.

ON DIRECTIONS TO BE OBSERVED WHILST STUDYING DRAWING.

The drawing paper during use, if not fastened on a board, should be he held firmly by the fingers of the left hand, so as not to shift about.

On commencing to delineate an object's outline, begin with the representation of the upper end of that which appears to be its most important left hand side line, and depict the outline from left to right.

Yet rather than lose time in considering which point of an object to represent the first, begin with any point without delay, as after a little attentive practice, the judgment will acquire the experience that will direct it aright in this matter.

When there are many objects to be represented in a picture, that which is larger than another should be delineated before the other.

The chimneys, windows, doorways, and ornamental parts of a building, should not be drawn until the general external form of the building has been pourtrayed.

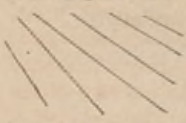
The delineation of a human figure, or that of an animal, should be commenced at the crown of the head: the body should be produced before the arms and legs: the features, fingers, and toes, before the configuration of the muscles: and the perfect external form of a clothed figure should be defined before the drapery markings.

The outline of the stem of a tree should be drawn before the branches; the larger branches prior to the smaller ones; the main forms of the foliage after the branches.

The places that the ends of a line to be depicted should occupy on the drawing paper should be found and denoted by slight marks, and the line be lightly, yet correctly, sketched in between the marks, before the perfect delineation be effected (see Lessons 1 and 2). When precision of judgment and execution have been attained, the preliminary sketching in may be dispensed with in the case of straight lines.

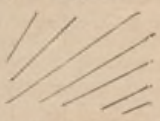
A horizontal line, and oblique lines taking the direction indicated in Fig. 17, should be drawn from left to right.

Fig. 17.



A vertical line, and oblique lines which are to run as indicated in Fig. 18, should be drawn from their upper ends, or with the pencil moving downwards towards the bottom of the paper.

Fig. 18



A curved line, which should take the direction indicated in Fig. 19, should be produced by a movement of the pencil, from the left-hand end of the line to its right-hand end; and by a movement, commencing at its upper end, and proceeding downwards towards the bottom of the paper, if the line should take the direction indicated in Fig. 20.

Fig. 19.

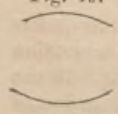
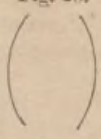


Fig. 20.



A circle, or curved line forming any continuous part of one, should be drawn, if possible, by one unbroken sweep of the pencil, beginning at the lower part of the left-hand side of either the one or the other figure.

As, however, the speedy attainment of freedom of hand should be aimed at, the learner should, as soon as possible, habituate himself to draw lines from either of their ends; merely observing the forgoing rules, relating to modes of delineation, as denoting the easiest method of proceeding for inexperienced practitioners.

Firmness of touch, being also an indispensable quality of a good draughtsman, to acquire it, feeble, undecided lines should never be drawn, as lines too thick and dark, appear more artistic than those which are too thin and slight. Nevertheless, accuracy, as well as firmness, must be carefully studied, as essential to proficiency in art.

But the pencil should on no account be dug into the paper during the attempt to obtain firmness; the effect, consequently, must be produced entirely through the medium of a

pressure proportioned to the necessity of the case, and by the employment of the right kind of pencil. (See Lesson IV.)

A line should not be patched up to its proper thickness and shade, but be drawn perfectly at once, otherwise the delineation will appear slovenly and inartistic.

A portion not less than one inch and a half in length of a straight line, nor less than three inches in length of a curved line, should be drawn at one stroke of the pencil, if the extent of the line to be represented admit of such a course of proceeding, and the wrist should be kept immoveable upon the paper, until such portion be delineated. When the first portion has been produced, the wrist should be moved (slightly only, however), so that a further portion may be drawn, and so forth.

Thus, a straight line, less than one inch and a half long, and a curved line less than three inches in length, should be delineated without a movement of the wrist, and by one duly vigorous stroke of the pencil in each case.

Remember, also, that a line, when drawn to represent a horizontal line, will not be correct if either end of it appear to run upwards or downwards; and to represent a vertical line, will not be correct if either end appear to lean to the right, or the left.

A composite line should not only be produced as described in Lesson IV., but likewise by means of a series of free long and short *jerkin* movements, as it were; made with as much rapidity as consistent with accuracy without removing the pencil from the paper, and according to the kind of composite line to be represented. And the endeavour, by the exercise of memory, should be made to draw the line without referring to the copy to ascertain each minute change or irregularity occurring in its form; for although mistakes in consequence must at first take place, yet a close scrutiny of the peculiarity of a composite line, before commencing to depict it, and assiduous practice, will speedily generate the habit of recollecting and representing the proper length, direction, thickness and shade of each of its parts.

Lastly, it will essentially promote the student's attainment of proficiency in drawing lines with masterly precision and freedom, frequently to alternate, with the practice of imitating copies, the practice of depicting straight and curved lines, from one dot to another, placed apart at varying distances and in different directions, on a sheet of common practice paper (as from *a* to *a*, *b* to *b*, Fig. 21), and so that they shall constitute the ends of lines, which will connect together and produce forms such as are intended to represent squares, triangles, the simple outlines of buildings, as indicated in Fig. 22, of figures, boats, and especially of circles and ornamental curves. But each line should be drawn with one continuous firm stroke of the pencil; and such lines be made sometimes of the greatest length the learner can manage to draw at once, as well as of every degree of smaller length. Whilst those learners, having the means of employing a smooth black board, should hang it flat against a wall, and standing about two feet from it, depict similar lines thereon with a piece of fine-pointed white chalk, effacing them, when necessary, by using a damp sponge. The production of lines running as in Fig. 23, likewise should be practised now and then, by starting from a central point, and moving the pencil, away from the point, up and down without taking it from the paper, until a series of equal-sized loops has been formed encircling the point,—to be made at first slowly, and with increasing rapidity as skill, in producing the set perfectly, increases.

Fig. 21.

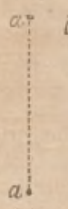


Fig. 22.

Fig. 23.

LESSON ON THE DRAWING COPIES, I. TO IX.

THE single lines in copies 1 and 2 should be executed before the connected lines; each line, also, after it has been sketched-in correctly (see Lesson II.), should be drawn with one unbroken stroke of the pencil, made as rapidly as consistent with fidelity.

The small detached lines contained in those copies, being intended to afford a practice leading to the production of *emphasized strokes*, and thus of effective delineations of tree

foliage, and herbage, should be closely imitated; as, for the same reason, should the accompanying examples of zig-zag, and other combinations of small lines, some of which, also, should be drawn thick on the right hand side, and thin on the left, and the reverse; whilst some of them should be commenced from the left-hand end, and some from the right, for the sake of accustoming the hand to emphasize strokes in every possible variety of manner. But they need not be sketched-in, prior to their perfect representation, although the proper position, the two extreme points of each combination, should occupy on the drawing paper, should first be denoted thus . . by dots. See rule on composite lines, Lesson VI.

The simple shading lines contained in copies 3 and 4 may be left until the outlines of the subjects to which they belong have been completed, when they may be drawn at once, without any preliminary sketching.

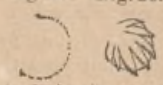
Copy 5, not having any guides, should be practised on plain paper of the size of the copy, or the back of one of the ruled drawing-paper sheets. Before imitating any line contained therein, carefully observe what is the relative length and position of that line, with respect either to the line, or to the outside edge of the copy, which is the nearest to it; and next attempt to delineate that line of a length and in a position that will accord with the copy. Three or four successive delineations, *on larger sized paper*, will likewise be advisable after the faults of each preceding one have been studied.

The foliage studies, in copy 6, represent the *touch*, as it is called (that is, the description of line), which will denote in the most natural manner, the peculiar appearance that the respective foliages of the ash (1), oak (2), beech (3), and elm (4), present to the eye.

If examples of touch consist of more than six combinations of minute lines forming a series of indentations (as in Fig. 24), draw a slight sketchy line (as in fig. 25) to indicate position, general direction, and extent; then fill it up with the requisite perfect indentations (as in Fig. 26), and with a free unbroken movement of the pencil, yet made so that the indentations shall appear easy, graceful, and generally like those of the copy. See also the rule on composite lines, Lesson VI.

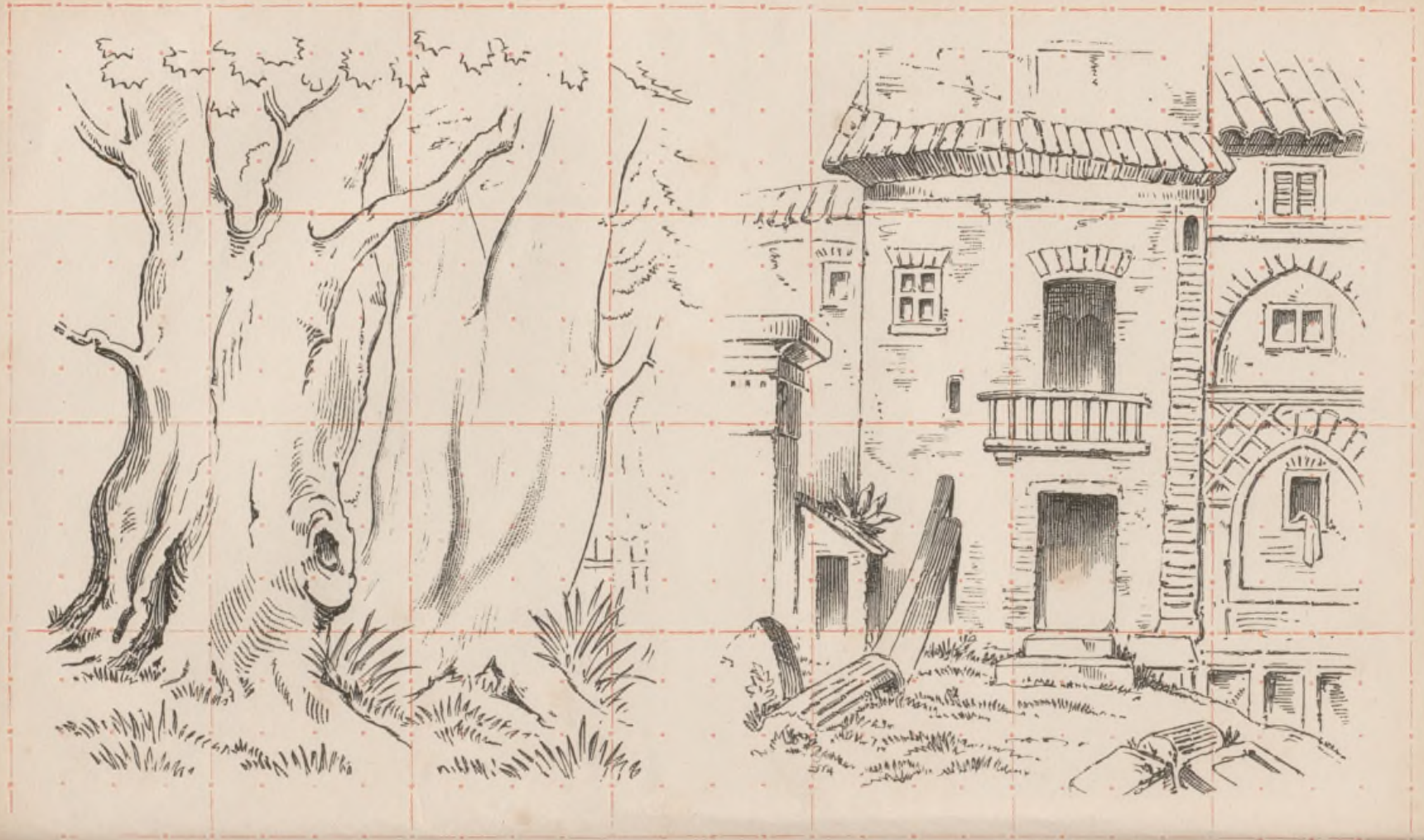
Fig. 24.

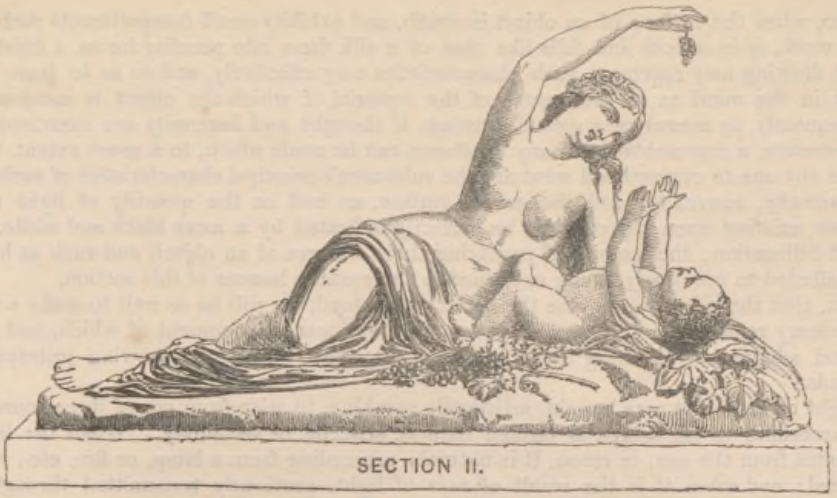
Fig. 25. Fig. 26.



The rules of Finished Drawing, in section II. should be studied before the shaded parts of the subjects contained in copies 7, 8, and 9, are imitated. Portions of shade, however, in those and the succeeding copies are produced by means of distinct lines, to show how characteristic shading lines may be depicted, and for the highly serviceable purpose of enabling pupils to acquire, through imitation of distinct lines, a power of using the pencil, so as to impart to sketches and drawings, when desirable, *characteristic* or *natural appearances* of surfaces—on this account, a mass of shade may either be imitated as given in a copy—but without absolute imitation of all the lines composing the mass, provided a sufficiently close imitation of them be made to give the proper effect of the shade; or the mass may be imitated by placing lines close to each other, without white spaces between them, as directed in the rules on shading.

Rubbing out never need be necessary, if proper care be taken with the preliminary sketching-in of lines before drawing them of their correct strength; a learner on having executed the subjects of a copy badly, should take another sheet of paper, and re-draw them, after he has well compared his first imitation with the copy, and detected his mistakes. *Each copy, in fact, should be imitated twice or thrice, unless it has been creditably executed previously.*





SECTION II.

STUDY OF NATURE — FINISHED DRAWING — LIGHT AND SHADE — THE SHADING, AND METHOD OF PRODUCING IT, REQUIRED FOR BUILDINGS, HUMAN FIGURES, ANIMALS, TREES, WATER, FORE-GROUNDS, MOUNTAINS AND CLOUDS, ETC.

THE directions with regard to drawing, contained in this work, are given with the view of attracting the art-student's attention to Nature, rather than as sufficient rules for his guidance under all circumstances. Close observation, of the characteristic aspects of natural objects, alone can impart to him a knowledge of every principle of proceeding in Art it is requisite to adopt to ensure accurate and striking representations of them.

Consequently, to become a good Artist, the student must resort *incessantly* to Nature for guidance; he must also constantly study and imitate her varying phases, analyze and strive to impress on his memory the peculiarities of the external form and features of such of her objects as come under his notice,—and endeavour, on imitating any of them, to devise efficient means of conveying a character of fidelity and picturesque charm to the imitation rendering it at once truthful and attractive.

Outline-drawing merges into finished drawing directly we commence depicting the representation of more than the mere form of an object. To render, then, the representation, of the object, complete, the aspect of its material, its color, the roughness, or smoothness, concavity, convexity, or flatness, of its surface, and the effect that light and shadow have upon it, must all be fully shown through the medium of the finished drawing process.

Every characteristic of the appearance, of an object, can be fully represented by means of a pencil drawing, excepting its color and the aspect of its material,—though some idea of both one and the other may be conveyed to the mind thereby.

For notwithstanding that the true color of the parts of an object which are red, yellow, etc., cannot be shown by aid of the pencil alone, yet, as one effect of color is *contrast*, the pencil is capable of being used so as to represent that effect.

Thus, should a combination of colors, such as white, yellow, red, blue, dark brown, and black, exist on different parts of an object, a contrast between the parts will be manifest, that may be denoted by shading up the representation of each part, during its progress, to a particular degree of intensity, to indicate the specific color of the part. Therefore, on making a drawing of the object, if that which is white in the original, be denoted by white in the representation; that which is yellow, by a slight shade; that which is red, by somewhat darker shading lines; the part that is blue, by still darker lines; the dark brown part by very dark shading lines; and the black portion, by the blackest shading lines which can be produced from a pencil; such a process will create a semblance of the general effect, as regards contrast, resulting from the presence of these colors on the object's surface that will convey a clearer notion of its appearance than could be produced without shading lines, or with those only which furnish no variety of shading tints.

Also, when the surface of an object is rough, and exhibits small compartments such as brick work, or is smooth and falls like that of a silk dress into peculiar forms, a finished pencil drawing may represent such characteristics very effectively, and so as to leave no doubt in the mind as to the nature of the material of which the object is composed. Consequently, by means of a pencil drawing, if thought and ingenuity are exercised in its execution, a representation of any substance can be made which, to a great extent, will enable any one to comprehend what are the substance's principal characteristics of surface.

Concavity, convexity, and flatness of surface, as well as the quantity of light and shadow existing upon objects, may be perfectly indicated by a mere black and white, or pencil delineation; the method of producing these features of an object, and such as have been alluded to previously, being explained in the ensuing lessons of this section.

But, that those lessons may be the better understood, it will be as well to make a few preliminary remarks on light and shade—upon the proper management of which, and the method adopted of depicting them, much of the effect of finished drawing principally depends.

Light on an object may be said, artistically speaking, to arise from one of three sources, and according to its source is termed natural, artificial, or secondary. When the light emanates from the sun, or moon, it is natural; proceeding from a lamp, or fire, etc., it is artificial; and when it is the result of rays of light, previously transmitted through a medium, such as a window, or other aperture, into an apartment, cave, or roofed space of any kind, it is secondary.

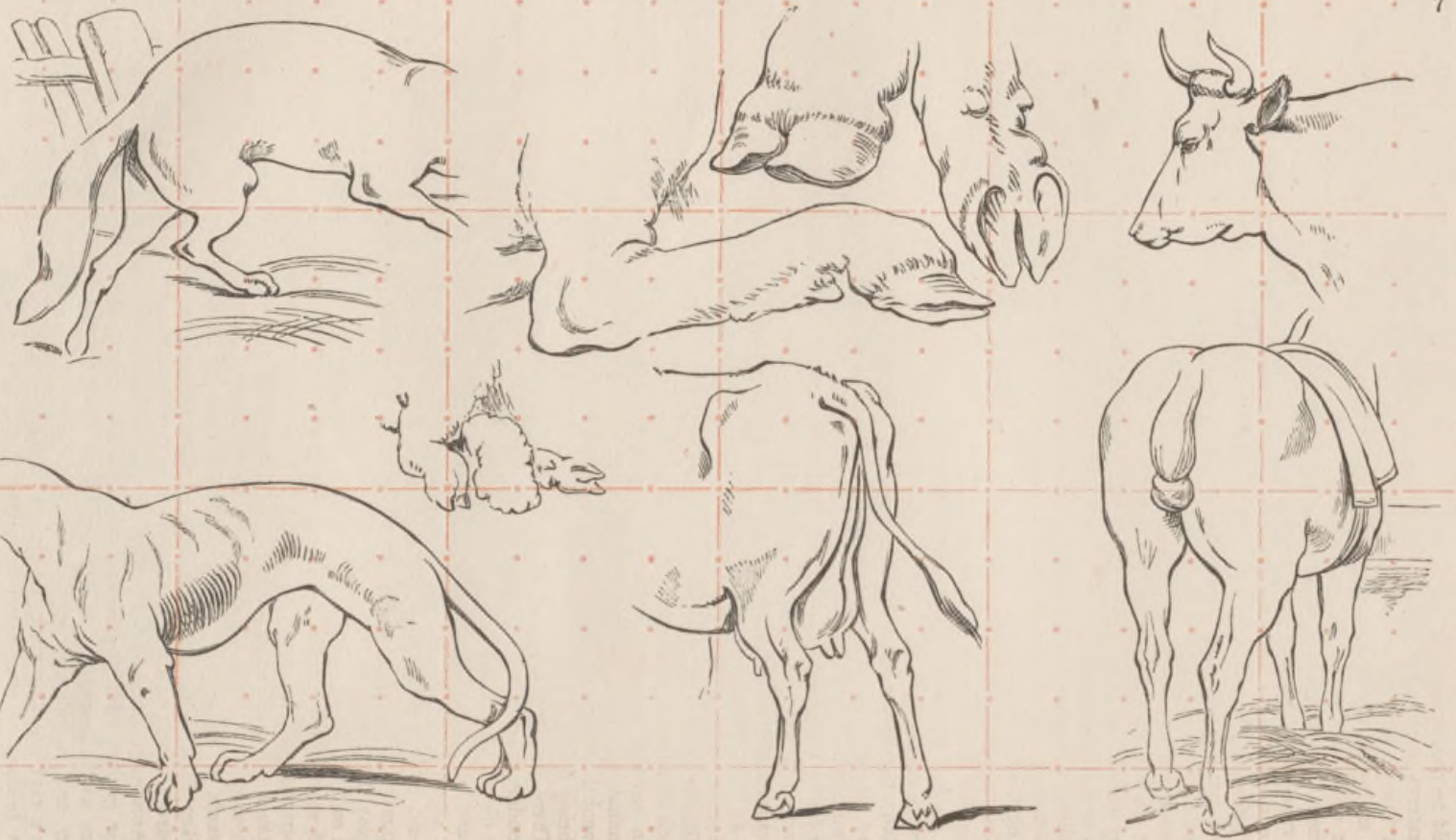
When rays of light fall on an object at a right angle therewith (that is from a source existing either *directly* above it, or facing it), the illumination produced is stronger than it would be if it proceeded from rays falling on it in an oblique direction; and the greater the degree of obliquity with which rays fall on anything the less intense is the illumination it receives therefrom.

The nearer, also, an object stands to us, the more brightly its surface usually appears to be illuminated by the light which renders it visible to us. Therefore, in proportion to the increased distance at which objects in a drawing should be represented as being from the eye, that which indicates light upon them should display the less brightness of appearance. In a drawing, then, either the illuminated parts of objects should be denoted by grey toned shading tints; and the adjoining shadowed parts by tints dark enough to furnish such a contrast with the tints indicating light as will cause them to manifest their proper degree of brightness according to distance: or the illumined parts should be denoted by white, and the adjoining shadowed parts by shading tints that will contrast sufficiently with the white to make it indicate a degree of brightness of light corresponding with the subduing effect of distance on the brilliancy of light. For that which designates light in a drawing will do so more or less strikingly, that is, produce the semblance of more or less brightness according as it is conjoined with, or relieved by, a comparatively dark, or a comparatively feeble-toned, mass of shade. This is shown by Figs. 27 and 28, since the light on the white animals, represented therein, appears to be much brighter in those places where it is conjoined with or relieved by dark masses of shaded object than where it is not so.

Fig. 27.

Fig. 28.

The apparent intensity of the light pervading an object, however, is always modified by the color of the object, and is the greater the nearer it approximates to white. Hence, snow will appear to have a brighter light resting upon it than a colored surface will seem to have, when the sun is shining on both, and so forth.



But a peculiarity, likewise, that light on an object displays, to which particular attention should be paid in drawing, is that of *invariable breadth*, or predominance of appearance over all features or markings caused by the natural color of an object. Consequently, color even though strongly observable, never destroys the semblance of light; and when the two are to be represented in a drawing, as being on the same surface, the shade of the color should not be denoted in such a manner—that is by a shading tint so dark—as to diminish the semblance of the naturally predominating effect of the degree of light which it is requisite to depict as illuminating the color.

Another characteristic of light to be borne in mind is, that as it may be both reflected and refracted, that is, be compelled by forces dependent on the constitution of bodies to take a course diverse from the straight lines in which it otherwise moves, the light on an object may be affected, either by reflection or refraction, and when so should be represented accordingly.

It may be said, in fact, to be always more or less increased by reflection, as almost every description of surface receives light reflected from other surfaces, and reflects its own to surrounding surfaces. "There are many phenomena in external nature," says an excellent writer on the remarkable phenomena of the earth, "which result from the reflection of light, for nearly all substances possess the power of reflecting, in some degree, the light which falls upon them."

The strength or brightness of the reflection of light from one surface on to another diminishes with distance, for which reason, on representing a reflected light in a drawing, the greater the distance at which the effect of reflection is to be indicated as existing from the cause, the less strongly it should be defined.

Refraction being a phenomenon resulting from the influence of fluids, such as air, and water, on light, and which produces but distortions of form corresponding with that well-known one called mirage, it is rarely necessary to take it into consideration in Art. In delineating water, attention to facts sometimes necessitates the imitation of the effects of refraction in bending the rays of light from their usual direction and thus producing the appearance of the bent or broken reflection of a vessel, stick, or plant, in a stream, or pool; and as "one touch of Nature is worth a world of Art," when a similar appearance is visible in a scene which is being pourtrayed, it should always be depicted by the artist.

Shadow on objects is produced by their deprivation of an equal amount of light to that which illumines the surrounding objects. Thus, anything is said to be in shadow, when it is in any way precluded from receiving on its surface the fullest effects of the prevailing illuminating power, or that looks darker than it would do, if nothing interposed to prevent its being fully illuminated from the source of light which is the general cause of its being visible.

There are two kinds of shadow; namely, a secondary and a primary shadow. A secondary shadow is the shadow of an object or surface; that is, it is a shadow cast by one object on to another, as the shadow of a house, tree, or other object cast on the ground, or on to anything else. Its edges are always bordered by light, where they do not adjoin the object which casts it; for this reason, a cast shadow, when represented, should be rather definitely depicted, especially as it mostly receives a distinct form corresponding with that of the object throwing it — sometimes so much so as to clearly display the complete outline of the object, as, for example, of a horse, coach, or tree, and so forth.

A shadow when not a cast one is a primary one. And the nearer any portion of either description of shadow is to the eye, the darker generally it appears; for the greater the distance at which we stand from objects, proportionally the less intense, as a rule, is the appearance of the shadow connected with them. Nevertheless, when a shadow is cast towards us, those parts of it which are close to the object throwing it, usually appear darker than those which are more distant from it; such being the case, in fact, with regard to every cast shadow, unless it be one of considerable length.

Accidental circumstances often affect, however, both light and shadow, and reverse their general effect, by causing them to appear more striking and powerful at a distance from us, than they do in our immediate neighbourhood. A cloud, casting a shadow over, and considerably beyond, the spot on which we stand viewing a scene whilst the sun's rays are illumining the distant portions of the landscape, will cause light to appear less brilliant on objects which are near to us, than on those standing much farther away;

and the same cloud passing onwards, may cause a shadow to move across the scene, so as to impart to its remote portions more depth of shade than is observable on its foreground. Still the light and shade of the very distant parts of a scene can be so little observably affected by accident, that they almost always blend, either into an extremely tender grey, or a neutral color, manifesting only the slightest perceptible variations of light and shade; a fact, proving that distance destroys the intensity of both illumination and shadow, and showing us, that without a proper management of light and shade in a drawing, it cannot be made to convey a perfect idea either of nearness or remoteness.

Reflection, likewise, materially influences the depth of shadow displayed on some surfaces. Thus, in the case of close proximity to each other, a cast or secondary shadow is rendered by reflection darker than the primary shadow existing on the shadowed surface casting the secondary shadow. This arises from the circumstance that the surface, existing beneath the cast shadow, reflects some of its light on to the surface existing beneath the primary shadow, without receiving in return reflected light from the last-named surface. Therefore, as a rule; firstly the cast shadow should be denoted by a darker shading tint than that employed for the representation of the primary shadow; secondly, we can perceive the surface-markings existing under the primary shadow more plainly than those existing under the secondary or darker shadow; and, thirdly, both descriptions of shadows should be depicted in accordance with these facts, when we desire to portray the effects of Nature with fidelity — to do which should be the aim of all who practise art.

LESSON VIII.

ON THE METHOD OF PRODUCING FINISHED PENCIL DRAWING.

Finished Pencil Drawing is produced by means of shading lines employed for four purposes.

1st—To denote the parts of scenes and objects which are in shadow.

2nd—To render the various parts of an object distinct from each other, when an equal degree, either of light or of shadow, exists upon the whole object.

3rd—To display the characteristic features of the surface of an object.

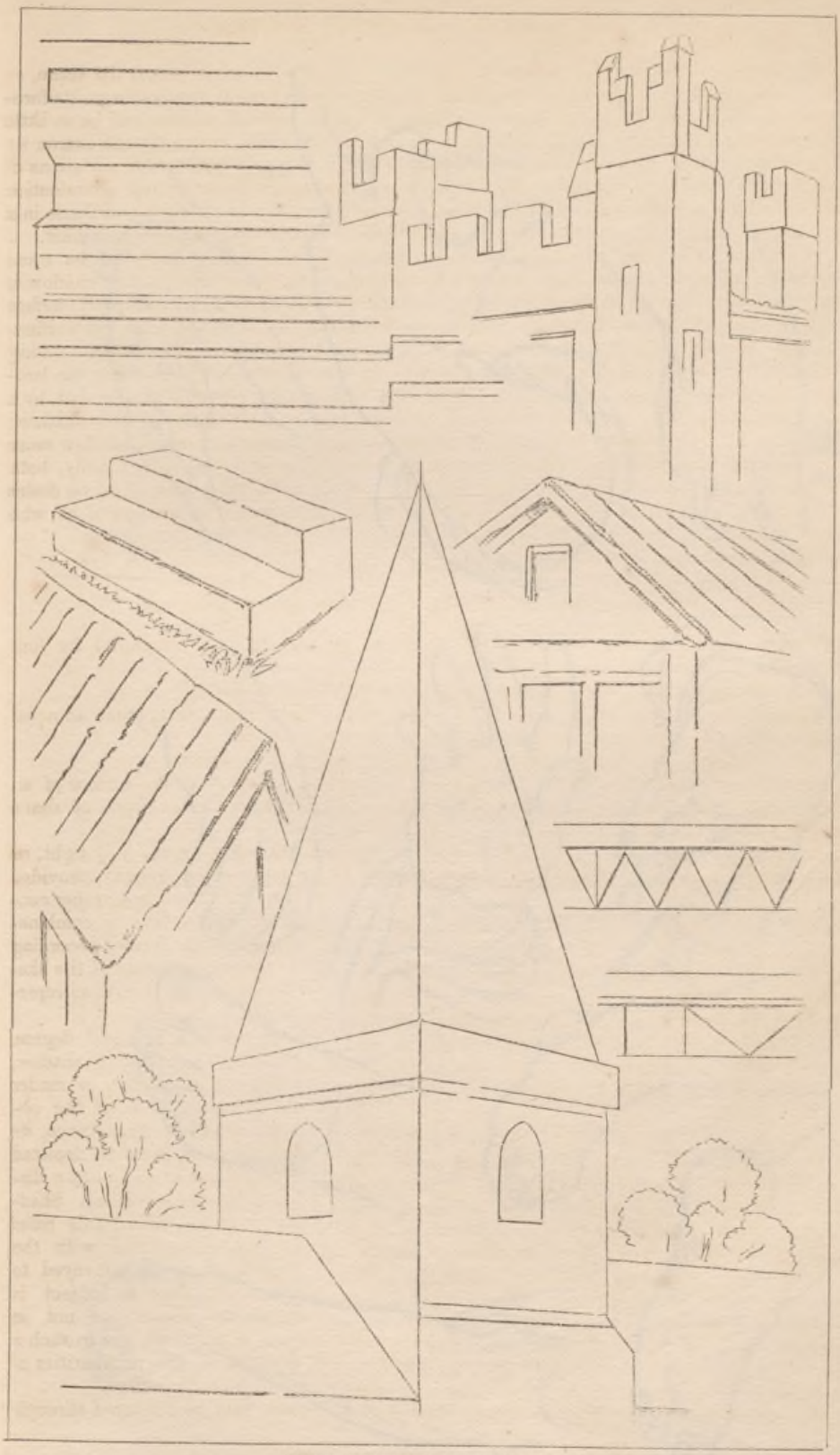
4th—To represent the tone of the color existing on each part of the surface of an object; the tone of a color meaning not the actual color, but its apparent depth of shade as to whether it be of a light, dark, or intermediate degree.

1. Shading lines will produce the effect of shadow, by being drawn duly light, or dark, relatively to the depth or darkness of shadow to be represented thereby, provided they are placed in a proper conjunction, and take, in combination, specific forms, according to the requirements of the shadowings to be shown, as represented in Fig. 29.

Fig. 29.

2. When an equal degree, either of light or of shadow, exists on an object, to render the representation of the obect finished in appearance, its various parts must be depicted in relief, or so as to show distinctly from each other. Shading lines will afford this relief (without interfering with the impression to be conveyed to the mind, that an object is either in shadow, or not in shadow) by being drawn so as to form light, or dark masses, as required, and in such a varied way as to follow the shape of the object, as well as express the peculiarities of color manifesting themselves under the light, or shadow, existing on its surface.

3. The characteristic features of the surface of an object, may be displayed through



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the medium of shading lines, by depicting them so that they will imitate the course of line taken by, or forming the different features constituting those markings. Thus, the tiles of a roof, the pattern of a dress, the roundness of a ball, the roughness of a tree-stem, etc., may be designated by the aid of shading lines, if they are depicted so as to represent what appears to be the course of line forming the characteristics to be shown.

4. Shading lines will express the tone of the color existing on each part of an object, by being drawn, relatively to its degree of shade, of a suitable intensity of darkness, intermediate between white and black. Thus shading lines, like those in Figs, 30, 31, and 32, produce three separate tones or degrees of shade; lines graduated, as in Fig. 33, also produce a tone or semblance of a particular degree of shade; as would any other unbroken series of lines graduated from light to dark, or the reverse. But neither white nor black legitimately can represent tones, although they may assist in producing the general tone of a drawing, by being brought into harmonious conjunction with its light and dark shadings, or by being introduced so as not individually to attract the eye and look like isolated spots.

Fig. 30. Fig. 31. Fig. 32.

Fig. 33.

LESSON IX.

ON THE METHOD OF DRAWING SHADING LINES FOR BUILDINGS, AND OBJECTS REQUIRING A SIMILAR KIND OF SHADING.

Shading Lines, when required to be either vertical, or diagonal, should be drawn downwards, that is, from towards the upper to the lower part of the paper..

Horizontal shading lines may be drawn from left to right.

To produce an even tone, shading lines should be drawn of one thickness and shade, and either close to each other so that *no white places* appear between any two of them; or they must be drawn equally distant apart, as represented in figure 34: and in both cases by an equal pressure of the pencil on the paper throughout the whole series which are to be executed to produce the required tone.

Fig. 34.

Series of shading lines, which are to be employed to produce an even tone, should not be drawn more than half an inch in length. And if the space to be shaded with such a tone, should require, from its size, several series of lines, to cover it, their extremities must not be rendered observable, or they will make markings unpleasant to the eye, and destroy evenness of tone, as represented at *a b*, *c d*, Fig. 35. They must be drawn, therefore, so as to blend imperceptibly one into another, and appear almost as if the mass of shading produced by them was formed of but one series of lines, as represented in Fig. 36.

Fig 35. Fig. 36.

As the parts of buildings, as well as of all objects, either when in shadow, or having a uniform color upon them, usually appear the darker the nearer they are to the eye, the representation of each portion which is more distant than another from the eye, should be produced generally by a less thick and dark shading line than that used for the part immediately preceding it. Thus, on depicting the receding side of a house, as being in shadow, the shading lines employed should be graduated usually in thickness and tone so as to appear as represented in Fig. 37—in which the tone of the shaded part, and the lines producing it, become gradually lighter and thinner as they proceed from *a*, representing the shadowed point of the building nearest to the eye, towards *b*, representing the point the farthest from the eye.

Fig. 37.

Shading lines requisite for the representation of a cast or secondary shadow should be delineated darker, more regularly, and generally thinner, than those that are used to indicate the primary shadow existing on the side of the object from which the cast shadow proceeds; as partly instanced through the cast shadow thrown by the buttress, shown on the left-hand side of the building in Fig. 38, and the shading lines on which are both darker and more regular than those forming the primary shadow existing on the side of the buttress from which the cast shadow is thrown. The nearer, also, such shading lines are to be placed to the object

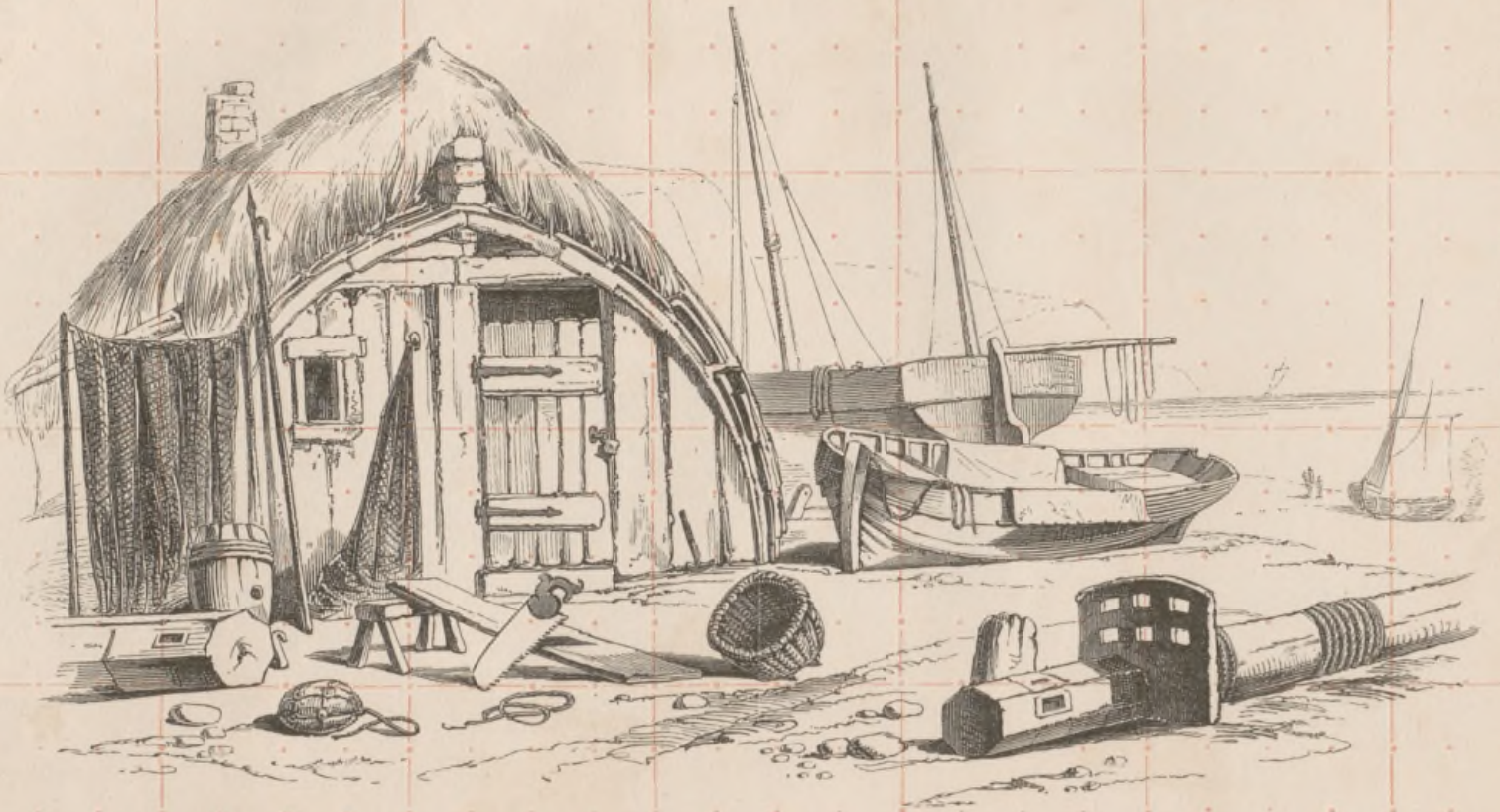
depicted as throwing the shadow, the thinner, darker, and smoother, as a rule, they should be drawn; because the parts of a cast shadow always appear the darker to us, the nearer they exist to the object which casts the shadow — unless the shadow extends to a long distance from the object and towards the foreground of a scene, in which case the parts of a shadow appear the darker the farther they exist from the object, and should be represented accordingly.

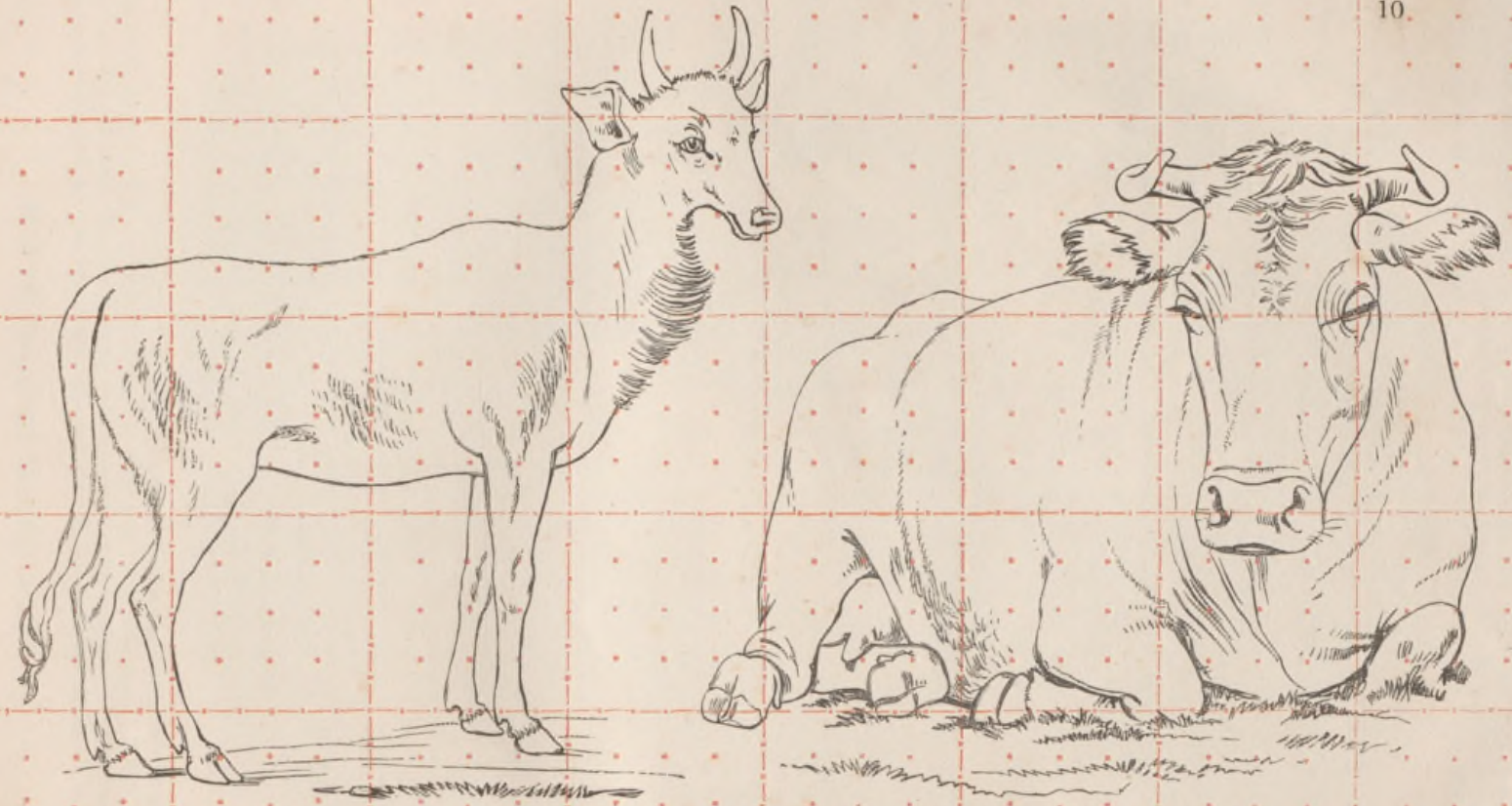
Fig. 38.

AN OLD HOUSE AT CHILDREY, BERKS.

On representing the characteristic features of objects, such as house-tiling, etc., and the local coloring, which render the appearance of an object darker in one place than another, such as weather-stains, etc., the shading lines, employed to convey an idea of those and corresponding peculiarities of character and color, should be of a varied nature, adapted to produce the effect desired. This is shown by the roof of the building, the markings of brick-work, and the general different-toned series of lines existing on the face of the house contained in Fig. 38.

Variations of characteristic markings, of tone, and of local colorings, are often observable on the parts of objects having a certain degree of shadow upon them; and the mass of shading lines required to represent that degree of shadow should be produced first, and then the lines requisite to employ, to denote the above-named variations, should be drawn over the depicted shadow so as to appear duly distinct from it.





Hence, on representing anything similar to the shadowed side of a house, the surface of which displays rough, broken, stained or colored markings, through age or other causes, depict the shadow first, and then run lines across the shadow lines in suitable directions to represent the surface markings, as shown in Fig. 39.

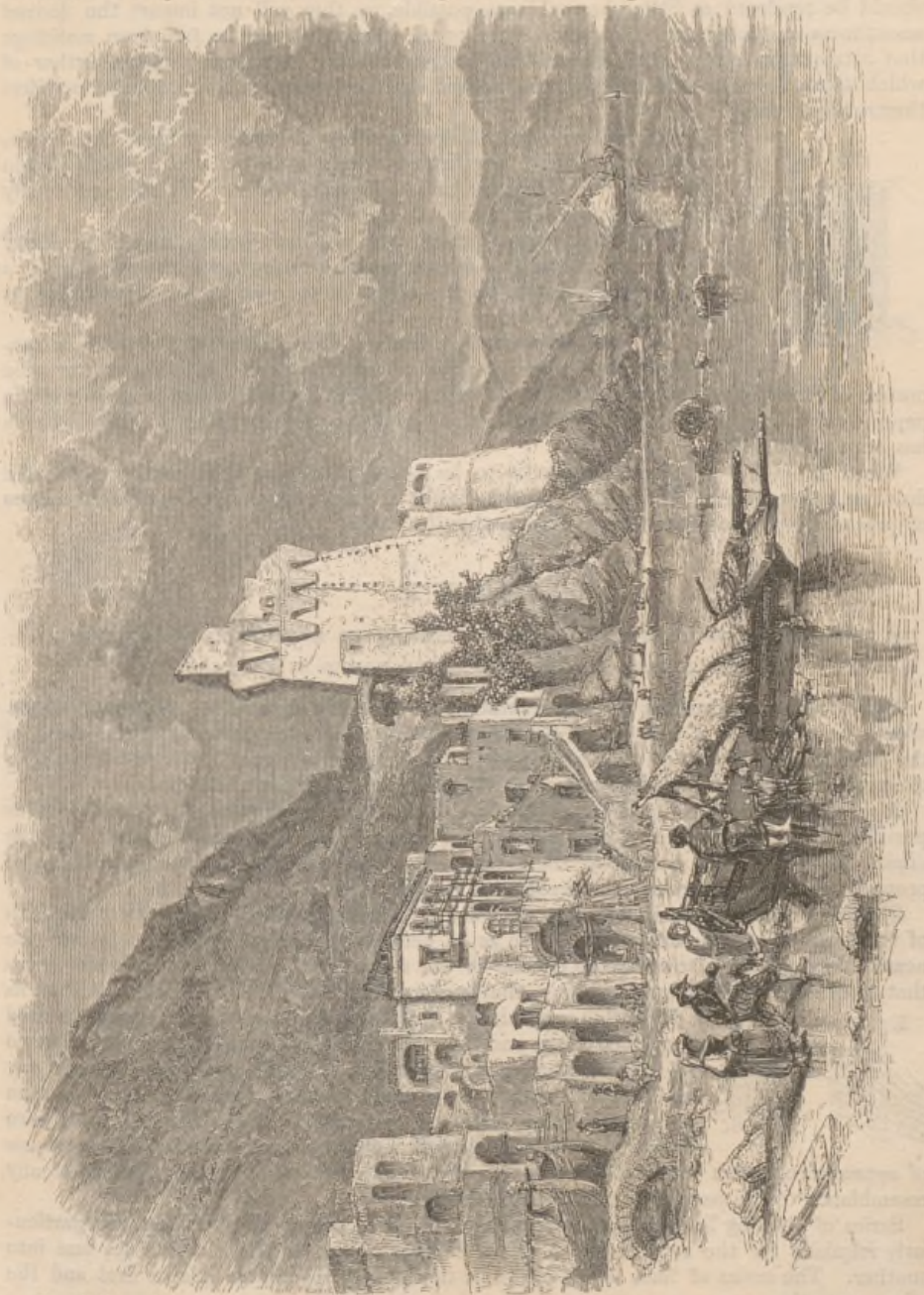


Fig. 40.

On delineating boats and ships, the shading lines required generally should take the direction of their hulls, and be curved, so as to correspond with the curve of their hulls, as shown in Fig. 40. The sails of a vessel usually should be shaded with lines running downwards, and finer than those used for the shading of the hull. See Fig. 54.

Sometimes it is requisite to depict a series of blended shading lines crossing each other, either to produce smoothness, or uniformly intense depth of tone; as neither the one nor the other can always be perfectly obtained through the medium of merely simple shading lines running in but one direction. But the variety of directions in which they are drawn should be rendered as little observable as possible, or, they will not impart the desired smoothness and intensity. For, a tone, to appear smooth, should be free from markings that attract the eye; and to be uniformly intense, should be perfectly even: neither of which it can be when indications of the crossed shading lines used to produce it, manifest themselves strongly.

Fig. 39.

To produce series of shading lines to represent light even tones belonging to not very distant objects, a flat-pointed F pencil should be used; or a B may be employed, if pressed lightly and evenly upon the paper according to requirement.

Every description of dark, even, and varied tones, may be produced by means of the last-named pencil, pressed upon the paper with a force proportionate to the depth of tone or degree of darkness to be produced.

For black thin shading lines, a fine pointed B B should be employed, and a broad pointed one for black thick lines: for solid masses of black, rub, as it were, the flattened point of the B B pencil over the surface of the paper, now in one direction and then in another, until the proper degree of solid blackness has been obtained.

When the effect of great distance is to be conveyed through the shaded parts of a drawing, a fine pointed H, or H H pencil, should be used, with a suitably delicate degree of pressure, so as to produce both lines and *rubbed tones*.

LESSON X.

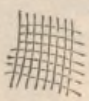
ON THE METHOD OF PRODUCING SHADING LINES, WITH REGARD TO DELINEATIONS OF THE HUMAN FIGURE AND ROUND FORMS IN GENERAL.

The shading required for the representation of all undraped parts of the human figure, should be drawn in a way especially adapted to express both the tone of the color of the parts to be represented as shaded, and the varying mouldings of each distinct part or the projections and depressions caused by the muscles and bones of the body.

Also, the shading lines used for either the one or the other purpose, should, as much as possible, follow the outline of the part of the figure which is being delineated; and be depicted more or less curved, as there are no parts of the human frame which can be properly represented through the medium of straight lines.

Shading lines, to assist in imparting an idea of rotundity of form, as well as of the flesh of the body, should be drawn, firstly, so as to become gradually thinner and lighter the nearer they approach towards the outline of the form; and, secondly, in different series that cross each other at acute angles — that is, somewhat as denoted by Fig. 41, and not as in Fig. 42 — or at almost right angles. A soft pencil should be used to produce them, and they should run at a perfectly regular distance one from another, and where there is any degree of thickness in any one line there should be a regular and due degree of substance in the corresponding parts of every other line; likewise great care should be taken to preserve each line from anything like *harshness* of appearance, which would necessarily seriously militate against the production of any resemblance to the peculiarly soft aspect of flesh.

Fig. 41. Fig. 42.



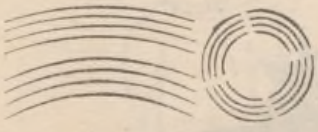
Series of shading lines gracefully crossing each other in various directions are particularly requisite for the representation of forms that blend, as the muscles do, one into another. The series of lines which are to be the longest should be drawn first and the others over them.

On shading the representation of all other forms possessing any degree of rotundity, as in the case of the human figure, produce the semblance of rotundity by means of lines which are rendered gradually lighter and thinner at the sides of the form than they are

towards the centre parts; because the tone on every round form generally appears the *darker* at a point about a third of the distance from its sides than it does at any other part, and becomes again *lighter* towards the centre, that is, if the sides are not illuminated, or have not decided light appearing upon them,

To acquire the power of producing such lines with certainty, practise depicting a number of circular lines in succession, (such as shown in Fig. 43,) in series taking different directions, (as in Fig. 44,) and of varied lengths, strengths, and widths apart.

Fig. 43. Fig. 44.



Also, *emphasize* each line of a series at once alike, so that no after patching becomes necessary; and draw it by a *sweep* as it were — rather than a *dragging* — of the pencil along the surface of the paper.

Learners should strive to depict these lines with perfect freedom; and to do so should endeavour to move the hand and pencil without effort or constraint, as well as with due mechanical precision, when practising them.

Whilst attempting at first to draw such lines, the wrist should be kept lightly resting in a fixed position on the drawing paper, at a point about opposite to that intended to be the centre of the series of lines to be drawn; then the pencil should be made to skim along the surface of the paper in a way that will perfectly emphasize the lines drawn, and also in a succession of movements, producing lines, some above and some below others, of the greatest easily practicable degree of length which can be obtained without creating a sense of fatigue in the fingers or wrist.

After the power has been acquired of depicting such lines with the wrist resting lightly on the paper, the attempt should be made to draw them without resting the wrist; and yet by merely moving the hand and not the arm.

To render the shading perfect which is required for drawings of the human figure and round forms in general, it may be necessary, however, to use a smooth tone as well as positive lines. This tone may be produced by rubbing the broad flat point of a soft and light pencil like the F, very tenderly over the part to be toned, and in such a way as to produce a series of imperceptible evenly laid lines, until the proper depth of tone has been produced.

To represent the hair of the human head, the requisite shading lines should be made more or less wavy, and be delineated with a rather fine pointed H B pencil, if they are to be only moderately dark, or with a similarly pointed B B, if to be otherwise. Each line also should be drawn at once, if not more than three inches in length, and be commenced from its upper end with a rather stronger pressure of the pencil on the paper, generally, than should be used for its termination.

To impart a graceful and natural appearance to the drapery of a human figure, the shading should be delineated so as to express the flow, as it were, of the garment, or the way in which it falls into folds, and sits upon the figure. A judicious mixture of straight with curved lines, may often be used advantageously to represent the drapery of small figures; but only lines, more or less curved, in accordance with the form to be developed, should be employed in delineating the drapery of large figures.

LESSON XI.

ON THE METHOD OF PRODUCING SHADED ANIMAL DRAWING.

As one of the principal objects to be attained in making a perfect finished drawing of an animal, is to produce a correct imitation of the character of its skin, the shading lines, used to represent it, should always be drawn so as to follow, as closely as possible, the direction and form which the hairy or other natural coating of the skin assumes.

Fig. 45. Fig. 46.

These shading lines should, therefore, be drawn sometimes nearly straight, as represented in Fig. 45, though never perfectly so; and sometimes curved in various degrees, as shown in Fig. 46. Thus, much of the woolly covering of a sheep's skin, and the hair of a horse, donkey, lion, of

many kinds of dogs and other animals, should be depicted with a line approaching the straight; whilst the remainder should be represented by a line more or less curved according to circumstances, as should be the entire coating of the skin of many animals.

For the shading of the feet and limbs of an animal, straight lines may sometimes be used when it is not necessary to indicate the appearance of muscular form, or of long hair, or wool.

As the skin coating of an animal invariably displays a series of lines formed by masses of hair, or other material, lying over each other (as shown in Fig. 47), the shading lines employed to imitate the overlying material should be drawn over those used to represent the underlying, and take a direction corresponding with that of the natural lines to be imitated.

Fig. 47.

The requisite shading lines for animals should be drawn with a rather sharp pointed F or H B pencil, if the lines are required to be sharp and decided, and with a blunter pointed B or B B, if to be soft in appearance; the proper regulation of pressure upon the paper, combined with the use of the right kind of pencil, being sufficient to ensure the production of the degree of thickness and darkness, softness or sharpness, that each line, when drawn, should manifest.

In conjunction with positive shading lines, the use of a tone may often be necessary in animal drawing, produced after the manner described in the last paragraph but two of the preceding lesson, and sometimes before the shading lines are depicted, sometimes after they are so.

LESSON XII.

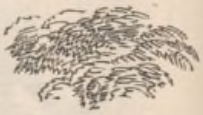
ON THE SPECIES OF SHADING REQUIRED FOR THE REPRESENTATION OF TREES, HERBAGE, WATER, MOUNTAIN SCENERY, CLOUDS, AND FOREGROUNDS.

One kind of shading required in tree-drawing is such as will particularly indicate leafiness of a character corresponding with the peculiar appearance of the foliage of the tree being represented. It should be produced, generally, by means of series of connected short, thick and thin, angular or round pointed lines, according to the effect to be depicted; as shown by Fig. 48, of a piece of shaded oak; Fig. 49, of shaded elm; and Fig. 50, of shaded pine. The lines may be, and usually should be, drawn in all directions but the vertical; yet so that their changes of direction, instead of appearing abrupt, as in Fig. 51, flow gracefully, one out of another, as in Fig. 52.

Fig. 48. Fig. 49. Fig. 50.

Fig. 51.

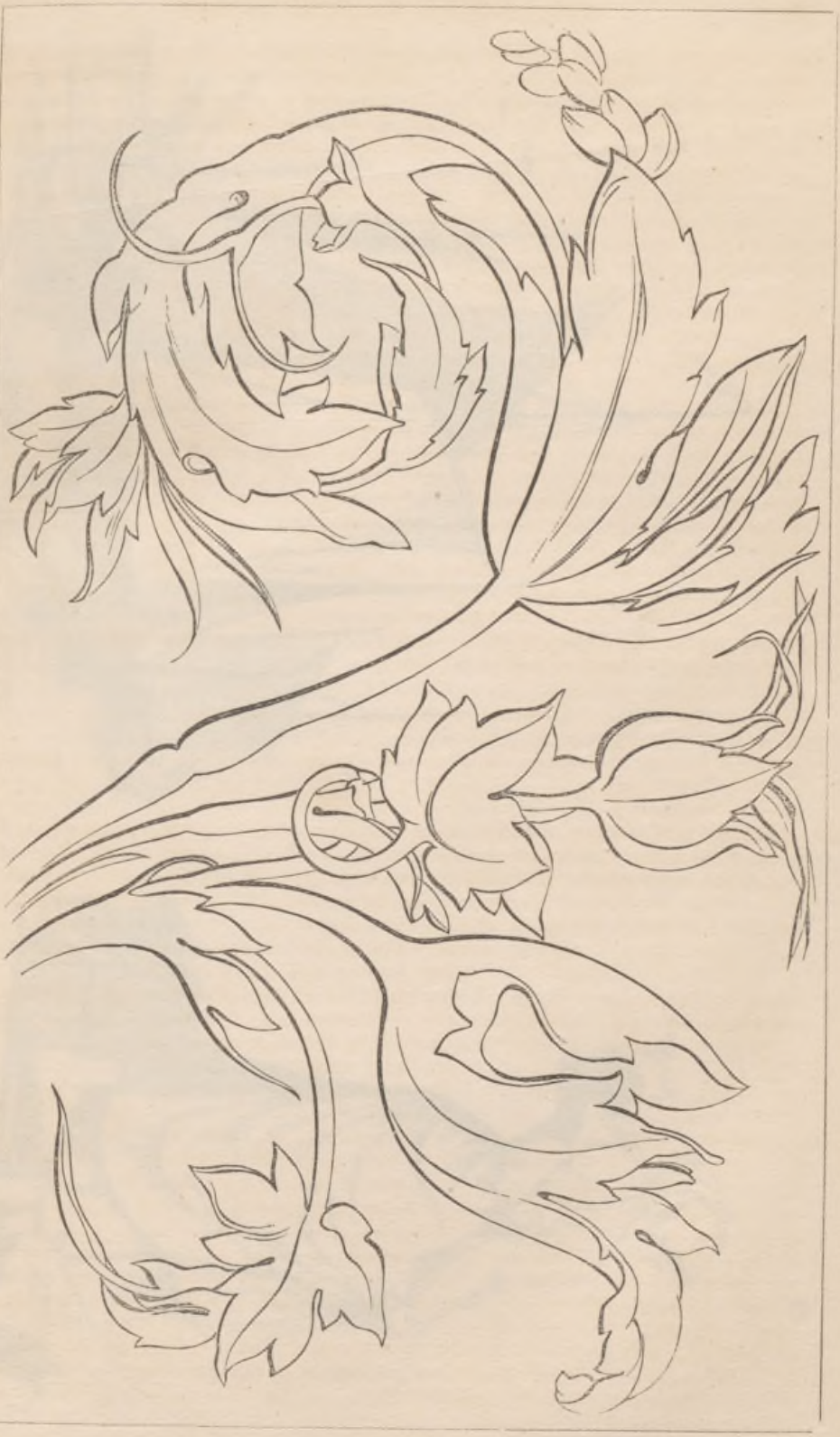
Fig. 52.



Another description of shading necessary, is that which will denote the characteristic appearance of the bark coverings of the stems of trees, and as that is very varied, the lines used to represent it should be correspondingly varied. Therefore they should be drawn so as to appear here rough, and there smooth, and also, as a rule, become gradually thinner and lighter from near the centre of a stem or bough, towards the outline, that the effect of rotundity may be portrayed. See Fig. 53.

Fig. 53.

Lines crossing each other, also, may be used in the shading of tree stems, as well as lines that run downwards or in any other direction; attention being paid the while to depicting the character-



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istics of Nature, as regards excrescences, indentations, hollow places, and the marks of detached limbs and branches, which most tree-stems exhibit.

On shading the representation of herbage, care should be taken that the lines used express the difference which exists between mere grass, and that which has a foliage or leaves.

On representing grass, lines indicating the way it naturally lies about, or shoots up from the ground, should be used for the shading. When shading is employed for the representation of herbage foliage, it should be managed so as to express the character of the leaves of the specific kind of herbage to be depicted, and, at the same time, so as to convey an idea of that graceful confusion of intertwined vegetation, relieved by the out-springing distinct forms of various kinds of elegant wild plants, so frequently observable about hedge-rows, fields, and woodlands.

Water is one of those things which cannot be depicted without the use of shading-lines; and to produce the semblance of transparency, is one of the main purposes to which the shading process has to be applied. This may be effected by placing straight lines of different degrees of thickness and darkness, one under, or above another, some close to each other, and others more or less apart, so as to create not only the effect of transparency, but of the reflection of clouds or other objects which is always observable in water. (See Fig. 40 again.) They should also invariably be drawn in a horizontal direction, when used to represent water as being in an almost, or perfectly smooth state. For want of attention to this rule, water is often depicted as most unnaturally running slant-wise, which it never does perceptibly, excepting in the case of a decided fall, or cascade. As, however, running water generally manifests an appearance of movement, that appearance should be indicated, when required, by means of a few lines drawn in irregular curvatures over horizontal lines.

When water is to be represented as agitated or being in waves, it should be depicted through curved shading lines which take a direction assimilating with that of the waves to be imitated (see Fig. 54); the semblance of transparency being attainable by varying the thickness and darkness of the lines placed in conjunction.

Fig. 54.

With regard to mountain scenes, hills, and rocks, as a general principle, a portion of mountain to be depicted as coming into the foreground of a picture should be drawn with bold shading lines, and the more rocky the character of that portion, the bolder should be the lines employed. Mountains or hills to be represented in the middle distance of a picture, should be shaded with masses of even-toned lines, placed close to each other, and so as to manifest *very little appearance of lininess;* though the masses may, and should often be rendered of different degrees of darkness, relatively to the extent of distance and the effect of light and shade to be denoted; whilst mountains or hills to be represented in the back part, or back-ground of a picture, should be shaded in such a manner that no shading lines become apparent, and after the method described for shading clouds.

The effect produced by the shading lines used to represent wooded mountains and hills should be somewhat similar to that shown in Fig. 55. When mountains, precipitous in appearance, round backed hills, and other elevations, are to be portrayed, neither perfectly horizontal nor vertical lines should be employed, but lines which take a direction corresponding with the most striking direction of the various features of the surface to be depicted.

Fig. 55.

Clouds should be represented by shading produced through rubbing (until the proper tone has been depicted) a rather soft pencil lightly over the paper, in series of lines adjoining each other, and running first in one direction, and then in another,

without the least trace of the commencement, termination, or of any part of the lines being rendered observable.

The foreground is always a most important feature of a drawing, improving or injuring its effect, according to the way in which it is shaded. That which is most necessary to attend to in shading a foreground, is to render it sufficiently bold — that is, prominent in appearance; for the idea of distance cannot be fully conveyed to the mind by a drawing, unless the general mass of shading lines used therein, appear the stronger, the nearer they approach its fore-ground. The result of due boldness is shown by Fig. 56, in which the bold shading lines on the foreground cause the remainder of the subject to appear to recede—or to represent objects which are further away from the eye than are the masses of stone indicated in the fore-ground.

Fig. 56.

In concluding these lessons on shading, it is as well to observe, that the degree of thickness or boldness of line used in shading up objects in a drawing, should be proportioned to the size of the drawing and of the representation of the objects. Thus, on depicting any set of objects, firstly, within a space, for instance, 12 inches long, and 8 deep, and afterwards within a much smaller space, the lines used in shading them on the larger drawing should be rendered considerably bolder than those employed in shading them on the smaller, and each object should be shaded with a strength of line (that is, thickness) proportionate to the comparative size and distance it is to denote

LESSON ON COPIES X. TO XVIII.

The matters most particularly requiring attention on imitating these copies, is, in those cases where the subjects are shaded, to endeavour to produce a pure and perfect outline of them before their shading is imitated.

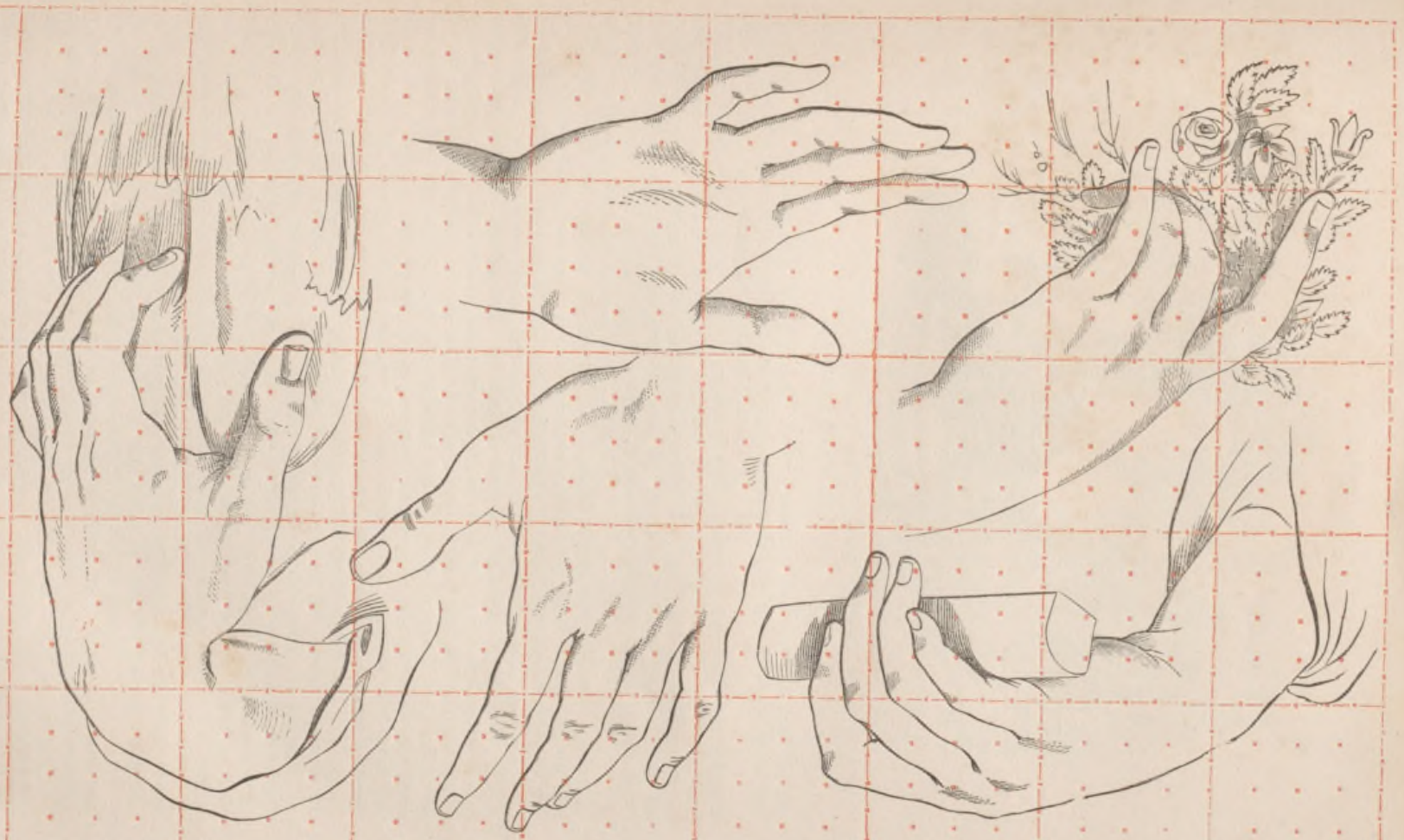
Likewise, as in some of the copies (for instance, in copies 10 and 11), the outlines of the objects are given much stronger than in others, that difference of strength should be carefully imitated, the intention of it being to afford learners a practice which will enable them to draw outlines with boldness and precision—whence will result the power of delineating delicately marked outlines; whilst if the habit of producing only feeble outlines be once contracted, it will be very difficult to overcome it, and prove exceedingly detrimental to the acquisition of artistic proficiency.

Where the shading lines are given in the copies in a distinct form, they should first be imitated as given, the practice of distinctness of pencilling being highly advantageous in the early stages of the study of drawing. Afterwards their effect should be imitated by means of blended lines.

Also, each copy should be practised, like the copy without guides, on plain paper, after it has been drawn on its proper sheet of ruled paper.

The foliage studies contained in copy 16, embrace examples of the distinctive touch which represents birch foliage (5), larch (6), weeping willow (7), and Scotch fir (8).

Finally, it is advisable that learners should practise as much drawing as they possibly can, with due care, at one sitting, and devote all the time they can spare to the study of the art; for nothing is so retarding as the custom of learning by fits and starts, or without proper assiduity and perseverance; as the hand and eye soon lose the discipline they may have gained through a period of practice, if the exercise of their powers be not continuous, and maintained at intervals not longer apart than a few hours.



ON FIGURE DRAWING.

To be able to represent the living human figure perfectly, that is, as it may be seen under the influence of any emotion, or circumstance, affecting its aspect, is justly esteemed the highest achievement of delineative art.

One reason of this is, that the acquirement of such a power of representation demands much patient study and the exercise of superior observation, discernment, memory, judgment, quickness of perception and execution, practical skill, and industry—a combination of qualities that only those who are animated by dauntless perseverance endeavour to cultivate, or can ever possess, and therefore deservedly ensuring to the productions, emanating from its exercise, the highest appreciation.

Patient study and superior observation, are requisite to lead to an intimate knowledge of the different forms that each part of the human frame can assume under all circumstances of position; superior discernment is necessary to detect the characteristics of the lines which produce those forms; memory, for the purpose of preserving the results of study, observation and discernment: judgment is essential to discriminate which of the lines composing a form should be, on portraying it, selected for representation to render the portraiture of the form correct without unnecessary details; quickness of perception and execution are required to catch and represent those minute expressive peculiarities of line which the form of every part of our frame is constantly liable to manifest, and that often should be represented to produce striking portraiture; practical skill must be possessed to devise and employ the appropriate methods of depicting what is to be portrayed, and industry, because without it nothing perfect can be produced.

Another forcible reason why the perfect representation of the human figure is so greatly appreciated, is, because it requires the portrayal of that which is spiritual, as well as of that which is material; or of the effects produced by the moral and intellectual qualities, and casual emotions of individuals, as expressed at times in the countenance, and even in the posture of a limb. For they often plainly indicate those effects in such a manner that they can be unfolded to our gaze by means of a mere stroke of the pencil, or brush, provided that it be made with masterly skill and strict conformity to Nature.

The matters, to which alone it is especially necessary to direct the attention of art students, in a work like this, with reference to the figure, are those generally connected with its properties of form, proportion, expression, color, and substance.

Form, with respect to the human figure, as to other objects, is the result of a particular combination of certain simple lines. But there is this difference between the representation of form as connected with the one and the others, namely, that an artist whilst imitating the lines composing the form of any portion of our frame, cannot deviate from Nature without seriously injuring the value of his work, whereas he may do so, to some

extent, when representing other objects. Too much attention, therefore, cannot be given to the study of the lines constituting the particular form of any portion of the figure to be drawn, upon commencing to imitate them; and no attempt at their imitation should be made by a learner, until he feels that he has a correct conception of their relative lengths and directions, as the form to be depicted must entirely depend on those lengths and directions.

Such lines will always be found, on examination, to be more or less curved, and to belong to that class of which the line of beauty represented in Fig. 57 is the type; as a moment's glance at any part of our frame will prove, — and consequently, that no portion of it can be truly represented by means of straight lines. Still some of the lines of the human figure often appear to approach the straight, as for example, that running from the knee to the instep, shown in Fig. 58; the line of the nose and forehead; and that of the neck when the head is slightly turned, as shown in Fig. 59: this fact, therefore, should be duly regarded by the figure draughtsman, that exaggeration of the curving tendency of the lines of the figure may be avoided by him in his works. It is also necessary that he should be very careful to avoid continuing a curvature of line beyond a certain limit, previously to changing its direction; such a continuation being a mistake very frequently and readily committed, because the eye, without a sharp scrutiny, may easily overlook the minute diversities of direction which the lines composing the form of every part of the human frame so peculiarly display.

Fig. 57.

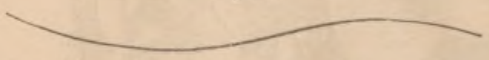


Fig. 58.

Fig. 59.

Proportion is intimately connected, either in a perfect or lesser degree, with every description of form; it being, when displayed to perfection in a form, the harmonious comparative measurement of the lines composing the form, relatively to each other; and such is its importance, to repeat the purport of an old author's intelligent remarks upon the subject, that if it be not apparent in the form of an object, the eye can never be perfectly pleased therewith; so that the delight as a matter of artistic taste, independently of color and association, which we experience on beholding any object, arises in a great measure from the influence of that perfection of proportion with which its form is endowed.

Consequently, according to the proportion of parts observed in artistic productions, they will possess so much the less or more beauty; and the artist, "who will proceed in his works with judgment must needs be acquainted with the nature and force of proportion," a knowledge of which will not only assist in enabling him to produce that which is attractive, but also to estimate aright, in a most important particular, the merits of the artistic works of others.

The peculiar effects imparted to an object, as, for instance, to the living human figure, by perfection of proportion in its form, are harmony of its parts, dignity and grace, which combined invest it with a most essential attribute of the beautiful, namely symmetry. Nevertheless, appropriateness of proportion is a characteristic of all forms purely the works of Nature, and oftentimes produces therein results deviating from symmetry, and even the reverse of it, yet such as are highly worthy of admiration and portrayal, as they serve to impart to diversity of form an individuality, or features that enable us to distinguish one form from another. On portraying, then, any form purely the work of Nature, as a rule which should not be departed from, excepting at the dictates of sound taste and judgment, the specific character of its property of proportion should be strictly represented, especially as it stands to reason that it must possess a perfectness upon which man cannot easily improve, emanating as it does from the hands of Him who fashioneth all things well and fittingly as regards their mould, as well as their purposes.

Hence, it may be inferred, how eminently necessary it is, on our pourtraying the human figure, that we should, unless we have good reasons for not so doing, only represent proportion relatively to the whole figure and its parts, exactly as then displayed by each; and that if we do not so represent it, our delineation must fail to denote a due degree of

6

symmetry and individuality of parts. And not only fail so far, but likewise to indicate proper expression of parts; for through the impulses of the will, internal sensations, and external causes, all parts of the human frame are liable either to a relaxation, or contraction, modifying proportion, and which invests each of them with a particular appearance or expression, that cannot be correctly depicted unless the modified proportion be imitated with fidelity. It is on this account, in fact, that proportion, whilst producing symmetry, sometimes is connected with that which partially destroys it; but only in so far as to change the perfect symmetry of a form into an expression which is still natural, and in its own way beautiful, as well as more admirable than symmetry, because it conveys an impression to the mind, through the eye, of that which belongs to human feelings as well as form, and thus possibly assists in communicating to us, a sense of the calmness of repose, the excitement of passion, or the agonies of suffering.

The standard of perfect proportion with reference to the various parts of the human frame, is admitted by the best authorities to be about as stated further on. Not that there is any universally acknowledged standard in every respect, yet the extent to which that laid down by one good authority, differs from that advocated by another, is so slight, as to be altogether unimportant, and not to impeach the general correctness of the principles upon which they have been respectively based.

To commence with the whole figure of a man, and measure it by heads according to the usual method, all authorities agree that the height of a perfectly proportioned man should be equal to 8 heads, or eight times the measurement of his head. Thus, with reference to the front of the figure, downwards, represented in Fig. 60.

The space from the crown of the head to the bottom of the lower jaw, being considered, firstly as	1 head.
Then from the latter, to just beneath the line of the top of the shoulders, there should be a space equal to the length of	⅛ head.
From the latter, to almost an inch and a half below the line of the arm junction, a space equal to	½ head.
Thence to the smallest part of the waist, or according to some, to about an inch below, a space equal to the length of	1 head.
From the latter point, in either case, to a line drawn across the summit of the lower limbs, a space equal to	1 head.
From the centre of that line to the centre of a line drawn across the middle of the knees, or according to some, to the centre of a line drawn across their lowest point, a space equal to	2 heads.
From the latter point in either case to the commencement of the small of the leg, a space equal to	1 head.
Thence to immediately above the ankle bone, a space equal to	½ head.
And from the last-named point to the sole of the foot, a space equal to	½ head.
The whole making together a length equal to that of	8 heads.

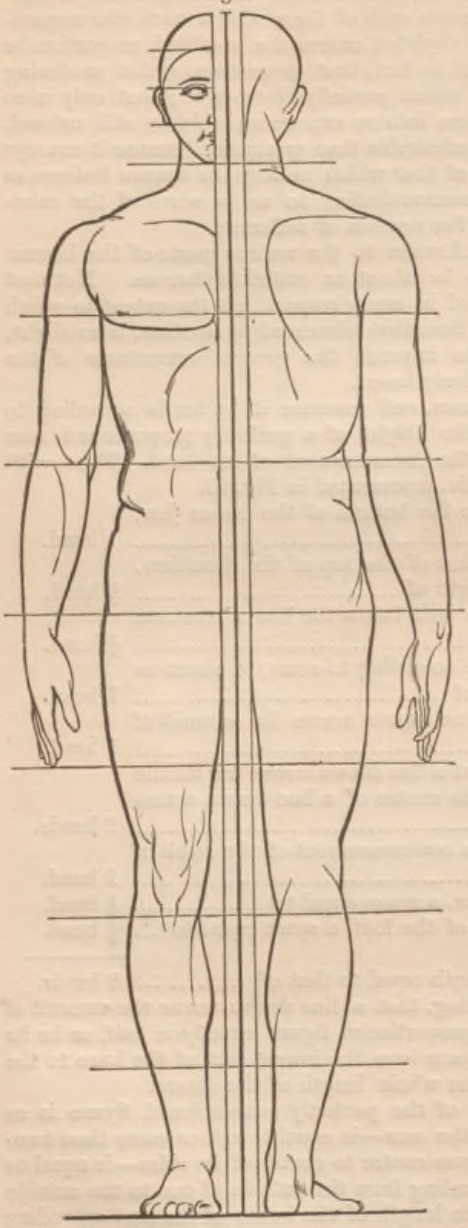
It will be perceived, then, from the foregoing, that a line drawn across the summit of the lower limbs would divide the perfectly proportioned figure exactly in half, or be its central-width-line; and that the length of space from the lowest part of the knee to the sole of the foot, is equal to one quarter of the whole length of the figure.

The width of each of the principal parts of the perfectly proportioned figure is as follows. The width of the head just above the ears—is equal to rather more than two-thirds of its length; of the neck through from centre to centre of its sides—is equal to half the length of the head; of the part extending from the outside of one to the outside of the other shoulder—equal to just double the length of the head; of the part extending between the junction of the arms with the body—to one length and a half; of the waist, from centre to centre of its sides—to one length and a quarter; of the part extending along the central-width-line of the frame—to one length and a half; of the knee, from centre to centre of its sides—to rather less than half one length; of the commencement of the small of the leg, from centre to centre of its sides—to two-fifths of one length; directly above the ankle bone, from centre to centre of its sides—to a quarter of one length; and of the foot, across the instep, to about two-fifths of one length of the head.

These measurements show that the widest part of a perfectly proportioned man is at the shoulders: that the width of the figure, independently of slight intervening variations

caused by the muscles, gradually narrows from the shoulders to the waist; that it thence increases, until it becomes at the central-width-line of the figure, equal to the width of the space, below the shoulders, extending from one to the other arm junction; and decreases from the central-width-line by graceful degrees, until it diminishes to its greatest extent at just above the ankles, and becomes at each ankle equal to but one-eighth of what it is at the shoulders. The scale also demonstrates that the width of the head at its widest part, or somewhere above the ears, is equal to rather more than one-third, and that of the neck to about one-fourth, of the width of the figure at the top of the shoulders.

Fig. 60.



The length of the arm, of the perfectly proportioned, from the top of the shoulder to the tip of the longest finger, is equal to the length of three heads and a half; and from the top of the shoulder to the elbow joint, to that of one head and a half; from the elbow joint to the wrist, to that of one head and a quarter; whilst the true length of the hand, from the wrist to the tip of the longest finger, is equal to three quarters of the length of a head,—the junction of that finger with the knuckles being the halfway point between the wrist and the tip of the longest finger.

The arms of the figure, when they hang down by the side, with the fingers of the hand extended, reach to a point five heads length from the top of the figure, see Fig. 60; and when stretched out at a *right angle* with the body, make a line equal in length to the length of the whole figure.

The greatest breadths of the hands and feet of such a figure are equal; whilst about twice the breadth of the hand is equal to its length; and one-fifth more than twice the greatest breadth of the foot indicates its length; the length of the foot from the heel to the ball of the great toe, being about two-thirds of the whole length of the foot.

The illustration (Fig. 60) represents the division of the front and back of the perfectly proportioned figure into spaces, each equal to the length of the head.

The figure of a woman being, as a rule, shorter than that of a man, and in some respects differently proportioned, it is necessary to state the principal features of the standard of proportion belonging thereto, separately.

A perfectly proportioned figure, as regards woman, as in the case of man, has a length equal to eight times the length of the head; and when divided out into eight spaces, each space has boundaries, corresponding with those which denote the limits of the eight divisions that have been given of man's proportional figure. The space, however, extending from shoulder to shoulder, or the width of the figure at the shoulders, is equal only to the length of one head and a half, instead of to that of two heads, as in man; the

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width across the waist, also, is rather less than in man, or equal to the length of one head and an eighth, instead of to one head and a quarter; the width across the central point of the figure is rather more than in man, or equal to the length of two heads, instead of to one head and a half; whilst all the other portions of the figure are more slender than the corresponding portions of a man's figure, as well as more round, because the muscles of the frame assume a less prominent appearance than those of man's, or flow less abruptly one into another, and thus impart that superior grace and beauty to every portion of the figure, which characterises it as compared with that of man.

Children are differently proportioned from adults, however. For instance, an infant's head is generally disproportionately large, and its limbs small and thick in comparison with the rest of its frame; and the centre of its figure lies about across the waist,—its members gradually assuming with its growth, adult proportion; the limbs becoming the while longer and thinner, the head increasing, though but very slowly in size, and the features enlarging comparatively more than the length and the width of the head.

The size of a well proportioned child, when about three years of age averages, as regards its length five heads; that is, from the crown of its head to the centre of a line extending across the limbs slightly below its hip joints, there is a space equal to three times the length of its head, and from that line to the soles of its feet, a space equal to twice the length of its head. At about six years of age, its length becomes equal to that of six heads, principally through the growth of the lower limbs which become comparatively thinner whilst increasing in length; and by the time it attains the age of fifteen or sixteen, its length is equal to about seven heads. From this period, the figure, if the proportion it develops be perfect, rapidly advances to the length of that of eight heads.

The principles of the standard of perfect proportion, relatively to the adult head, require,

Firstly, That the head should be oval in shape like an egg;

Secondly, That the widest part of the oval should be slightly above the ears, and measure rather more than two-thirds of the length of the head, from the crown to the bottom of the chin;

Thirdly, That the upper part of the head to the commencement of the forehead (see Fig. 60) should occupy one-fourth of the length of the head; that the forehead to the root of the nose, with the eye-brows and eyes to the upper part of the lids (see Fig. 60) should occupy the second fourth of its length; that the nose, to the junction of the nostrils with the face, should occupy the third fourth of its length, whilst the whole of the eyeballs should come within this fourth (see Fig. 60): and that the remainder of the face, from the nostrils, should occupy the last fourth of its length, in such a manner that if the space were divided into six equal parts, the portion of the face from the nostrils to the top of the upper lip should occupy the first sixth; the whole of the upper lip, the second sixth; the whole of the lower lip, the third sixth; the space between the bottom of the lower lip and the top of the chin, should occupy the fourth sixth; and thus leave two sixths for the chin.

Fourthly, That the width of the oval on a level with the upper lip, should be about equal to one-half of the length of the head.

Fifthly, That the distance, from the centre of the ear to the centre of the forehead, from the centre of the forehead to the centre of the bottom of the chin, and from the bottom of the chin to the centre of the ear, should be equal.

Sixthly, That the ear should be as long as the nose, and the top of it be on a level with the top of the nose, and the bottom of it on a level with the under part of the nostrils.

Seventhly, That the top of the ball of the eye should be on a level with the top of the ears and root of the nose, and that if the space extending between the ears were divided into five equal parts, the second part from either ear should be occupied by an eye; from whence it may be deduced that the space between the two eyes, and that between either eye and the nearer ear, should each be equal to that occupied by an eye.

Eighthly, that the nostrils should spread together over a space equal to the width of the eye, and the corners of the mouth extend very slightly beyond the nostrils.

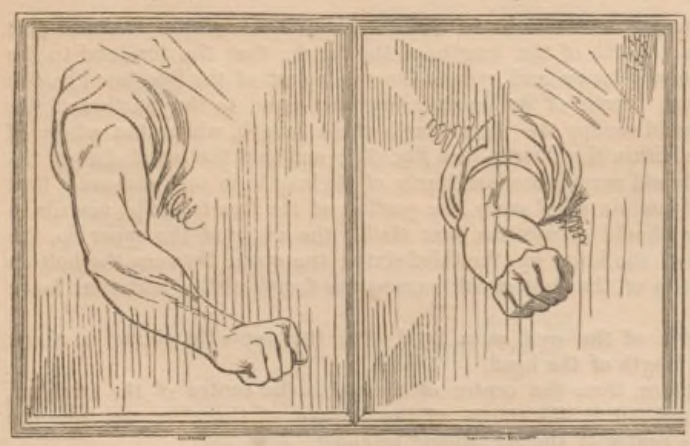
Ninthly, Dividing the eye into three equal parts, that the central part should be occupied by the pupil; dividing the ear into three equal parts, that the central part should be occupied by the orifice; dividing the space from nostril to nostril of the nose into three equal parts, the nostrils should occupy the two outside parts; and dividing the mouth into four equal parts, the fullest portions of the lips should occupy the central parts.

But although there is a standard of perfect proportion with respect to the human figure, yet it is not to be assumed that on that account every human figure should be represented in strict accordance with this standard, the purpose for which it has been fixed being merely to serve as a general guide to artists, who will always find that Nature, excepting in rare cases, does not deviate very far from this rule of proportion, and that a knowledge of the rule will assist them to delineate the human figure correctly, as well as render their labours the easier, if they attend to its principles.

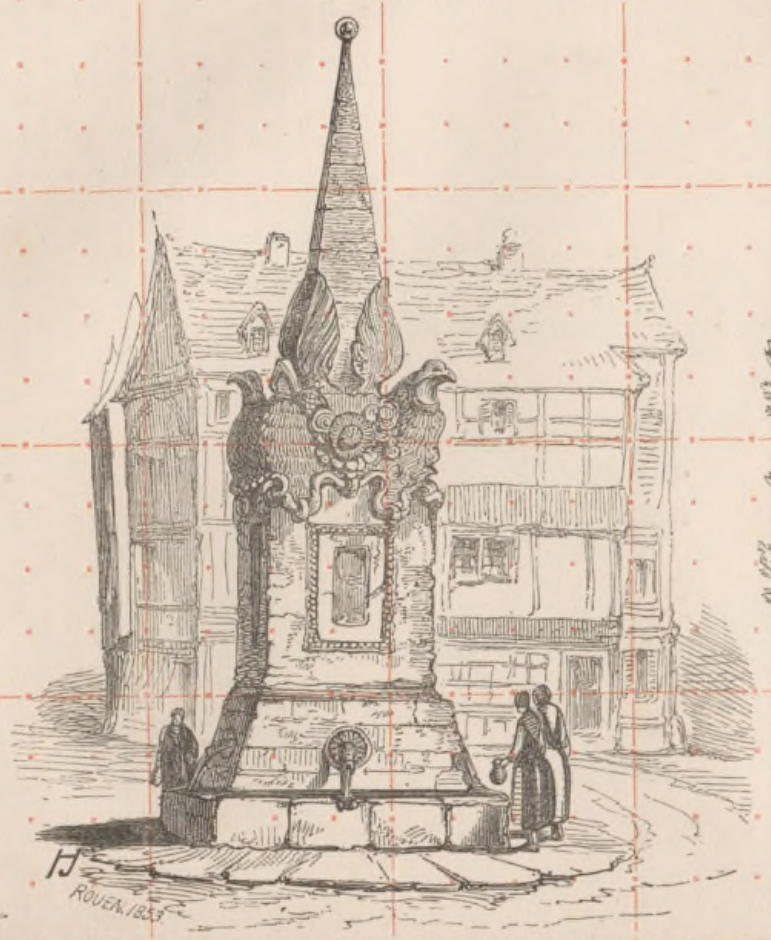
As influencing proportion, form, expression, and requiring constant representation in figure drawing, the peculiarity of appearance called fore-shortened, must now be noticed. The meaning of the word is, apparent contraction of space. Thus the space occupied by a circle sometimes is apparently contracted, or appears to be smaller than it is, as is proved by the fact that in certain aspects the circle appears like an oval, or narrower than it is, which it would not do, but for the circumstance that through being seen from a particular point of view, the true dimensions of the space it occupies appear contracted or fore-shortened. More or less of a fore-shortened appearance, in fact, is in some respects or other common to everything, and, as must be evident to the reflective, affects proportion, form and expression. This being the case, learners must perceive how very necessary is the unremitting exercise of their acutest powers of observation, discernment, and judgment, when occupied in representing the living figure.

It becomes obvious, likewise, on reflection, that a drawing would seem either to represent a ludicrous deformity, or to be the production of one totally ignorant of Art, if in the delineation of any portion of our frame which appears fore-shortened, the lines of the form were represented of their actual length, instead of in accordance with the fact that if the form were seen through a pane of glass the lines composing it would seemingly touch the glass, and thereby prove that they appear—without creating the impression of that which is unnatural—shorter and different from what they are actually.

Fig. 61. Fig. 62.



It would not be much more absurd, indeed, to represent a man's face as having three eyes, than for an artist to represent two eyes as being apparently alike in size and form, when the position in which he sees them, on representing them, is such, that through their being fore-shortened in appearance, the apparent form of the one differs from that of the other—as would be certain to be the case if that position were not exactly opposite the central point existing between the eyes. Yet it must be borne in mind that there often is this peculiarity about the aspect of a fore-shortened feature, or limb, viz., that the apparent loss of real width, or length of space causing the fore-shortening effect, frequently does not strike us; and we conclude, therefore, that we may look upon the effect as being the consequence merely of position, and hence that it does not depend on that loss of length, or width of space. How erroneous this notion is, becomes clear by placing a plaster cast of an arm, for example, behind a pane of glass, firstly, so as to lie against the pane, as in Fig. 61; and then so that the knuckles only touch the glass, whilst the arm recedes almost at a right angle from it, or so as to appear fore-shortened, as in Fig. 62; and by tracing over, on each occasion, the outlines of the arm that seem to touch the pane. We perceive, then, that although the absolute length of arm is the same in each instance, that, nevertheless, if lines were drawn of the length employed in Fig. 61, to depict the two different positions of the arms, a false impression would be produced as regards the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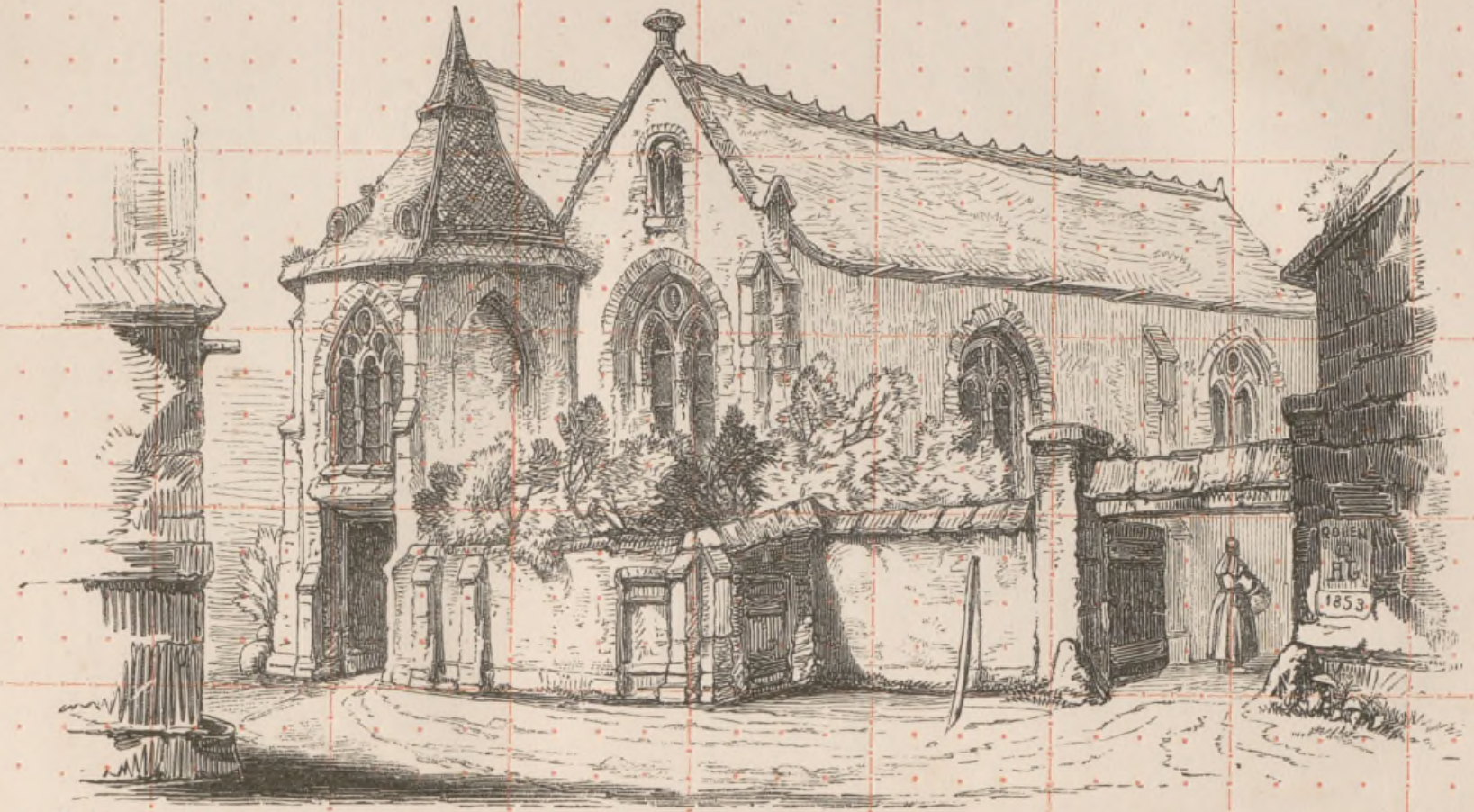
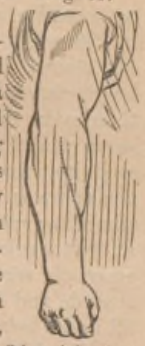

1853

position of the arm indicated in Fig. 62, or that the portraiture of it would appear somewhat as shown in Fig. 63; and consequently either convey the idea of a very much longer arm than the plaster cast arm, or of one existing in a position different from that shown in Fig. 62.

Fig. 63.



To promote the attainment of a clear conception of the effects of foreshortened appearances, relatively to Nature and art, some of them are indicated in Figs. 64 to 67, correctly copied from Nature. Thus, Fig. 64 represents a leg as seen in a position causing, from the knee to the heel, a foreshortened appearance as regards length; whilst Fig. 65 represents a similar sized leg on the same scale, but as seen in a position not causing that effect as regards length from the knee to the heel. Therefore, by comparing the two, it may be observed, that the representation of the foreshortened limb's length requires less space to be devoted to it than the representation of the non-foreshortened limb's length requires; and hence that when the limbs were copied, the apparent space occupied by the length of the former was much less than that occupied by the length of the latter. On comparing, likewise, the amount of space allowed for the under part of the foot at the toes, Fig. 64, with that allowed for the upper part of the foot at the toes, Fig. 65, the above-named effects again become obvious. Compare the arm Fig. 66, with the arm Fig. 67, from the wrist to the

Fig. 64. Fig. 65. Fig. 66.

Fig. 67.

elbow, and that in the former obviously represents a foreshortened appearance, or a certain actual amount of *arm length* considerably diminished in apparent extent, through peculiarity of position, and thus definable in a drawing within a smaller space than it would be if foreshortening had not to be denoted. The arm, Fig. 66, from the elbow to the shoulder, and the backs of the hands, etc., Figs. 66, 67, display also foreshortening in respects the student may, and should endeavour to, discover for himself by comparing these representations with Nature.

The correct inferences are derivable, then, through the foregoing Figs. 64 to 67; firstly, that we cannot look at any part of the human figure without its displaying at the time foreshortened appearance in some way or other; secondly, that foreshortened appearance causes the apparent width, or length, or both, of that part's form to be less than its actual width, and its apparent shape to be, to a greater or lesser extent, diverse from its real shape; thirdly, that both its apparent size and shape will vary every time the position of the eye

varies relatively to the position of the form; and, fourthly, that the human figure cannot be correctly represented unless portrayed in strict conformity with these circumstances.

Foreshortened appearance, in fact, has been aptly described as much seen in little, and is, in reality, a perspective effect. To ascertain the *comparative amount* of space occupied by the width, or length, line of a foreshortened form; fix an immovable glance thereon, and place before the eye a long pencil, parallel with the body, at the distance of the pencil's length from the eye, yet so that the two ends of the line may *seem* to touch the pencil: then make two marks where they seem to touch, and repeat the process with regard to some other line of the form; and next compare the space existing between the firstly made two marks with that existing between the secondly made two, as the extent of the one space as compared with that of the other will give the required amount. This rule should be remembered, because, in sketching, it will be found of the greatest use; whilst all that has been stated with reference to foreshortening, if practically applied, will prove especially serviceable to learners, when attempting to design or sketch the human figure—attitude and expression chiefly depending on foreshortening, and the important office they fill in art being that of interpreters of the meaning of a designed figure. Thus, the pale marble, skilfully wrought, and the surface representations of the figure artist, often tell us of facts and circumstances, through attitude and expression, no less powerfully and eloquently—indeed sometimes more so—than even the graphic pen or tongue; and many a truth, many a history, would have remained for ever only half told were it not for the works of sculptors and painters, and the wondrous skill they have evinced in creating those interpreters of the story of their productions.

Expression may be defined as being either the general spiritual appearance of the whole form of an object, or the particular spiritual appearance of the form of either of its parts. For instance, the general spiritual appearance, termed nobleness of mien in a naked savage, is the expression of the whole form; whilst the particular spiritual appearance of a mouth, eye, or limb, is likewise the expression of the form—the word "form" having a double signification in art, and meaning either the perfect exterior contour or shape of anything, or the shape of any interior portion thereof having an outline which can be distinctly traced by the eye.

Speaking of expression, "It is the very soul of composition," says Flaxman; "and whether the story be heroic, grave, or tender, it animates its characters as the human soul doth the body and limbs. It engages the attention and excites an interest which compensates for a multitude of defects, whilst the most admirable execution without a just and lively expression will be disregarded."

To succeed in representing expression, it is peculiarly requisite; 1stly, carefully to observe and discriminate what specific length, direction, and relative position of any form-lines of our frame, it is which produces the expression to be portrayed; and having satisfied the mind on these points, 2ndly, to be careful in delineating that length, direction, and relative position of lines.

Color, with regard to the human figure, is an important property, because it aids expression and imparts character, or may render the appearance of a human being, as respects the head and other parts of the frame, so peculiar and striking as to lead to its producing a forcible impression on the spectator's mind, of facts and circumstances connected with the individual. It is so varied, that it may require the use of every kind of artificial oil or water colors to represent it; and most difficult to represent, for it is subject to be influenced in tint, by light and shade, by reflection from the colors of neighbouring objects, by the degree of the transparency of the skin, and even by the muscular movements or workings of the frame occurring under circumstances of strong emotion and action. Pencil drawing can merely generally indicate color by representing what is its tone or degree of intensity of shade as to whether it is dark or not; nevertheless, it may be executed, if ingenuity and judgment be employed in the operation, so as to indicate with much truthful effect both expression and character.

The substance covering our bodies being soft and flexible, it is liable to be constantly thrown into a state of contraction or relaxation, through the action of the underlying muscles. Our skin, termed *flesh* in art, consequently looks different, for example, from the non-elastic bark of a tree; and, as it can only be represented through the medium of color, or pencil shading, which ever medium is employed to represent it, should be so in a way that will denote the peculiar appearance and qualities of the human-skin-covered flesh, as varying from those of other substances.

The representation of draperies is connected with figure-drawing. For the requirements of original figure-subject pictures, drapery ought to be copied from Nature, and portrayed with as much simplicity as possible, that is, as showing as few folds and lines as will serve the purposes of the picture. Also the folds and lines should flow gracefully, and never come together at right angles, and, with the general mass of drapery to which they belong, should express, when feasible, the form lying beneath them, so that they shall not convey the idea of a mere empty bundle of clothes.

Anatomy, Action, Attitude, Dignity, and Grace, are most important adjuncts of the human figure; but they need not be further noticed here, as they will be referred to elsewhere in this work.

LESSON ON COPIES XX TO XXIX.

ALL the copies contained in this work being *fac similes* of actual pencilling, the lines in them should be imitated closely as regards their spirit or meaning; but, for the sake of clearness, some of their light lines have been depicted thinner than it is requisite the imitations of them should be made to appear, provided that in making those imitations thicker they are not at the same time *rendered darker* than the lines they represent.

After having delineated the tree studies given amongst these copies, 20 to 29, the student should examine into the difference which exists between the touch representing one kind of foliage and that representing another, and then try and produce that difference on plain paper without the aid of the copy. It would, likewise, considerably advance the progress of learners, if they were to endeavour to draw most of the important subjects of the copies from memory, immediately after having depicted them from the copies.

The lines representing the forms of horses, cows, sheep, etc., given in copies 23 and 28, should be imitated so as to distinctly denote the characteristic outline appearance of the respective forms of these objects. The outline of a horse, for example, should be flowing, graceful, and comparatively unbroken; that of a cow, sheep, and donkey, somewhat broken, yet graceful and free. Lines employed in the imitation of the foreground studies, cannot be depicted too vigorously, if drawn with due delicacy of color when they should be light, and proper freedom when they should be curved for the purpose of expressing herbage, etc.

Practice, in reducing and enlarging subjects taken from copies, being an efficient means of disciplining the eye, it might be beneficially commenced by the learner, on completing the ordinary imitation of these copies. To reduce, he should select a subject occupying two, or three, or more squares of one of the large-squared copies, and depict it so as to occupy the same number of squares on one of the accompanying small-squared sheets of drawing-paper, so that what exists within a large square of the copy shall be represented within a corresponding small square of the drawing-paper, as indicated in Figs. 68 and 69.

Fig. 68.

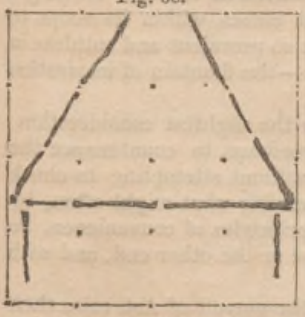


Fig. 69.

He must be careful, however, to preserve a proportional decrease of size when depicting each line required to represent his reduction; and *to proceed* in such a way, that the representation of what runs through a specific red dot or line of his copy, shall run through the corresponding red dot or line of his drawing-paper; that the representation of what passes half-way between two red dots of the copy, shall run half-way between the corresponding dots of the drawing-paper; that what runs on his copy through a red line at a third, or fourth of its length from one of the ends of the red line, shall run on the drawing-paper similarly through the proper red line, and so forth. To enlarge, select a subject from a large-squared copy, and represent it on a small-squared sheet of drawing-paper, proceeding as just above described. To commence this practice, reduce the pony, copy 23, and enlarge one of the large tree subjects contained in some other copy.

ON LANDSCAPE DRAWING.

The charms of a lovely landscape are more or less appreciated by every one, whether Art-educated or not,—hence the wondrous variety of attractive scenery embellishing the earth, affords man a most fertile source of the highest enjoyment. Art-education amongst the masses, however, would materially assist them to derive increased gratification from this source; by directing their attention to numerous scenic effects, ensuring admiration, which generally escape the observation of those not conversant with Art; as well as by instructing their judgement as to what constitutes the beautiful in Nature, and thus virtually extending the range of objects imparting pleasure to the mind.

It being one of the aims of this work to aid in widely diffusing such education, and in so doing, promote the general welfare, by furnishing a generally available means of acquiring an attainment that produces great additional enjoyment of existence through creating a perfect appreciation of the manifold beauties of Nature, it comes within its scope to make an appeal to its readers with reference to the practice so prevalent and ruthless in its operations in these days, of unnecessarily defacing Nature—the fountain of inspiration to the artist.

This practice prevails from the tendency of the many, on the slightest consideration being presented to their view of profit or presumed convenience, to countenance the destruction of the park, the field, the woodland, and waste, without attempting to check or regulate the hand of the destroyer for the purpose of preserving what might often, by a little less, eager pursuit of gain, or attention to imaginary principles of convenience, be spared without ultimate disadvantage as regards either the one or the other end, and with certain great good to the community at large.

Let, therefore, those who have a taste for Nature and the pursuit of Art, raise their voices on every opportunity against the destruction of trees, when not absolutely requisite, the obliteration of fine points of view and open spaces, and the enclosure of grounds, so that nothing but unsightly, naked-looking houses, walls, or fences, and tree-less hedges, remain observable on or from our roadways, where over-arching foliage, elegant residences, and enlivening glimpses of the many-object-chequered distance might and should abound.

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If they would do this, a universal Art-education, creating a universal cultivated taste for the beautiful in Nature, would then prove a national advantage, by becoming the salvation of much of the picturesque attractiveness of our charming country. And fields would still remain remuneratively productive, though a few trees were left about them, affording a grateful shade to man and beast, and variety to the scene; houses would be built as conveniently as ever, while the taste indicated would lead to their being erected in an improved style, to the adornment, instead of the disfigurement of the wayside; landowners and building speculators be sufficiently profited; health as well as enjoyment be advanced, by the prevention of a too dense clustering together of houses, without an open space about them sufficient for wholesome ventilation; and the creation of gardens be rendered possible, stimulating the delightful amusement of flower culture, with probably the useful custom of planting trees and shrubs when feasible, to compensate for that destruction of those noblest ornaments of a landscape, which the march of improvement and the necessities of the age renders, unfortunately, to some extent indispensable.

Landscape-drawing embraces the representation of the forms and general appearance of trees, herbage, water, mountains, rocks, the level country, and buildings of every description, and of that which has been so poetically termed "cloud-land."

The important province of the department of Art to which it belongs is, in fact, to portray the surface of the earth with its numberless interesting and beautiful features, and thereby to bring home to the minds of the untravelled, a serviceable knowledge and presentment of *the aspect*, of different countries, as influenced by peculiarities of climate, vegetation, physical conformation, and culture, so as to render it familiar as that of a well-known neighbourhood, and, if possible, as attractive as one frequently sought on account of its local graces.

Its utility, therefore, probably surpasses that of every other branch of Art;—and it may, also, be truly said of it, that it enables the imagination to wing, as it were, its flight in an instant from any one part of the globe to another, even to remote and almost inaccessible regions, that have been traversed only by the adventurous few—to the summits of mountains, or the depths of primeval wilds, presenting magnificent scenes to the enraptured fancy, of the charms of which many, but for its influence, could have no conception.

The power of depicting a landscape in a masterly truthful spirit is considered less difficult to acquire than a corresponding degree of skill in drawing the human figure. Whether it is so or not, it is certain that no one can excel in landscape drawing without a previous study of Nature as close as that required for the attainment of proficiency in figure-drawing, as well as the exercise of a considerable degree of taste, judgment, and ingenuity—of the two former, for the purpose of selecting what it is desirable to represent, and of the latter to ensure the employment of fitting means of conveying a clear notion of that which is to be represented; and further, that it necessitates the imitation of an almost infinite variety of forms, taxing the discerning faculties very greatly to detect and discriminate their respective characteristics.

The directing influence of a well-cultivated taste and judgment, above all things, is essential, to enable the landscape artist to produce anything approaching perfection. This only will secure him the chance of success in his vocation, as every step he takes in the practice of it, is liable to be a false one, unless directed by those qualities; their use being to enable him to discover the most peculiar and attractive features of that which he represents from Nature, and those, consequently, that if depicted, ensure correct and pleasing resemblance. For every scene and object displays, amongst its various features a few leading ones which are, comparatively with the others, so pre-eminently peculiar and attractive, as to suffice to impart to it an identity; and which, therefore, are the only ones generally necessary to imitate for the purposes of truthful and agreeable portraiture, yet that cannot be discriminated without the exercise of judgment and taste.

On the art student's early endeavours, however, to exercise those qualities, the error may easily be fallen into of being too particular in determining what to depict and what to leave unrepresented,—leading him to attempt too much or too little, and thereby tending to cause either a confusion of appearance, or a deficiency of point or picturesque interest in his drawings. To avoid these consequences, a safe plan for him to follow is to maturely consider before commencing to represent an object of Nature, which are the main *distinctively striking* and pleasing features of that which he intends representing, as

compared with the peculiar features belonging to other similar objects; and having selected them to the best of his ability and experience, to confine himself to depicting them only. Then, when they are depicted, he should next compare his work with the original he is imitating; and if he find that it is not a sufficiently perfect imitation for his purposes, he should continue depicting, in the order of their prominence, the leading features of the subject he is portraying that remain unrepresented, until the result of his operations appears generally satisfactory, and that of a portraiture which is neither confused through containing too much detail, nor meagre from the reverse cause. By adopting such a course from the beginning of his studies, and invariably pursuing it whilst studying, he will be sure to obtain at once some considerable degree of success in producing artistic ressemblance, and of achieving eventually perfect success, that is, if he be not altogether devoid of an ordinary measure of taste and judgment.

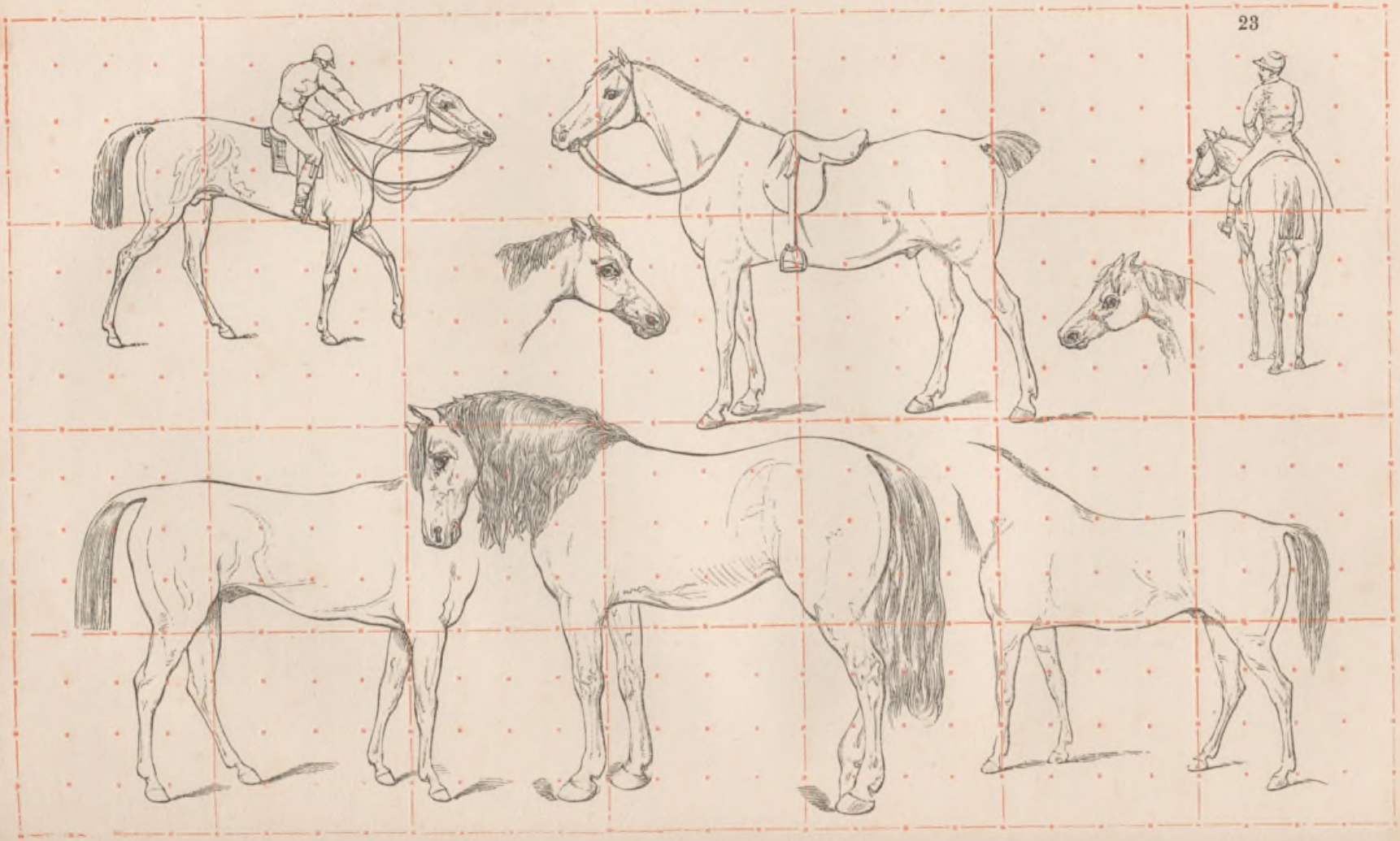
How completely objects may be represented, even through the imitation simply of their leading characteristics of form, is shown to some extent in the illustrations Fig. 70 of an Ash tree, Fig. 71 of an Elm, and Fig. 72 of a Birch,

Fig. 70. Fig. 71. Fig. 72.

as each of the three figures portrays but three or four of such characteristics, and yet distinctly represents a kind of tree differing from those represented by the other two. And each does so, notwithstanding the lines and kinds of touch, employed in them to express the forms and foliages of the represented trees, are necessarily exceedingly minute, and therefore, such as it is difficult to render expressive of tree characteristics; but which it is possible to do, by reason of the fact, that every scene and object has, among the features which are *peculiar to it*, leading characteristics of form, the mere imitation of which alone, by means of even the minutest pencil touches, properly made, suffices to produce portraiture.

Supposing, then, a learner wishes to depict a particular kind of tree, on, as he should do, examining it previously, he will find that the striking features peculiar to it will be as follows; namely, the general character or appearance and color of its foliage, stem, and branches; the way in which the foliage clothes the stem and branches, and the effect that light and shade produce upon the various parts of the tree: and if examined very closely, features of minor importance may become apparent, such as broken boughs, a decayed trunk, singular accidental disposition of foliage, and playful scatterings thereon of light, which, though not so prominent or peculiar as the first named features, still may assist in imparting identity and a picturesque interest to the object to which they belong.

On depicting it, under these circumstances, the general outline of the forms composing its external shape should be slightly sketched in first, and then, if correctly depicted, be gone over, in a detailed manner, with a suitable *touch* or kind of line, until the specific character or appearance of the external form of the tree is represented to the extent requisite to ensure portraiture; after which, the form of the main branches and masses of foliage, breaking, as it were the general outline, should be imitated; next the principal variations of light and shade displayed on the tree; and finding further workings to be necessary to complete the portraiture, either with respect to the outline or shading, such should be added, care being taken during the process, to stop at the right moment, so as not to do more than produce a clear, graceful, and effective semblance of the tree.

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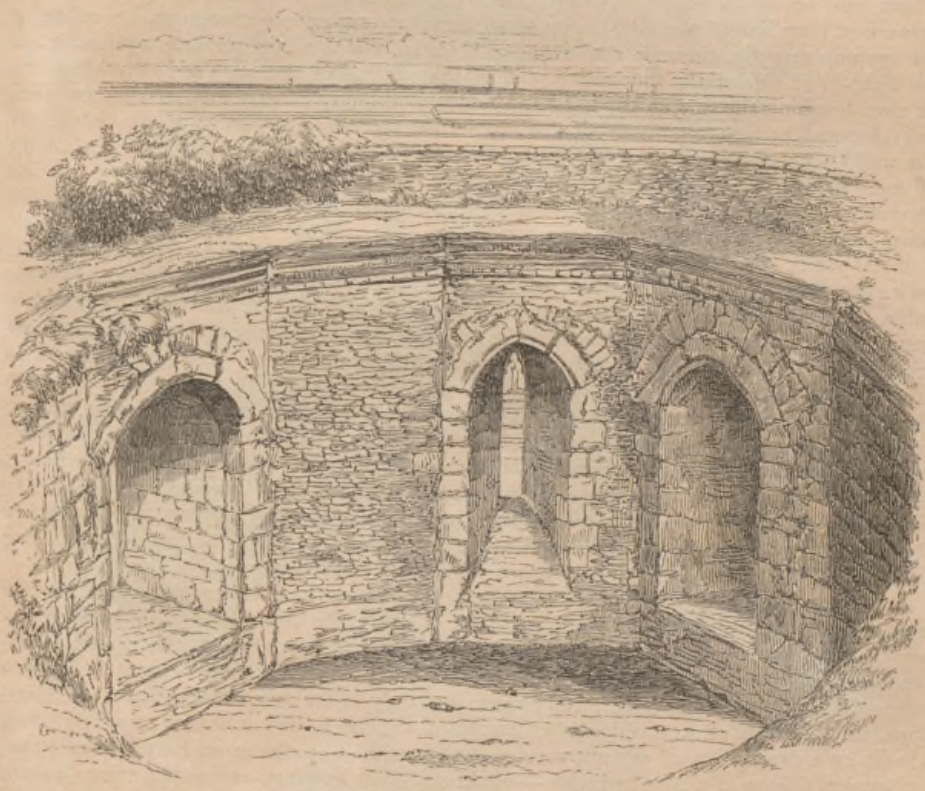
By adopting a method of proceeding similar to that which has just been described, objects and scenes in the majority of cases may be effectively represented,—that is, through the mere portrayal of their most striking and attractive characteristics of form, etc., so that to represent other features generally would be to waste time, disfigure the picture, and mar the pleasure it should produce. Nevertheless, occasions arise when every feature of an object or scene should be defined with the utmost possible fidelity, or with the exactness of a photograph, as, for instance, for the purposes of scientific illustration. But even then, the employment of taste and judgment may be made compatible with the requirements of literal imitation, and assist in producing works which, like good photographic representations, impart much gratification to the sight, notwithstanding many things therein may present themselves to the eye, which, considered individually, do not create an agreeable impression.

It may be inferred, from the preceding remarks, that an important result arising from the judicious and tasteful selection and management of the most striking features of a

Fig. 73.



scene with regard to a picture, is *effectiveness*, or a power of raising in the minds of beholders a vivid impression both of Nature and perfect Art. At the same time, it must be perceived, that but few specific rules can be afforded, serviceable as guides for the production of effect, depending so intimately as it does on the imitation of that which is constantly varying as subjects vary; as well as on those ever-changeful circumstances which may be termed the happy accidents of Nature, or, in other words, on those casual beautiful dispositions of form, color, tone, light, shadow, and reflection, which are always observable within-doors and without. Beyond a certain limit, consequently, experience alone, in conjunction with unremitting, close, properly-directed observation, can assist the Art student, whether of landscape or figure-drawing, in imparting effectiveness or a good effect to his works. "He who recurs to Nature," says Sir Joshua Reynolds, in his Instructions to Students, "at every recurrence renews his strength—the rules of Art he is never likely to forget, they are few and simple; but Nature is refined, subtle, and

infinitely various, beyond the power and retention of memory; it is necessary, therefore, to have continual recourse to her."

The leading elementary rules and principles of effect which can be given, are as ensue below. Their application, however, must be governed by attention to appropriateness or that which is consistent with the subject: for as a good *effect* means also a truthful effect, — anything introduced into a picture for the purposes of effect, which is not consistent with its subject or the scene it represents, must be inappropriate, and hence prove worse than ineffective, namely, unnatural. But they may generally be more or less fully applied, without risk, by the thoughtful, whilst engaged in sketching and working after Nature — the occasions when they are of especial use — and are as follows: —

1. No line in a picture should display a too prominent degree of continuity, or it will attract the eye unduly, to the detriment of agreeable effect. The eye, on this account, should be diverted from catching the absolute length of long lines, by various means, such as that of placing shading against some of their parts, and leaving light against others; or, by introducing a portion of the outline of a suitable object in connection with a long line, so as to break its length: as indicated in Fig. 73, where the length of the uppermost long line of the wall is prevented from appearing unpicturesque, or catching the eye unpleasantly, through the medium both of the shading running against it on the right-hand side of the illustration, and of the outline of the mass of bushy foliage to be seen breaking the line on the left-hand side. Continuity of line may also be rendered less obvious through repetition of line, like that occurring in Fig. 73 at the bottom of the wall, — and above it, in that which denotes water; or by the artificial introduction of such repetition into the sky, or some other parts of a picture — repetition of line serving to keep continuity in subjection to general effect, by preventing the eye from being exclusively attracted by any one line.

2. As effect is enhanced by judicious contrast and variety of lines, forms, color, and tone, the lines of a picture should be varied in length and direction, and the forms, color, and tone, be diversified as much as practicable. Violent contrasts, however, in immediate juxta-position, should usually be avoided, as they look singular; and whatever looks singular in a picture, absorbs attention, and (unless it has been made to do so intentionally, because it is that which the picture is principally meant to represent) thereby creates a false impression of importance, destructive of the comparative degree of interest the other parts of a picture should excite. Still, sometimes, an ungainly-looking object may be advantageously placed near one required to appear the reverse, provided it is rendered properly subsidiary; or a burst of light may be made to break into a shadow, and a shadow be run across a mass of light, so as to prevent the one or the other from looking monotonous and uninteresting, as well as for the sake of producing intensity of light and shade by affording a judiciously strong contrast.

A human figure, an animal, cloud, tree, a small form near a large one, an angular and rugged form in contiguity with one that is otherwise, are, for example, such accessories as may at any time be employed in a picture, for the purpose of creating due contrast and variety, if in keeping with the subject, or what one might expect to see in a scene similar to that the picture represents; but only under such circumstances. Therefore, in a picture of English scenery, to place a half-clothed Indian — to portray dark clouds on a description of sky not consistent therewith — an elm in an Eastern landscape, or tropical foliage in a Northern one — would not be in keeping, and would evince a want of taste and judgment, as every object in a picture should be natural to the locality represented. Also in the arrangement of accessories to complete the effect of a picture, care should be taken to avoid disturbing the general composition — that is, interfering with its main intents — or the loss of unity may ensue, without which a work of art cannot be perfect. Nothing, likewise, should be employed as an accesssory, so as to seem disconnected with the subject of a picture. An object may look disconnected, through being inappropriately introduced, or being isolated from other objects. When it appears so from the former cause, it should be removed from the picture, or altered in position; and when from the latter, some other form — which may either be similar or diverse, according to circumstances — should be placed near to it. Thus, if a large object be placed in the foreground of a picture, one or more smaller objects usually should be depicted so as to combine with it in attracting the eye, and thereby destroy at once its isolation and too great singularity of appearance.

3. One of the secrets of effectiveness, resulting from composition, being the agreeable

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combination of objects, all parts of a picture should display a mutual connection through management of accessories, if they cannot be made to do so otherwise. To ensure connection, all forms, and colors even, should be repeated in diminishing quantities, or be what is called carried through a subject, their special predominance of appearance being preserved the while in those places where they should assume a predominance. But it must be borne in mind, that the word *form*, as last used, implies general form — as round form, square form, angular form — and therefore that the repetition of form enjoined, means that a form composed of curved lines should be repeated by some form more or less curved in its outline; an angular form by one more or less angular, etc.

Nevertheless, as the excessive recurrence of similar forms, lines, or colors, diminishes the beauty of a picture, it should be obviated; or when they naturally recur considerably in a scene to be depicted, the representation of the recurrence should be disguised by the employment of suitable devices, in the shape of management of light, shade, reflection, intersection of line, or other diverse accessories. For instance, recurrences of vertical, horizontal, diagonal, and curved lines in pictures of buildings, and of many kinds of scenery, frequently require disguising, for the attainment of good effect, by the judicious use of some such accessories, as trees, shrubs, figures, animals, strong lights, shades, smoke, etc. When many figures are introduced into a subject, they should be separated into groups (one of which should be larger than the rest), contrasted here and there by detached figures.

4. Effective connection of the various parts of a picture, precludes such an arrangement of its objects as will enable the eye to calculate their number at a glance.

5. As a rule of composition influencing effect, portions of the outlines of objects should not combine together in producing formal looking, ungraceful, accidental lines that attract the eye. The unpleasant effect resulting from such accidental lines is shown by Fig. 74, in which two are observable — one from *a* to *b*, and one from *b* to *c*; or, where the top of the woman's head, the right-hand diagonal line of the house-roof, and the right-hand side outline of the mass of trees behind it, combine in producing an accidental line obviously ungraceful; and where the left-hand side outlines of the masses of foliage, from *b* down to *c*, also combine in making a similar one. If a scene to be depicted presents features creating ungraceful accidental lines, a movement a little to the right or the left of the aspect in which it does so, will generally cause an alteration of those appearances, and should be made when possible,—the extent to which the absence of such lines improves effect, being indicated in Fig. 75, a partial representation of the scene given in Fig. 74, but a more agreeable one, on account of its being free from the accidental line-blemishes of that figure.

Fig. 74.

Fig. 75.

It may be as well to observe, however, that the accidental lines in Fig. 74, and which cause the part of the composition to which they belong to assume a triangular form, are rendered less detrimental to the effect of the picture, than they would be if that triangular form were not, as it is, slightly repeated in the form of the mass of foreground placed on the left-hand side under the palings, as well as in that of the nearer end of the house-roof. This may be proved by looking at the diagram with a piece of paper covering the foreground, and then without the paper, a process that will likewise serve as an illustration of the importance of repeating form, previously enlarged upon in rule 3.

6. Parts of pictures having much detail in them, should be contrasted by other parts manifesting repose, or the absence of marked detail; for a picture without repose cannot be an agreeable one, and fatigues the eye. When many small forms must be introduced into a picture, a large form will serve to impart repose to them; or a large mass of light and shadow will convey it to a subject displaying many small masses.

7. All large objects, belonging to a subject, that are unpicturesque in form, should have their attractiveness heightened by the introduction of something in connection with them that will give an additional interest to them. Playful management of light and shade, reflection and color, or appropriate small accessory forms placed about them, will communicate interest to large forms.

8. Due subordination of every feature of a picture to that which should display a greater degree of prominence than itself, being one of the most essential requisites of effect, this should consequently be preserved. To maintain it thoroughly, a knowledge of the laws of perspective and light and shadow, combined with great practical experience, is necessary. Its results are those of causing everything to occupy its true place in a picture, by the proper regulation of the size of its objects, and of the intensity of color, light and shadow, depicted upon them — so that nothing looks too large nor too small, too strongly nor too weakly defined.

9. There should be a balance preserved throughout a picture, or that which will prevent one side of it from appearing meagre, weak, or uninteresting as compared with the other side. To preserve it, however, it is not necessary to place an equal amount of objects, or of anything else, on each side of a picture; but merely to manage so that one side of it shall display something exciting nearly as much interest and attention as that which the other displays. A small figure, therefore, may balance a large building, if it causes as much interest as the building; or a light or shadow, a mass of clouds, etc., may be introduced into and rendered so striking and attractive on one side of a picture which is devoid of marked detail and power, as to balance the other side, although full of detail, objects, and power.

10. A large-looking principal object, as compared with the other objects of a picture, should not be placed in the centre of a subject when it can be avoided. If the old man in Fig. 76 were placed in the centre of the subject, the composition would look formal, and appear to be divided into separate equal spaces, one on each side of the figure, an appearance contrary to the laws of good effect.

Fig. 76.

11. Parts of scenes and objects that are not attractive, should generally be kept in subjection to the other parts of a picture by means of judiciously tender, or stronger shades; and that which should stand out conspicuously, either should be illuminated to a degree proportionate to the prominence it should assume, or should either have color, or shadowing tones placed upon it, so as to bring the object duly forward. To enhance effect, shadows may be introduced into any part of a picture without any indication of their cause — for accidental shadows are common in Nature, and can arise from such a variety of causes, that one can hardly be introduced into a subject taken from Nature, without the possibility that it was to be witnessed in the scene represented.

12. Light and shadow should be so diffused throughout a picture, that no harshness becomes observable in any of its parts, from want of the softening and subduing influence of one or the other, an influence on which mainly depends the important elements of effect called airiness, harmony of tone, and breadth.

13. There should be an imperceptible blending together of light and shadow, which

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does not destroy the due force the one or the other should display, yet prevents either from appearing like isolated spots. They should both, also, be made to retire out of the picture at different parts of its sides, or masses of light especially will look somewhat like spots or holes, as shown in Fig. 77. The more natural and pleasing appearance produced

Fig. 77.

Fig. 78.

by making light retire, as stated it should, being shown by Fig 78. It may be made to do so at any convenient part of the subject, and through the medium of any convenient object, as, in one place by the aid of a tree, in another by that of a figure, cloud, mountain, stone in the forground, etc.; as made by means of the palings, etc., Fig. 76. When a picture is to be a vignette (like, for example, Fig. 78), the subject should, as it were, melt into the paper at the sides, so that the edges of the picture appear gracefully irregular, and totally devoid of blackness and formality.

14. Strong shade should be placed in juxtaposition with strong light, when it is desirable to produce intensity of light or shade. A frequent repetition, however, of strikingly opposed light or shade, will destroy repose, and therefore should be avoided. When likewise the peculiar effect of a burst of strong light should be represented in a particular part of a subject, light should only be repeated or diffused in small quantities over the other parts.

15. Whenever large masses of light and shadow must occur in a picture, they should be relieved or contrasted by smaller masses placed elsewhere about the subject. Positive lights, half lights, or reflections, also, should be introduced into large masses of shadow, or there will be a harshness and sameness of appearance about them; and duly forcible shading tones, for the same reason, should be introduced into large masses of light. But as large masses of light and shadow serve, as has been before stated, to impart repose to small masses of lights and shadows, the large masses should not be cut up by such a use of accessory shadows and lights as will destroy their influence in producing repose.

16. Solidity and relief, when required, may often be conveyed to a mass of shadow by introducing therein a speck of absolute light — yet it should be so placed as not to catch the eye obtrusively.

17. What are termed *points of light* should always be preserved about a picture; that is, a few more or less brilliant spots of positive light, for the sake of giving clearness and force to the illumination of a subject. The objects on which they are to be placed should be suitably chosen, and such points should be made of different sizes and degrees of intensity, so that one may not interfere with the purposes of the other, and that the one which should be the most intense keeps the other from becoming too striking, and destroying its influence. The top of a man's hat—any part of his garments—a stone—an animal—a tree—a building, etc., will serve as the medium for the introduction of a point of light, its formation, also, requiring a well-defined bordering, or species of outline, produced by an encirclement of shade of that degree of darkness which will create, by contrast, the degree of brilliancy the point should manifest. It should, however, never be totally disconnected from the other lights of a picture,—as all such lights should run, as it were, in a chain of connection, which is preserved through the aid of half lights and reflection of light, or *very light* tones of shade.

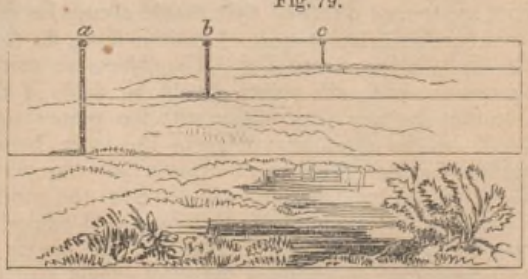
18. No management of light and shade in a picture can look pleasing that does not produce the impression of *breadth*, or cause the two to blend together so as to create a sense of unity and fitting repose. A picture, consequently, without breadth, can no more be perfect, than one that is deficient either in appropriateness of accessories, or attention to the laws of composition, and will appear as an aggregate of disconnected subjects, each having its distinct lights and shadows, rather than, as it should do, a representation of one subject, all the features of which combine in producing a perfect general effect.

To ensure breadth, the principle of effect, stated in rule 12 of this section should be attended to, as well as that of keeping the various lights and shades of a picture in subjection to one principal mass of each, judiciously placed towards the foreground of a subject. Points of light, and points of intense shade amounting at times to blackness, also, should be used where they will assist in giving such force of contrast as to bring those parts of a subject forward into their proper degree of prominence of tone, which destroy the breadth of a picture by attracting the eye away from general effect, through their feebleness of tone. There are two points of light on the dog, in Fig. 76, which convey force to the animal, and bring both the latter, and the bank behind (to which they equally impart intensity of tone) more forward than they would otherwise appear, keeping them thus in place; whilst the dark tree, above the palings, acts somewhat as a point of intense shade, amounting in parts, to blackness, and preserves the landscape from looking tame, besides imparting breadth to the whole picture,—the superior force of tone or color on the dog, serving to keep the tree, and other dark, shaded portions of the picture, as much in the background as they should appear.

Breadth in a picture, also, is dependent on the principles laid down in Rules 14 and 15: or, firstly, on the absence of a too frequent repetition of strong lights, or shades, as their introduction would cause it to appear as if unduly striking or isolated spots disturbing the breadth as well as repose a picture should display to the eye; and, secondly, on the presence of large masses of properly relieved light and shadow, either positive or reflected in character, and judiciously diminishing in force away from the foreground of the picture. But the largest shadowed mass of a picture should be much more widely diffused and broken up by accessories than the largest general mass of light—yet the utmost care should be taken so to diffuse and graduate it, that it neither produces heaviness in the picture, nor want of airiness of effect and distance both of which it is essential a picture should display, in the highest possible degree, to be a perfect one.

19. To convey an idea of different degrees of distance, and of the relative heights of objects in a picture, the human figure should be employed; for a figure is always supposed, by the laws of perspective governing art, to be 5 feet high, and, therefore, can be made a standard of measurement for the distance that is represented between the foreground and any back part of a picture, *by a diminution of its size*, towards the horizon of the subject *proportionate* to the increased degree of distance it is intended to assist in expressing. Thus, if, in a picture, not representing a bird's-eye view, a figure were placed of a proper comparative height at a point of the picture selected to denote any particular distance from the eye, as, for instance, 50 yards, (a point chosen according to the principles of perspective, explained elsewhere in this work), the point where the feet would come of another figure depicted only half the size of the first, but with its head even with the first figure's head, would denote correctly double that particular distance — for a figure, as well as everything else, through the perspective law of Nature, diminishes one half in apparent size each time its distance from the eye is doubled. (See Fig. 79). When it is necessary to show in any picture the relative heights of certain objects existing at different distances from each other: as a figure represents 5 feet of height, one placed against each object will indicate these heights. For, supposing a figure were placed against a tree, depicted five times as high as the figure, the tree would necessarily be represented of the height of 25 feet.

Fig. 79.



Finally, as a general rule for producing effect, some parts of a picture should be depicted with great force and precision — but not hardness — of outline, and some with skilful slightness, or only just enough force to suffice to denote what they represent.

The kind of effect to produce should be determined by circumstances. When sketching from Nature, for the sake of study, the best effect to endeavour to work out is that before

the eye, for Nature is always effective; and the power of truthfully treating subjects, either derived from the imagination, or from the reminiscences of Nature, is only to be acquired through an intimate acquaintance with her various phases.

There are scenes, however, which can be most perfectly represented as seen pervaded with the broad glare of the brightest sunshine; whilst some can be so, as seen under the influence either of a frequently clouded sky producing various masses of wide obscuring shade, or under that of the object-softening light of early morning. Again, one kind of scene, can be depicted most effectively, as displaying the setting sun widely diffusing his rich mellow beams across the landscape, and absolutely gilding objects with rays which grow the more resplendent the nearer he sinks towards the horizon; another, as showing threatening storm-clouds covering the heavens, but leaving an opening through which the sun gleams, with startling brilliancy, on one solitary spot, whilst all the scene else is enveloped in striking gloom.

Still, no rule can be furnished to assist the taste and judgment in selecting a description of effect to imitate from Nature, or to depict in a composition, beyond this, that the effect selected should admit of concentration or unity of aim, and simplicity; and in the case of a composition or picture derived from the imagination, the effect adopted should accord with the character of the scene to be portrayed, as well as represent its features in the way most gratifying to look upon. When, likewise, a subject should display a

Fig. 80.

finished effect — that is, be rendered more effective than a mere sketch, if not as effective as it can be made—there should not be too much light left in it, or it will appear meagre, like that shown in Fig. 80, in which there is too great a degree of a certain kind of

smooth, weak finish, to enable it to pass for an example of a sketch, and yet too much light to produce finished effect.

The subject of Fig. 80, furnishes a marked contrast to that of Fig. 81 in which an excess of shade exists, yet producing a more perfect specimen of finished effect than is displayed in the subject of the previous Fig.; because the greater amount of shading tone in Fig. 81 prevents the appearance of rawness and incompleteness that characterizes Fig. 80. But illuminated as it is, which is partly the cause of its heavy monotonous appearance, it may be as well to point out, that a figure placed standing in the foreground, and running up into the mass of shade on the building, could be made to receive light, and therefore increase the quantity of light in the picture, as well as otherwise improve its interest and effect. These might also be materially improved without such aid, through the medium of more varied tones than are depicted on the building and

Fig. 81.

ground, variety of tone serving to produce results analogous to those of light by destroying heaviness and monotony.

The quantity of light and shade that should be introduced into a picture for the purposes of effect, determines itself by the character of the subject. Simple subjects should be treated so as to display more light than those intended to convey an impression of the gloomy, the solemn, the sublime, the grand, or even of the splendid: those of the last description, requiring for effective representation, the introduction of a greater quantity of light than those of the four preceding classes.

The use of white unpencilled spots on the drawing-paper, or of white pigment, for the representation of light, it may be inferred from what has been stated, should be sparing, and merely for the purpose of brilliancy and strong contrast, as objects in Nature never appear perfectly white or colorless, owing to the influence atmosphere and reflection invariably have upon them. Yet, as many things may seem to be nearly, if not quite white, such objects must occasionally be represented with a light upon them purely white, otherwise neither truthful force, brightness, nor due contrast, as far as attainable in art, can be imparted to their portraiture. But, on the other hand, if positive white, even though not left in large proportions, be scattered too profusely about a picture, weakness, and deficiency of effective contrast and concentration, must ensue.

The way light should course through a picture has been laid down by some writers on art; it is, however, manifestly absurd to advance rules upon the matter, and the attempt to follow any (excepting those founded on practice, and which experience and taste teach better than any authorities), only fetters the artist, and causes him to produce repeated similarity of effects totally opposed to that infinite diversity which is the great peculiarity and charm of Nature. That artist best shows an intimate knowledge of Nature, and skill in his profession, who dares to be truthful and varied in his works, notwithstanding he may fly in the face of authority; nor will he fail to earn appreciation from the world in the long run, although he may be criticised at first by the ignorant and self-sufficient connoisseur.

The management of the sky in landscape-drawing is one of its most important operations, as it affords the opportunity of treating representations of scenery with striking effect. To acquire a power of skilful management, Nature must be constantly resorted to and contemplated; and, unlike most adjuncts of her landscape scenes, the sky may be studied anywhere,—from amidst a dense mass of houses, as in the open country,—while some of its aspects which may be seen from the former, are even more favourable to pictorial effect, than any it exhibits elsewhere. How often, for instance, does the sky hanging over a large city like London, present masses of clouds that astound by their magnificence, or enchant by their diversity and elegance of form, as well as by their exquisiteness of hue and tone —softened, harmonized, varied as are both hue and tone, by the smoke and misty exhalalations generated by the crowded precinct. Though as pure a sky as can be witnessed from the mountain-top, or the houseless plain, may not be visible from cities, yet in many respects far finer clouding frequently may be seen; and artists should not consider they have worked sufficiently after Nature, until they have repeatedly studied from the roof of a house, or other convenient eminence, the aspect of the heavens at all times and seasons, as observable over a large town.

Clouds being formed of vapour, single masses frequently display every possible tone of shade, from the lightest to the very dark. Owing partly to this circumstance, they may be turned to great account in a picture, for through it, without creating an appearance of the use of forced and artificial means, light and shade in any quantity, and almost of any power, can be carried through a subject. The hues, also, that clouds derive through their properties of reflection, are very extensive in range. These may be found, at times, to partake of the blood-red, the most vivid crimson, powerful yellow, gorgeous orange, intense purple, of green and violet of inimitable delicacy, and of every species of neutral tone, whilst the color of the sky may gradate from the deepest transparent blue to the lightest azure. In shape, clouds differ as much as in color and intensity of light and shade:—

> "Sometimes we see a cloud that's dragonish,
> A vapour sometimes like a bear or lion,
> A towered citadel, a pendent rock,
> A forked mountain, a blue promontory,
> With trees upon't, that nod unto the world
> And mock our eyes with air."—SHAKSPEARE.

From the diversities of shape, color, etc., which clouds may assume, arises the reason why the management of the sky in art is of so much importance, requiring considerable care and preliminary study. For as Phillips, alluding to the sky, clouded and otherwise, in one of his works on Water-color Drawing, well remarks, "the variety of color, the gradation of tint, varying from the greatest depth to almost perfect whiteness, of which it is susceptible, affords every facility to the artist to assist his composition, whether he

require opposition of light or dark, diversity or harmony of color, contrast of form, or a continuation and further extension of a mass of dark or light."

Relatively to the treatment of the skies: the immeasurable distance the pure sky is from the clouds, the fact that it is not a substance, but perfectly transparent ether; the greater remoteness of some clouds than others from the earth, the vapoury character of clouds, their respective comparative densities, the total absence of all flatness in their forms, their distinct yet almost indefinitely soft edges, the circumstance that light penetrates into and through their edges more than through their central parts—rendering the former the lighter, excepting when the latter reflect the sun's light; the facts also, that according to the increased degree of density, opacity, and nearness to the sun, of clouds which are strongly illuminated, so they exhibit the brighter illumination or the darker shadowed parts, and glisten so much the more, with a hue somewhat metallic in appearance,—that clouds above the sun receive illumination on their lower, and those beneath it, on their upper portions,—that only certain kinds of clouds are observable in conjunction during the different states of weather,—that there is a wintry and a summer, a morning, a mid-day, and an evening sky, each having its distinctive peculiarities: these are all matters which the artist should bear constantly in mind, and to which the art-student should devote an investigating attention.

Fig. 82.

Trees form one of the most usual and attractive features of a landscape, though many will cast their eyes over wooded scenery without becoming aware how much its attractions are heightened by readily overlooked peculiarities, displayed by the diversely formed and foliaged trees adorning it. The probably elegant, or stately, shape of some of them—the gracefully bending intermingled with the nobly erect—with the striking sweep and ramifications of their branches, and the varied hues of their leafy coverings; the lights

and shadows that often play about their stems and foliages throwing groups and solitary trees into prominence, or mellowing them into a beautiful general effect,—the one, at times, producing a thousand glittering specks of brilliant dye, which, ranging through the whole scale of color, render a scene enchantingly splendid,—the other, subduing groves into masses of deep shade that produce a completeness of sombre grandeur: such are a few of the causes why trees usually impart so many charms to wooded scenery. It is, then, to these circumstances the student should direct his attention in the study of the representation of trees; whilst it will require a well practised eye and hand to depict them faithfully.

Trees of every variety and form should be studied from Nature, as an artist may be called upon to depict those of any species, and which are in any condition. Nevertheless, perfectly-formed trees are not usually so picturesque as those which, through age or accident, are imperfect in shape; and a picture containing none but irregular-shaped trees, looks better, as a rule, than one containing those only that are the reverse.

The beautiful picturesqueness of tree groups of irregular growth, and, comparatively with their perfect condition, of ragged form, neighboured as they often are by gaunt leafless stems, is shown in Fig. 82. The attempt to depict any tree, represented therein, perfect in shape according to its species, would have spoiled the character of the scene, and have diminished its attractions; so true it is that the perfect in Nature is frequently imperfect for the ends of art. Still the perfect may be represented highly effectively; necessarily, however, it is more difficult to portray than its opposite, and tends to lead to the production of pictorial formality which cannot be avoided nor conquered, though it may be somewhat disguised, and made to appear, by skill, pleasing to the eye.

The copies given in this work show that the touch required to represent foliage is extremely diverse; but, that foliage characteristics are so distinctive that they may be clearly displayed on a very small scale, may be seen by comparing the following eight diagrams of trees respectively with the trees they represent. To describe the different kinds of touch that should be employed, would not be of service to pupils; there are, however, certain general features belonging to the trees most usually depicted, which may be serviceably pointed out to the student's notice, for the sake of giving a definite direction to his studies from Nature, and they are as follows:

The Elm (Fig. 71) has a foliage which hangs loosely in full, round, rolling masses capable of receiving great breadth of light. It is a lofty and stately-looking tree when full grown. Its stem generally consists of two or more large limbs, which strike out from the lower part of the trunk, at seldom less than ten feet from the ground, and run upwards without separating very widely from each other, until they reach the head of the tree; from the lower parts of these limbs smaller arms spread out in all directions; but from their upper parts still smaller arms or branches, covered with innumerable sprigs, tend upwards, and make a full round top to the tree, distinguishing the elm in winter as much from other trees, as its round, rolling masses of foliage distinguish it therefrom in other seasons.

Fig. 83.

Fig. 84.

The foliage of the Oak (Fig. 83) causes the exterior outline of the tree to appear a mass of angular irregular indentations. It hangs full and compact in the central parts of

the tree, yet not in a rolling form like that of the elm. Standing alone, the tendency of the Oak is to spread rather than run to a great height; but in groups it will sometimes attain the height of 90 feet or more, and without a lateral branch extending from its stem at any point less than 33 feet from the ground. For stoutness of limbs it surpasses all trees excepting the cedar, and it is not easy to discriminate its main stem from its largest limbs, for they seem less to branch than divide from the former. On account of its strength and toughness, its stem never becomes, as other trees often do, twisted in form through the action of the winds. Its arms are mostly very crooked; and, as they spread out in uneven lengths horizontally over a large space, and its trunk always inclines to be extremely rough and huge-knotted; a more perfectly picturesque tree, altogether, is hardly conceivable.

Fig. 85. Fig. 86. Fig. 87.

The Beech (Fig. 86) is one of our noblest forest trees. It grows to a great height in sheltered spots, producing a foliage so thick as to form a complete roof, the "shade of the beech" being often alluded to in consequence. Its leaves hang on thin twigs which shoot out from its branches, and spread undulatingly in every direction, so as to render the tree very difficult to depict. Its stem runs rather straightly and vertically, and projects curved limbs all around, not so wide-spreading as those of the oak, nor so compactly together as those of the elm, and occasionally making elbows or sharp turns. The trunk also is frequently studded with large excrescences, and is picturesque through being covered with a bark which, at a distance, looks smooth and polished, and of a light olive hue elegantly varied by thin darker rings of colour.

The Ash (Fig. 70), from its extreme gracefulness, has been called the Venus of the

Fig. 88. Fig. 89. Fig. 90.

forest. Its stem more or less follows the line of beauty to the summit, dividing sometimes into two or more arms without abruptness, and its branches principally take a curved

form. Owing to the character of its foliage, which is formed of long, narrow leaves hanging somewhat loosely like the outspread fingers of a hand, to the lightness of the color of its leaves, and the alternations of light and dark color that ornament the bark of its stem, it preserves a perfect elegance of appearance throughout.

The Birch (Fig. 72) is a pretty object in a landscape, as its outer branches "weep" or hang downwards in thin strings of great length, clothed with a light colored foliage. Neither its stem, limbs, nor general form, are so graceful as those of the ash, yet by means of careful drawing, the tree may be rendered highly pleasing in a picture.

The foliage of the Firs, or of the Pine class of trees, is composed of long thin spines, which, though leaves, are never flat. The Spruce Fir (Fig. 90), and the Larch, grow much alike as regards their stems and branches. The stem of each is a single straight shaft with branches running out around it, and gradually decreasing in length, so as to cause each tree to taper upwards in a cone-like form. But the branches of the spruce vary more in length than those of the larch, are more gracefully undulating, have a greater tendency to sweep downwards, and are clothed with a fuller, richer foliage, the spines of which combine more into tufts, and appear far less forked.

The Scotch Fir (Fig. 85) grows differently from either the spruce fir or the larch, or more like the trees previously described; its foliage, however, consists of spines that principally strike upwards, as does that of most other kinds of similarly shaped Pines.

The Cedar (Fig. 84), the most magnificent of all Pines, rises from the ground, branches out its enormous limbs, and spreads its massive-looking foliage around, with an air of majesty no other tree equally displays. "The foliage is superior to that of any other of the tribe, each branch being perfect in its form; the points of the leaves spread upwards into graceful little tufts; and the whole upper surface of the branch, which droops in a graceful curve toward the extremity, has the semblance of velvet. The color is also fine; it is a rich green, wanting the bluish tint of the pine and fir, and the lurid and gloomy one of the Cyprus." The bark of the cedar stem, like that of most pines, is of a fine brown color, partaking of a rich glowing coppery hue when illuminated by the sun.

The Poplar (Fig. 88) throws its branches upwards, at very acute angles with its stem. The under sides of its leaves are of a pale silvery color, and the foliage hangs upon flexible twigs, which, with the whole tree, are readily agitated by the wind; two circumstances which artists should take advantage of, that they may impart more grace of form, lightness, and variety of color to their delineations of the poplar, by representing it in motion, than they could if they were to imitate it in a motionless state, when it naturally looks stiff and rather sombre.

Most Willows have a foliage which, when depicted, has somewhat the semblance of Ash foliage; in the case, however, of the Weeping Willow (Fig. 87) the foliage is different, whilst it is, with that of the poplar, more easily imitated than that of any other tree. The trunk of the Pollard Willow (Fig. 89) is in general divided, broken, full of hollows, and remarkably uncouth in form, with huge knobs at the top, rendering the upper the thickest part of the stem. Though a stunted ragged-looking tree, the careful delineation of it will repay the trouble of the artist, by conveying a character of great homely naturalness to his work.

But enough has been here said on the subject of trees, to prove how necessary it is for the art student to study them from Nature, both when in leaf and leafless, and to direct his studies; and now water, distance, foregrounds, and landscape accessories, must be briefly referred to in conclusion of these remarks on Landscape drawing.

Water materially increases the beauty of a scene, because it contrasts strongly with all other objects, and possesses the power of reflecting form, light, shade and colour, to an extent which often imbues a scene with something of the magical; a power of reflection also, that is of the greatest consequence to the artist, for it frequently enables him to repeat, in a perfectly natural manner, form and tints, and modify light and shade, when requisite for the effect of his picture.

In the study of still water, the difference of appearance existing between it and running water under a cloudless and a clouded sky, and its power of reflecting form and color according to the degree of light upon it and the position of the sun, should be closely examined into. Running and sea-water likewise manifest peculiarities that should be understood before they are depicted: the construction of waves, the way they form heads and roll in shore and out at sea, combine, and flow one into another, especially

being matters which should be understood by those who would depict sea-waves otherwise than as a series of unmeaning ridges, without lucidity or wave characteristics.

Distance destroys detail, but imparts vastness to a scene. With increasing distance from a spectator objects become, relatively to their natural color and forms, and to accidents of light and shadow, the fainter in hue and the less strongly marked in outline; and the idea of air and space, therefore, can only be conveyed by a picture when it imparts that of distance through portraying the objects, which are not represented in its foreground, of different degrees of positiveness of color and form, in accordance with the laws of Nature. One object either too clearly defined, or too dark in those parts of a picture which represent either the middle, or the extreme distance of a scene, will not merely destroy the semblance of distance, but seriously injure the appearance of the picture in other respects.

Foregrounds are composed of banks, precipices, pits, large stones, stems of trees, foliage, bushes, herbage, roadways, or other occasional landscape features, irrespective of the prominent important objects standing in the forepart of a scene—this class being generally termed foreground objects. The foreground of a picture should be the boldest and most perfectly drawn part, proportionably to the relative size of its details, and display deep shades, strong lights, and colors, with faithful delineation of minute objects and absolute imitation of surfaces—such as a dew-drop on a flower, clearly traceable net-work of foliage and wild herbage, the ruggedly indented surfaces of roadways, banks, tree-stems, etc.; a weak unfinished-looking foreground being certain to render the effect of a picture imperfect. Taste and judgment, however, must be exercised to determine the amount of force of character, through detail and finish, which should be given to a foreground, some subjects requiring clearer detail and higher finish with respect to their foregrounds than others.

Human figures, animals and vessels, as accidental accessories to a landscape, serve more than any others to increase its attractions. They impart animation to scenes, and ordinarily bring them more within the range of our sympathies than they would be without their presence. It must have been observed by every one acquainted with Nature, that a group of cattle, a solitary peasant, a flight of birds even, or a sailing vessel, accidentally passing into a scene, have been sufficient to make it perfect in effect, and cause it to awaken sensations of interest not easily forgotten; and the represention of accessories like these is a legitimate liberty an artist may take when sketching a scene, should they not be present therein, but his fancy can imagine their presence, and his skill is equal to the effective representation of them. Finally, still-life objects, such as moored vessels, fallen trunks of trees, planks, ladders, brooms, pails, etc., may also be added to the portraiture of a scene to aid its naturalness of appearance; and our imagination should always be on the alert, whilst we are sketching from Nature, or working from a sketch, to devise suitable accompaniments to a scene, provided good taste suggests that anything may be added to it with advantage.

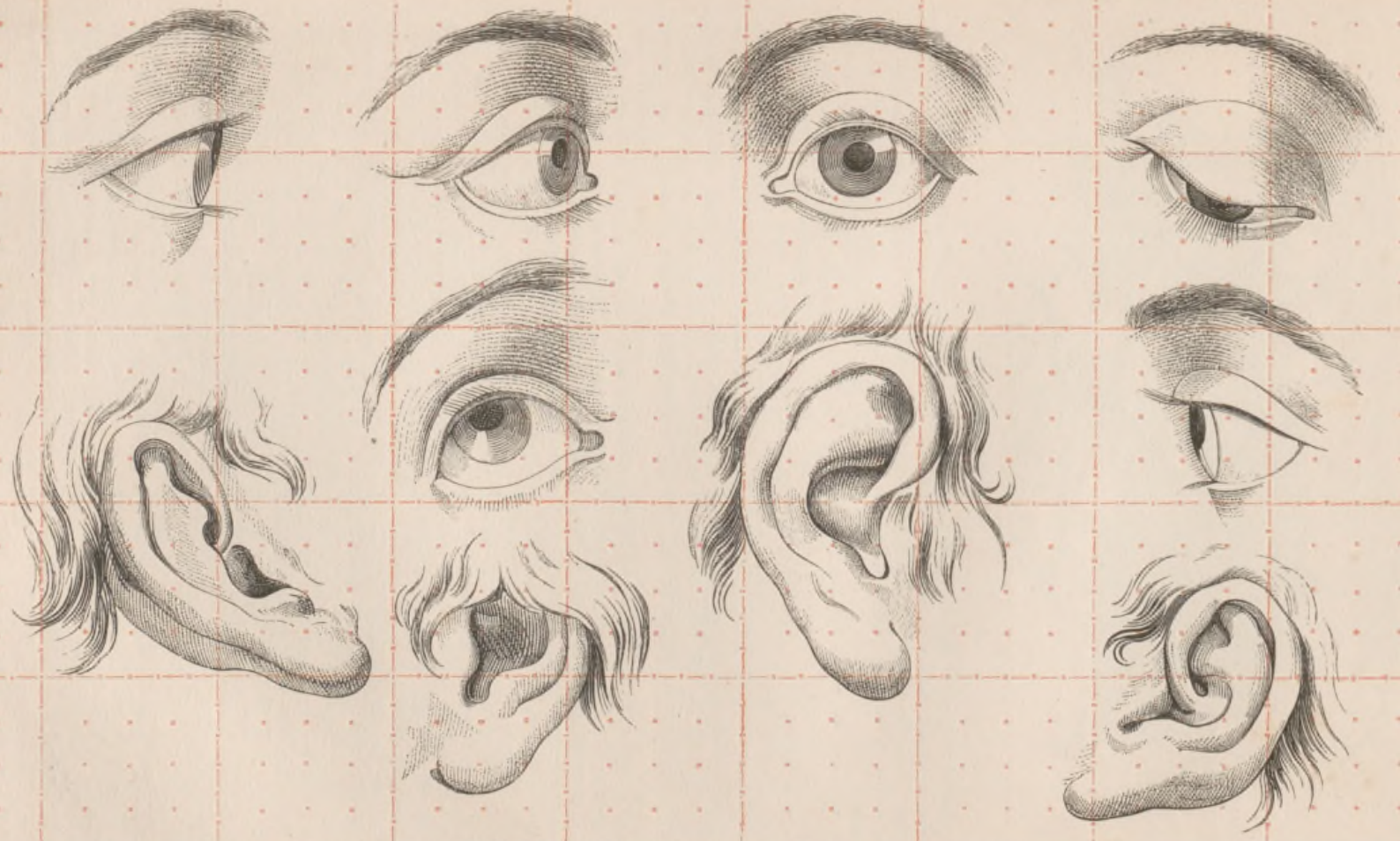
LESSONS ON COPIES 30 TO 34, AND 37 TO 39.

The Oak is shown in the centre of Copy 30 with a foliage that breaks into abrupt masses of zigzag indentations.

The limbs, the parts of animals, and the vessels represented in Copies 31, 32, 33, will require shading, according to the rules given in Section 2 on Finished-drawing. Before shading them, their outlines should be sketched in as correctly yet faintly as possible, and their forms be defined afterwards with due spirit and freedom yet delicacy. To imitate the shading properly, the pencil should be made to work freely over the paper, without leaving decided lines.

Spirited outlines, with occasional very expressive sharp touches in them, should be made of the objects represented in Copies 34, 37, 38, and 39, as the lines they display are intended to afford practice in producing characteristic picturesqueness of outline.

Copies 35, 36, being in Sepia color, will be referred to in the following Section, of this work, on Water-color Drawing.



On Color Drawing.

To depict scenes from Nature, with a complete and striking fidelity, the use of coloring material is indispensable to the artist. Atmosphere — the glow produced by the sun — the beautiful effects, replete with variety and contrast of tints, resulting at different times of the day from light and shade acting in a peculiar manner upon the natural colors of objects — perfect breadth of light and clearness of shadows — distance — the limpid quality of water — the vapouriness of clouds — the impalpable aspect of the sky — transparency, the semi-transparency of such objects as flowers — the leafiness of trees in accordance with their various characteristics — the richness, wild profusion and elegance of ground and woodland herbage — the softness and flexibility of the human skin — surface characteristics — the true relative bearing of objects, as manifesting itself more by general relief of one object from another through color rather than through outline — animation or thorough life-like appearance, and the semblance of motion — all depend upon color for truthful representation to as great an extent as do the absolute tints of Nature.

The practice of color drawing is by no means difficult to a certain limit, within which pleasing works may be produced, not approximating, it is true, very closely to the varied aspect of Nature — yet not so diverse therefrom as pencil drawings must of necessity be. But as the effect of a scene principally arises from the manner in which its objects strike the eye in consequence of an almost endless variety in the degrees of contrast, force, delicacy, transparency and opacity, displayed by their local colors, really artistic portraiture requires a close preliminary study and knowledge of those principles which cause peculiarities of color and effect, as far as they are connected with the power of Art representation. Any one, however, may attain great excellence in the perfect practice of color drawing, provided he does not neglect opportunities of advancing himself, and certain most important ones, which he can readily embrace, are of frequent occurrence. For instance, every occasion of open air exercise may be made to furnish us with valuable art study, if we keep the eye the while in a state of constant watchfulness for beautiful effects, and devote a few moments firstly to the analyzation of those which then will be sure to present themselves to its gaze, and secondly to making slight sketches or notes of their principal features, such as may be hastily jotted down in a memorandum book. Another process of insuring the recollection of effects being that of continuing to watch them intently for short periods, and closing the eyes after each observation, to ascertain whether their characteristics are clearly impressed on the memory, until it be found they are so; both processes, to prove perfectly serviceable, requiring that the impressions acquired through their medium, before they have faded, shall be worked out with the brush and color as fully as admitted by circumstances. An earnest artist, who loves his vocation, sketches and studies thus, as well as more systematically, from Nature at all times and seasons, and there is little chance of his achieving reputation in his profession, unless his works are based upon the experience to be gained by such a course of proceeding, especially if he employs color — as every one practising Art should do,

color-drawing being infinitely more useful and interesting than pencil-drawing. The study of pencil-drawing, nevertheless, is necessary to every Art student, for the purpose of habituating him to such a free and expressive use of the pencil as will enable him to sketch in the first outlines of his subjects with precision and truthfulness.

Color is employed in Art through two mediums — those of water and oil; when it is employed through the former, it assists in producing what either may be termed paintings in water color, or water-color drawings.

Water-color drawings may be produced either by means of dry cake colors, or moist colors, — the dry cake colors affording the greater purity of tone, and the moist colors being the easier to work with.

Before proceeding to make a good color-drawing, it is of the highest importance to select a sound paper for it; for if a sheet of paper be not free from defects of surface, a perfect drawing cannot be made upon it. The way to ascertain the soundness of paper is to hold it up to the light, so that the eye can glance along its surface on the side marked with the *maker's name reading forwards*. When so held, if its surface appears to be even all over, without a flaw, or a greater degree of roughness, or smoothness in any one part than another, it will be perfect and fit for use; but should any part display a scratch, or crack, or a smoothness, or roughness not common to the general surface, the paper will be unfit for use, excepting for practice — as that does not require an absolutely perfect paper, or one that possesses superior qualities beyond the absence of woolliness of surface and of palpable thinness of substance.

Imperfections in the selected paper either would prevent a wash of color from flowing freely whilst being worked over them, or would cause the wash to create unevenness of tinting, — that is, in both cases, would produce results incompatible with good water-color drawing. When smooth places occur on the paper, a wash runs over them as it would over grease spots; and when very rough places, the wash becomes absorbed by them without flowing onwards properly: the latter, however, may often be eradicated by burnishing them carefully with the smooth handle of a knife, or with a paper knife, so as to create, not polished-looking spots, but merely equality of surface with that which surrounds the burnished parts; whilst the former may sometimes be got rid of by rubbing them over gently with a piece of pumice stone, or very fine glass paper, until they assume an equal degree of roughness with the surrounding surface. One of the best kinds of paper to use for highly-finished drawings is Whatman's, of a thickness proportionate to the size of a drawing to be made; for practice-drawings, a common, firm-faced, and slightly yellow-toned cheap cartridge paper will suit.

Whatever paper may be employed, it should first be equally damped all over, by passing a clean sponge, moderately charged with clear water, lightly over both sides of it, until the whole has lost its stiffness, without becoming in the least degree saturated so that some parts will take a longer time to dry than others and be liable to crack when the paper is further handled; nor must it be injured by the process of sponging — which of course must be effected with delicacy, otherwise the fibre of the paper will come off on the sponge, and the paper in consequence be rendered unfit for use. To roll the paper up gently in a clean damp cloth is a good plan for ensuring its being completely moistened: and the way to ascertain that it is sufficiently moistened is to bend a corner of it tenderly with the nail of the thumb; for, should it be, it will move backwards and forwards without elasticity, or showing any power of being able of itself to return to its place. If too much, or unequally moistened, the corner will have a tendency to fall and break through its own weight, which, however, it must not be allowed to do.

The paper, when prepared as above described, should be fastened in a drawing-frame, or on a firm smooth flat block of well-seasoned hard wood, about three quarters of an inch thick. If it is to be placed in the former, the moveable board belonging to the frame should be taken out; the back of the paper (*which should be indicated by a pencil mark, before the paper is damped*) should be laid as flatly as possible on the face of the board, the edges of the paper be carefully turned over the edges of the board so as to strain the paper as much as possible without breaking it at its turned edges, and the board be replaced in its frame, fastened in, and the apparatus be put in some place where the paper can dry gradually and evenly; therefore, in a dry place, but not near a fire, as that might cause the paper to dry so quickly and unevenly as to crack in parts. If the

paper is to be fastened on a block, it should be placed thereon as on the board of a drawing-frame, the edges should be pasted, or glued either on the face or the back of the block, and due care should be taken to ensure the proper drying of the paper. On pasting it only a moderately thick paste ought to be employed, and this should be evenly spread in bands, about a third of an inch wide, on the place which the edges of the drawing paper are to cover. And whether paper be made ready for a drawing, on a block or in a frame, it should, when dry, present a perfectly *tightened, unwrinkled surface* — if it do not it should be taken off its tablet (by wetting the pasted parts, if pasted), and be re-damped, etc., if required for anything but practice; neither cockles nor wrinkles admitting of the production of that evenness of tinting, on laying in broad masses of color, essential to render the effect of a drawing complete and highly finished, the former causing a wash, when laid over them, to tend to settle in pools, and the latter causing it to make ineffaceable lines following the course of the wrinklings.

Paper which is to be used for very large or important drawings, should be fastened on a board, by means of a thin solution of the best white glue, as paste will neither hold nor strain paper perfectly enough for such works. Students who do not possess a better kind of apparatus may make useful practice-drawings on paper fastened on a piece of stout flat millboard, or on an old stout flat book cover.

A piece of paper having been strained in conformity with the foregoing directions, the next matter to be attended to is the delineation of the outline of the subject to be drawn thereon. This should be effected by means of a soft pencil and with great *precision*, *accuracy* and *delicacy*; that if it should become necessary to efface lines for the correction of mistakes, no injury may be done to the surface of the paper by rubbing them out, and that the pencil markings of lines may not show strongly under the tints of color laid over them. Foreground objects, and such as are to have dark tints laid over them, however, may be more strongly outlined with the pencil than distant objects; and should lines appear wrong or too dark they can be best effaced or subdued, as requisite, by means of a piece of stale crumb of bread rubbed very gently over them, provided the bread be neither dirty nor greasy.

Although to minutely outline a subject may appear a somewhat tedious process when the learner is naturally all eagerness to commence working up its effects with color, yet he will find that to do so and with extreme accuracy will amply repay the trouble it costs: by securing him, in his after-proceedings, from all doubt as to what he is producing — and, therefore, affording him a specific direction for every step he has to take, and thus enabling him to lay in his tints brightly and clearly, and his touches with a precise definite aim.

After the outline of a subject has been depicted, the wash of color, to be laid on it first, should be prepared in a convenient vehicle, such as a saucer, or plate, and in a quantity sufficient to cover the whole of the subject,— as the first wash which is to be used, generally, should be laid over the whole of the subject, excepting where white lights should be left.

The brushes principally required by a learner for water-color drawing, are a large sized swan-quill brush, for laying in masses of flat tint; a goose-quill brush, for making broad touches; and a crow-quill brush, for producing fine touches or lines: all of the kind called French Siberian Hair Brushes, and the first costing about two shillings, the second about three-pence, and the third a penny. Although if he can afford to purchase a set of the dearer sort of brushes called Brown Sable Brushes, they will prove to him both more durable and efficient implements than the others: the cost of a large sized swan-quill brush of this material being from five shillings to seven shillings and sixpence; of a goose-quill brush, one shilling; and of a crow-quill brush, sixpence. Intermediate sized brushes, would be serviceable to him, but not absolutely necessary; it is advisable, however, that he should procure them when opportunity offers, because he is certain to require them after a time, if he progress in his Art. The flat tin-cased camel-hair brush of the size, costing about one shilling, also is an extremely useful implement to possess; for it serves not only for laying in large masses of sky tint better than a smaller brush, but also for damping the paper, as frequently requisite before commencing a drawing and during its progress, as well as for washing over and softening tintings that have been laid in with harshnesss or too much strength.

Camel-hair brushes are cheaper than all other brushes, and those who cannot afford to buy dearer descriptions of water-color pencils may purchase a very serviceable set of camel-hair pencils for a trifle.

Before purchasing brushes, their quality should be tested. To test that of a pointed brush, place it in water, then remove it therefrom and shake the water out of it with a sudden jerk of the arm. If the brush be a good one its hairs will fall together at the tip and make a perfect point, the perfect character of which should be further brought to proof by spreading the point on a finger-nail, as the great imperfection of the brush, namely, inequality in the length of its hairs, if it exist, will show itself by that means. If a flat brush is a good one, after it has been put into water, taken out and shaken, the tips of its hairs will fall into an even line. Inequality in the length of the hairs of brushes prevents their being used with certainty for their purposes.

The best mode of handling the brush is to hold it at a considerable length from its working end, with the right or brush hand, slightly resting, or not, as the learner feels he can most securely proceed. If the hand be rested it should be in such a way that the motion of its wrist and fingers shall not be impeded.

On laying in a large mass of *even* tinting, the brush, after it has been filled with, if possible, just tint-wash enough to cover the place to be tinted, should be passed rapidly over the place, with great decision from the outline of one extremity of it to that of the other, so as to tint the whole of it at once. If the contents of the brush prove insufficient for the purpose, the brush, when empty, should be replenished quickly with as nearly as can be judged the quantity of wash still necessary, and be worked from the *yet moist* tinting which is to be completed; for if the latter be allowed to become dry before its completion, unsightly edge markings will appear where it was originally discontinued. But if the brush were over-filled at first, the wash in it would flow from it so as to accumulate into a pool at the lower part of the place over which it was passed; and this accumulation if not absorbed into a clean dry brush, or piece of blotting paper, before it has time to sink into the drawing paper, would make an ugly blotch. Therefore, as the edge markings would be difficult, and the accumulation troublesome to remove, these facts show how necessary it is care should be taken neither to fill the brush with too much nor too little color at a time.

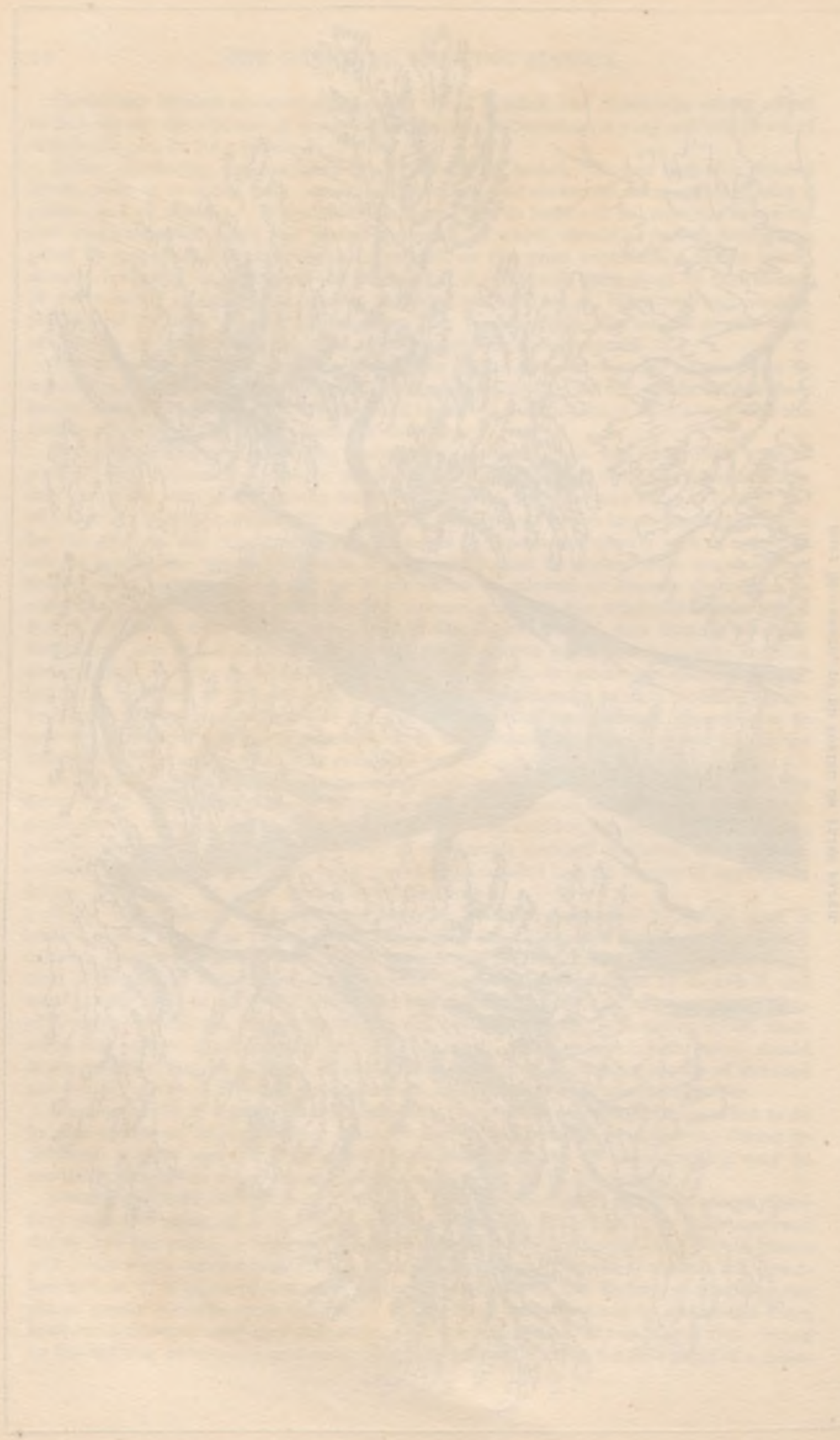
The hairs of a brush should be made to spread out on the drawing-paper in a fan-like form, whilst being used for laying in masses of tint; and should converge to a point when employed in making markings which should be very decided, or precise in form. To produce markings which should be only of a tolerably decided character, such as those required for the imitation of somewhat indistinctly-detailed looking masses of herbage or foliage, the side of the brush should be worked with.

Many characteristics of appearance may be effectively obtained by using what is termed a dry brush (or brush either containing very little thin liquid color, or only coloring matter which has been barely moistened), the result arising from its use being that of imparting brokenness of appearance to the markings made by its means, and consequently such as often tell with great truthfulness and vigor of effect on those parts of drawings where the representation of old buildings, water, tree-stems, rocks, roadways, and surface characteristics occur. The brush, when charged with color, should it be requisite, may be brought to a very fine firm point, by turning the tip of it round and round on a piece of waste paper, until all its hairs have been worked together.

It being useful to know, before commencing the practice of color-drawing, what to do in case of certain liable kinds of accidents arising to the injury of a drawing during its progress, a short space amongst these preliminary remarks on color-drawing may be profitably devoted to a few simple instructions with regard to the matter.

Should accidents occur through spots of dark, or false color, falling on places where they spoil the effect of a drawing, such spots may be effaced (if they have not sunk deeply into the paper, or been allowed to become too dry) by slightly damping the places with clear warm water where they have fallen, wrapping a corner of a clean silk handkerchief, or of a piece of fine wash leather, round one of the fingers, and rubbing the places gently until the spots disappear; or they may be scraped out by means of a sharp knife, or a scraper, used very delicately. At the same time, any impaired tint, caused by the rubbing or scraping processes, may be repaired by using the firm point of a crow-

COPY 38—BEECH, TO BE COPIED ON PLAIN PAPER.



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TINTED XYLOGRAPHY.

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quill brush, and *stippling* the place, where the imperfection exists, all over in fine dots of color, such as in combination will produce a power of tint corresponding with that of the mass to which they are added, and exactly match the hue of it — stippling being a process similar to that of pricking a piece of paper all over in dots, by means of a pin.

A mass of tint that becomes defective as respects evenness — through the accident of a blemish in the paper on which it is laid, or through an after-arising necessity, which frequently occurs, of reducing its intensity by washing the tint over with water, — may be, likewise, rendered even through the aid of stippling; and as very small white places must often be introduced into a drawing by scraping them out from places covered with color, and yet may be made too large, stippling is at times requisite to reduce them in size. White places, however, may be produced through the medium of a material called Chinese white, laid on to the paper where they should appear; and should it become advisable to make any changes in the effect of a drawing by washing out a tint of color, but the paper should continue stained or show any remains of the tint, after a washing has been continued as long as it can be without injury to the surface of the paper, the defect may be remedied by, firstly, washing its place over with a thin solution of Chinese white and water, and then re-washing it with a suitable tint. This material (Chinese white) may be obtained from those who deal in water-colors, and is about the best of all whites for retaining its purity, as most other whites turn dark very rapidly. For washing out large masses of color a sponge is more serviceable than either a silk handkerchief or wash leather; and it should be borne in mind that the process should always be managed so as to do as little injury as possible to the paper of a drawing, or to the parts of a drawing that surround any portion being sponged. A protection against injury to the surrounding surface may be ensured, by cutting into a piece of cardboard or stout paper a hole of the size of the mass of color to be washed out, and fixing it over that mass before sponging it, or rubbing it with a handkerchief. Superfluous moisture remaining on a washed place after the protecting material has been removed, can be absorbed into a dry sponge, or by means of white blotting paper. But no place on a drawing should be washed out or scraped until *perfectly dry*.

On washing or scraping out defects, the drawing should be laid flat on the table. But when a drawing is being worked upon with color, it should be placed so much aslant that washes of tint, as they are laid on it, can flow readily downwards. And every wash of tint, that is to be worked over a previously made tinting to increase its darkness, generally should be worked so that the edges which it produces will blend into the edges of the tinting it is to darken, but yet without exactly extending to them. Hence where a mass of tinting is to be produced by means of several washings, each washing usually should cover rather less space than the preceding one covers, but still lose its edge in the edging of the preceding one — consequently the mass of tinting when completed should appear to become gradually, though very slightly, lighter as it proceeds from its centres to its sides — for if it does so, it will have a natural luminousness of effect.

A learner being provided with a drawing board, some roughish cartridge paper, and three or four brushes, also with a piece of sponge, of white blotting paper, and of wash leather, or silk, together with a box of colors,* a small color slab, and half a dozen halfpenny saucers, he is prepared, having the aid, likewise, of such simple instructions as the foregoing, to commence the practice of color-drawing. And, as very little can be done with color until the power of using the brush with facility and precision has been acquired; as, also, the surest way of acquiring this facility is to commence practising color drawing through the medium which washes most easily, or with *Sepia*— Sepia color-copies are provided for him in this work, which he should practise carefully if he desire to qualify himself quickly for beginning to use with profit that beautiful variety of pigments whose hues vie with Nature's exquisite tints.

Copy 35 shows on its right hand side half, four different shades of tinting which should be imitated two or three times for the sake of practising laying in even tintings of various degrees of intensity. To produce an imitation of the lightest of these tintings: put a few drops of water into a saucer, rub up some color in them thickly from a cake of Sepia,

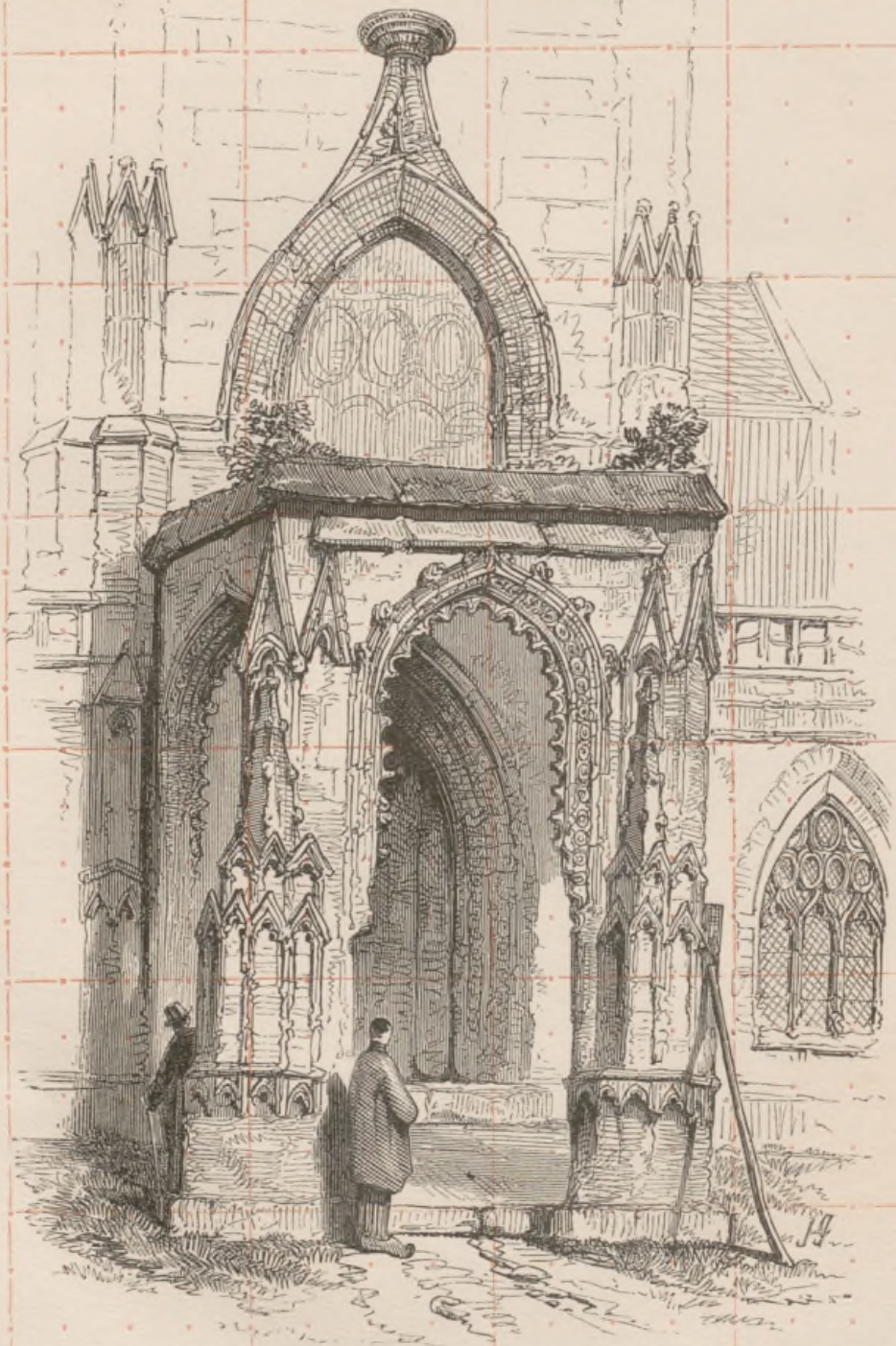
* In page 80, the cost of a variety of water-color pigments is stated; but only tin cases of large cake colors are now made, and their prices run higher than the prices given in the list contained on that page referring to tin cases.

dilute the color detached from the cake with about a teaspoonful of water, take up some of the mixture into a large brush, and test the strength of its tinting power by washing a little of it on to a piece of waste paper; then, when the mixture is made, and proves to be of the right shade, proceed to lay a wash of it over a space, on strained drawing paper, of the size of the space covered with the lightest tinting in the copy. The next darker mass of tinting on the copy should be imitated by laying a wash of the last mixed tint-wash on to a fitting space, then mixing up some rather darker tint-wash, and laying a coating of it over the same space — yet not until the latter has become dry. With respect to the two darkest masses of tinting contained on this copy; a third quantity of tint-wash, darker than the two dilutions previously employed, should be mixed for the third shade of tinting, and be laid over a dry space which has been tinted with those two dilutions; and then a fourth quantity of a duly dark hue which should be laid over a dry space, which has been tinted with the three other dilutions. A coating of tint-wash, in these cases, should be dry before another is laid over it, lest the laying on of the latter should work away the former and produce an uneven tinting. Each tint-wash, whilst being mixed, should be preserved free from specks of dirt, of dried up tint-wash, and of imperfectly diluted color, and be as pure as possible when used, for if it is not, a clear and even tinting cannot be produced from it.

The left-hand side of Copy 35 furnishes one subject in two forms. In the upper form, the trees over the building have been produced by laying different shades of tinting one over the other, without an attempt to blend the edge of each layer into the general mass of tintings, or to make a gradation, the unnaturalness of appearance ensuing in consequence being apparent. On the contrary, the under form (which alone should be copied) shows on the trees gradation of tints produced by laying several tintings one over another, so that the edge of each successive layer of tinting combines with that of the underlying tinting, without perfectly covering it. To obtain this effect of gradation, and of the whole subject: when a tinting, like the lightest contained on the copy has been washed over the pencil outline of the whole subject, a darker second tinting, like that covering the roof of the building on the copy, should be worked over the outlines of the trees, of the roof and side of the building, of the shadowed sides of the chimneys, and of the darkly-shaded parts of the face of the house; then, *after the edgings of the outlines of the trees have been moistened slightly with clear water*, a still darker tinting, corresponding with the third or darkest shade of tinting displayed by the smaller tree of the copy, should be worked from a little within the edgings, so as to *flow into and mix with* the moistened parts, and cause a commencing gradation, whilst the brush is moving downwards to imitate the third shade of tinting. Finally, after the edgings of the outline of the larger tree have been moistened again with water, a dark tinting, like that covering the larger tree of the copy, should be laid over their interior, but so as not to touch them,— and the dark and light touches requisite to bring the outlines of the drawing up to the effect of the copy should be depicted, with the point of a brush, to complete the drawing. But the copy does not furnish an example of the proper mode of depicting a tree with color, and is merely intended as a convenient medium for affording practice in producing gradation of tinting.

Gradation of tinting, however, may be produced by two other modes of proceeding, provided only one color need be employed for it; viz.: 1st. By using a tint-wash dark enough to produce the darkest part of the gradation to be depicted, laying it on to the place of that part first, and then gradually softening off the tinting laid on *whilst moist*, or lightening it by means of taking up water or light tint-wash into the brush, so as to carry on the tinting to its outline with duly diminishing intensity of shade — the drawing board being placed the while so that the successive contents of the brush will flow downwards, for it is better to work all tintings downwards, by altering the position of the board as requisite for the processs of so working them, than to wash them in by dragging the brush upwards; and 2ndly. By first using a tint-wash light enough to produce the lightest part of the gradation, and next continuing *very rapidly* to take up darker and darker wash into the brush, as the gradation should be rendered darker: both processes, nevertheless, though useful to practise, are more difficult to master than the one previously explained, and require to be performed with great skill and experience to prove effective in their results.

Copy 36 affords subjects (which should be repeatedly imitated with sepia tint-washes of



various shades) of several descriptions of brush touches that are adapted to produce characteristic imitations of foliage and herbage. A few of these touches, distinguishable by their brokenness of appearance, and contained on the upper left-hand corner of the copy, should be imitated with a so-called dry brush, or brush having so little color in it that its hairs naturally separate when used on a drawing surface, and in consequence make broken markings, or markings of individual hairs rather than of their combined mass. The touches, occurring immediately underneath the examples of dry-brush touch, and those on a line therewith (excepting the right-hand corner ones) as may be readily discerned, represent beech, elm, oak, and ash tree-foliage; and fine, light pencil outlines, indicating their size and general direction, should be made of them before they are depicted with the brush. The right-hand corner mass of touches is a representation of ground-herbage, and should be imitated by proceeding as enjoined for copying the neighbouring foliage representations.

After slight outlines have been made of the three lower subjects of copy 36,

Fig. 91.

representing bushes, trees, and posts, etc., to depict these subjects properly, a perfectly even wash of tint, agreeing in depth of shade with the lightest tint belonging to them, should be worked over the whole of the spaces surrounded by the drawing of their outlines, excepting where white places should be preserved on the spaces, such as appear on parts of the weed-leaves and ground of the left-hand side small subject, and on portions of the posts etc., of the right-hand side subject. When this wash of tint has been laid in on the drawing and become dry, the foliage-touches and ground-markings to be imitated should be executed, some massively or with very broad touches worked into masses such

as will hardly display any breaks of lighter tint, and some distinctly or showing breaks; and the side of the point of a large brush, the hairs of which have been wrought to a point on waste paper, should be employed to make the touches according as required. One only, however, of these subjects should be undertaken at a time; and the characteristics of each should be depicted in the order of their depth of shade, commencing with the lightest shade of tint wash of which they are to be composed—so that those which are to appear the darkest should be executed the last; whilst, at the same time, the copyist should aim at depicting the *spirit* or *meaning* of the copy rather than endeavour to imitate each marking employed in producing the effect of the subject he may be copying.

Sepia color copy 40, is divided into three parts. The two small parts occupying the left-hand half of the copy are partial representations of the sky of the complete subject contained on the other half of the copy, and they should be depicted separately before the imitation of the complete subject is attempted, as the imitation of the latter will be rendered the easier by adopting the preliminary process recommended. On imitating the upper small part—after a very slight outline (such as will totally disappear under a light wash of sepia tint) has been made of the white places to be left on the drawing to indicate cloudings, a light tint, like that existing on the copy of the sky-representation, should be laid perfectly even over the whole of the drawing excepting where the white cloudings should appear. To imitate the lower small part of the copy, an outline should be made in this, as in the former case, of the white cloudings to be left on the drawing—a light tint, like that on the upper small part previously imitated should be laid evenly over all the drawing but where the white cloudings should be, and, when this first wash is dry, a second darker tint should be laid over the same portions of the drawing as the first tint has been worked over—the proper shade of the second tint having been previously ascertained *and made to match with the copy, by experiment on waste paper.*

The complete subject of this copy, on depicting it, should be outlined with a thin line such as that represented on the outline subject, fig. 91. Then a light tint, such as is observable on the lighter portion of the sky, should be worked over all but the portions of the drawing which should remain white according to the copy; a darker tint, after the first has become dry, should follow it over all the drawing but where lighter tinted and white places should remain; a third shade be produced over all the drawing but where the first and second tints and white places alone should appear; a fourth shade succeed and cover those portions of the drawing which should look darker than the lighter shades of tints previously washed in; and to finish the drawing, requisite specific ground markings, house-roof and wall, paling and boat markings, with the dark outlinings and very dark shadows to be represented, should be depicted with color of the right degree of intensity of shade, amounting, in places, to almost blackness.

The Sepia color, copy 41, should be imitated by depicting primarily a pure clear fine outline of its largest sized subject, so as to appear similar to that shown by figure 91; and such an outline, therefore, as will just suffice to serve as a guide with regard to the places on the copied subject where washings and dark markings of colour should be laid on with the brush. After the outline has been depicted, a sepia coloured wash of the lightest shade to be used for the drawing should be laid evenly over all the subject, excepting where white places should be left thereon; or of a shade, and over as much of the subject as is indicated by the light tinting almost entirely covering the topmost small similar subject of the copy. A second wash, when the first laid on is dry, and darker than the first, next should be laid over the copied subject and be made to cover such parts thereof as correspond with the tinted parts of the left-hand side small subject of the copy, and with a tint of the shade of those tinted parts. A third wash should be laid over the second tint when dry, so as to cover such parts of the copied subject as correspond with the tinted parts of the right-hand small subject of the copy, and of the same depth of shade as the tinting on this small subject. Lastly, the light and strong markings on the large subject of the copy, indicating stone divisions, ornaments, broken outlines, foliage, herbage, etc., should be imitated on the copied subject, for the completion of the drawing, after the third wash has been laid on, and with shades of colour that vary from the lightest to the darkest tints of sepia.

The imitation of the mill subject sepia colour copy should be produced by proceeding in accordance with the directions given with reference to the imitation of the preceding sepia colour copies; that is, a correct drawing first should be made of the outlines

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of all its forms, for the guidance of the use of the brush, and so that those outlines will not show through the tint washings to be laid over them where they ought not to show through; and then one fresh washing of tint after another properly deepening in shade, should be passed over the drawing, when the preceding wash has become dry, but only over those parts of the drawing which should not be lighter than the fresh wash. And great care should be taken in laying on each fresh wash, to do it so skilfully as not to wash up the underlying tint and cause the fresh wash to produce an uneven tint where it should produce an even one. Also, before you use a fresh wash of tint test its strength on waste paper.

The two remaining sepia copies should be imitated through a mode of proceeding similar to that which has been given for the imitation of the foregoing sepia copies. The outline of the building, forming the subject of one of these copies, and executed in sepia color on a preceding plate, is intended to show; that, although the outline of a color-drawing, should be depicted at first with a faint line, that will disappear where it should under the washes of color laid over it; yet that, on finishing a drawing, the kind of vigorous dark touches given in this plate, frequently should be added either to portions, or, as in this case, to the whole of the outlines of the subject, so as to impart force and character to them — buildings more especially often requiring, in color as well as in pencil-drawing, the aid of a great deal of dark touchy outline to render them effective.

But there are effects in some parts of each of these copies, necessarily incidental to the only means by which these copies could be executed, that should not be imitated: namely, 1. That of occasional imperfection of outlines, and greater weakness of tint, than there should be; and 2. That of occasional insufficiently gradual transition from one shade of tint to another. Nevertheless, these defects need not militate against the production of attractive and good drawings, from the copies if, on imitating them, repetition of their faults be avoided by the use of judicious *ad libitum* due strength of outline and intermediate tintings, in parts which would be defective if depicted without such strength.

Likewise, by carefully imitating these sepia color copies two or three times, according to the directions given respecting them, the copyists may become sufficient masters of the artistic use of the brush to be qualified to proceed advantageously to the practice of water color painting, or of the superior branch of water color drawing requiring the employment of the whole range of water color pigments. On having attained this use of the brush (or such an use as will suffice to enable them to produce therewith even and graduated tint washings and specific touches, tolerably representative of distinctive tree foliage and general surface markings of all kinds), if they are desirous of studying water color painting, it is advisable to commence doing so at once.

To prosecute the study successfully, however, it is necessary for the student to acquire previously, through assiduous observation of Nature, a perfect experience or power: in the first place, of discriminating, as far as possible, what is the *actual or local color* of any surface he may fix his eye upon, and what is the *apparent color or hue* it displays; that is, whether the *actual color* is, for example, a particular kind of green and the *hue* any other kind of green, as a bluer or yellower green, or either partly, or else altogether, some other color,—and to do this, he must obtain a knowledge of the general influence that light and shadow, contrast, reflection and atmosphere, exercise upon local color, so as to become enabled, at all times, to estimate almost instantaneously what is the effect produced by the action of that influence: whilst, in the second place, he must acquire the power of matching the hues of local colors as closely and quickly as feasible on imitating them,—to do which he must learn beforehand, by experiment, what coloring effects water color pigments will produce when individually used, and when two or more are employed together, and when tint-washings of different colors and degrees of strength are placed one alongside of another.

Every hue either is a primary, a secondary, a tertiary, or a gray color, of one degree of intensity or another, and of one degree of tone or another.

Its degeee of intensity is, how far it is as dark as it can possibly be according as it is a red, a blue, or any other individual color. When a color is said to increase in intensity, it means that it approaches towards becoming as dark as it can become, under any circumstances, without losing its individuality as being a red, or whatever color it is; when it is said to decrease in intensity, it means that it approaches more

towards being as light as it can become, under any circumstances, without losing its individuality.

Its degree of tone is, how far it is as bright and as warm as it can possibly be. When a color is said to increase or become higher in tone, it means that it approaches more towards being as bright and warm as it can become, under any circumstances, according to its individuality as being red, green, or any other color; when it is said to decrease or become lower in tone, it means that it approaches more towards being as dull and cool as it can become, under any circumstances, according to its individuality.

The individuality of a color, then, is that which enables us to call it by a particular name instead of by any other name; and a color is said to neutralise, or its hue to tend to neutrality, when any circumstance tends to cause the hue to be of such a color as cannot be called by any other name than neutral.

The terms local color and hue, are often employed as expressive of the same thing; but this is an incorrect application of them, since hue is that color which is apparent to the eye whenever we look at any near or more distant colored surface, and which, at any time and under any circumstances, apparently emanates from a local color,—and as this emanation, through atmospheric influence, if not from other causes, must always be a tint, either altogether or else in some degree diverse from the tint of the local color, hue and local color, therefore, must be different things.

The actual color of a surface is termed *local color*, because a surface is a place or locality, and consequently the color covering it must be local color. Thus, when the color covering a surface, is all of one uniform red, then its local color is red; where it is here, for example, red, and there blue, then its local color is red where red covers it, and blue where blue covers it; and when the surface colour is various, as often is the case with regard to numerous kinds of surfaces, then, as many varieties of actual color as there are on the surface, so many local colors it possesses. For the least difference that exists between one surface-color and another, renders each in reality a different local color,—although it would be impossible to indicate clearly more than a few of the various local colors that are to be found in Nature.

To acquire the experience which it is requisite for the student to obtain to ensure the successful prosecution of the study of water-color painting, as well as for other useful purposes connected with the study, his attention to the following details of matters relative to local color, hues, etc., may be of assistance to him.

Firstly. Colors are considered to be either primitive colors or compound colors.

All kinds of actual reds, scarlets, crimsons, lakes, roseates, yellows and blues, are presumed to be primitive colors.

All other kinds of color are presumed to be compound colors.

Every primitive color is a simple one (or one not supposed to be mixed with any other color) and belongs to the class termed primary colors.

Every compound color, on the contrary, is a supposed mixture of two primitives, or else of the primitives, red, blue and yellow, in particular proportions; or, is presumed to have for its constituents, a certain mixture of colors, and hence to belong to one of three classes, termed secondary, tertiary and gray, as denoted in the ensuing table:—

Comp. col.	Constituents.	Class.	Comp. col.	Constituents.	Class.
Orange	Red and yellow	Secondary.	Citrine	Orange and green	Tertiary.
Green	Yellow and blue	Ditto.	Russet	Orange and purple	Ditto.
Purple	Red and blue	Ditto.	Olive	Purple and green	Ditto.

Violet, a presumed mixture of blue and crimson, in which blue may be supposed to predominate. Class, secondary.

Brown, a mixture of intense red, yellow and blue, in proportions varying in such a way as to produce different kinds of brown. The pigments termed brown, Vandyke brown, raw sienna, burnt sienna, raw umber, burnt umber, sepia and brown madder, represent the various kinds of browns, and there may be red browns, yellowish browns, citron browns, russet browns, olive browns, and green or bronze browns. Class, tertiary.

Gray is presumptively any secondary or tertiary having less than a medium intensity, or less than half the degree of darkness that it has when of its strongest intensity; it is also any such secondary or tertiary, which has, besides, presumptively a tinge of any

primary markedly apparent in its tint. Accordingly, a gray may be termed an orange gray, a green gray, a bluish russet gray, a reddish citrine gray, etc., relatively to its presumed constituents. Class, gray.

Gray, also, may be a neutral gray, or neutral tint; that is, a presumptive mixture of tints (of less than medium intensity) having a color which does not appear like either of the primaries, nor more like any one secondary or tertiary than another.

In describing colors, combinations of the names of different colors are often fittingly employed, as reddish brown, yellowish brown, purplish brown, yellowish green, bluish green, purplish green, etc., to denote those differences, existing between colors, which are not indicated by the names given in the above table. And as any color that requires the use of a name, so derived, must be a compound color; on having to invent a name for it, let the presumptive main constituent furnish the latter half of the compound color's name; thus, when red is the main constituent, and yellow appears to be slightly tinging or in conjunction with it, the compound should be termed a yellowish red, and so forth with respect to any main constituent and its conjoined foreign tinge.

When any particular color of a specific name, given in the above table of primary, secondary and tertiary colors, and of more than medium intensity, displays a very slight tinge of either of the other colors named in the table, but so slight as not to disentitle that particular one to be considered a color of that specific name, then it is termed a broken color. Thus, blue displaying a very slight tinging of red, yet so as not to appear to be like a positive purple or violet, is a broken blue; so that through slight tingings there may be broken reds, broken yellows, etc., according to the particular color tinged.

Secondly. Colors are often said to be warm or cool; that is, either to have a tendency to display a hue tone of lively cheerful brightness, or to manifest, on the contrary, one ranging between the absence of such brightness and the positively frigid.

Thus, if we look towards the sun, when setting with any brilliancy, the hues of all objects and the atmosphere surrounding them, which together are directly illuminated by its rays, will appear to be more or less warm toned; and where crimson, or orange coloured rays proceed from the luminary, proportionally to their intensity of color, the hues of local colors illuminated by those rays will display an amount of bright warm tone; whilst, if we turn our backs on the sun, and look in the direction opposite to it, on that which is not illuminated by it, and cannot, through position, reflect the color and light of its rays, then a strong sense of the coolness of tone that the hue of local colors can display will become felt by the eye.

Warmth or coolness of color, therefore, does not mean that some colors can never display a cool toned hue, and that others can never display a warm toned hue,—but simply that, under certain circumstances of light, contrast, reflection and atmosphere, the hue of any color may be a less bright and warmed toned hue than it would be under other circumstances—and even may be a brighter yet less warm toned one, or a warmer yet less bright toned one in one case than another.

Nevertheless, some hues are technically termed warm and some cool, relatively to their cheerful or reverse tendency.

Thus, reds, scarlets, crimsons, yellows, oranges, intense red, and orange browns, roseates, with red and orange grays (that is, grays which are presumptively composed of red, or orange, or both together, with a slight mixture of blue) are all considered to be warm toned in proportion to the *redness* of their tinge, to the degree of their intensity, and the extent to which they are brightly illuminated; whilst they manifest a tendency to coolness of tone, according as they become more and more shaded or neutralized.

Blues, purples, green, and all other colors not indicated above, are never considered to be more than comparatively warm toned, and only to be so in proportion to the degree of their intensity and to which they are brightly illuminated. But of these hues, citrons, russets, reddish and yellowish greens, roseate lilacs, and the brightest class of browns and grays, which are neither mainly purplish nor blue greenish, are the warmest toned, and blue and green the coolest toned—the blue more so than the green. And when either of them is seen under the influence of shadow, it is considered to be an absolutely cool toned hue.

Hence, if hues, entitled to be termed warm toned, appear to be diffused more widely over a scene in Nature than cool toned hues are, the scene should be considered to display a *general warm toned hue* of color; and if it is to be represented, it should be

depicted accordingly. If cool toned hues appear to be more widely diffused than warm toned hues, the scene should be considered to display a *general cool toned hue*, and should be depicted accordingly.

Thirdly. Intimately connected with the tendency of colors to create beautiful results and gratifying impressions, is the fact that colors produce accidental tints as they are termed.

Thus, in the words of Sir David Brewster, "when the eye has been strongly impressed with any particular species of colored light, and when in this state it looks at a sheet of white paper, the paper does not appear to it white, or of the color with which the eye was impressed, but of a different color, which is said to be the *accidental color* of the color with which the eye was impressed. If we place, for example, a bright *red* wafer upon a sheet of white paper, and fix the eye steadily upon a mark in the centre of it; then, if we turn the eye upon the white paper, we shall perceive a circular spot of *bluish green* light, of the same size as the wafer. This color, which is called the accidental color of red, will fade away.

"The bluish green image of the wafer is called an *ocular spectrum*, because it is impressed on the eye, and may be carried about with it for a short time.

"If we make the preceding experiment with differently colored wafers, we shall obtain *ocular spectra*, whose colors vary with the color of the wafer employed, as in the following table:—

Color of Wafer.	Accidental Color.	Color of Wafer.	Accidental Color.
Red	Bluish green.	Indigo	Orange yellow.
Orange	Blue.	Violet	Yellow green.
Yellow	Indigo.	Black	White.
Green	Violet red.	White	Black.
Blue	Orange red.		

"Hence the law of accidental colors derived from observation, may be thus stated. The accidental color of any color, in a *prismatic spectrum*, is that color which, in the same spectrum, is distant from the first color half the length of the spectrum; or, if we arrange all the colors of any prismatic spectrum in a circle, in their due proportions, the accidental color of any particular color will be the color exactly opposite that particular color, hence the two colors have been called *opposite* colors."

"If the primitive color, or that which impresses the eye (that is, the color of the wafer) is reduced to the same degree of intensity as the accidental color, we shall find that the one is the complement of the other, or what the other wants to make it white light; that is, the color of the wafer and accidental color will, when reduced to the same degree of intensity which they have in *the spectrum*, and when mixed together, make white light. On this account, accidental colors have been called *complementary colors*.

"With the aid of these facts, the theory of accidental colors will be readily understood. When the eye has been for some time fixed on the *red* wafer, the part of the retina occupied by the red image is strongly excited, or, as it were, deadened by its continued action. The sensibility to red light will, therefore, be diminished, and consequently, when the eye is turned from the *red* wafer to the white paper, the deadened portion of the retina will be insensible to the red rays which form part of the white light proceeding from the paper, and consequently will see the paper of that color which arises from all the rays in the white light of the paper but the red; that is, of *bluish green* color, which is therefore the true complementary color of the red wafer."

The color termed indigo in the above table is a purplish blue; violet reddish is red with a tinge of violet tendency; orange red, is a rather reddish than yellowish orange. Whilst ordinarily, for general purposes, colors and their accidental or complementary tints are considered to run thus:—

Color.	Accidental Tint.	Color.	Accidental Tint.
Red	Green.	Green	Red.
Yellow	Purple.	Purple	Yellow.
Blue	Orange.	Orange	Blue.
Citron	Intense Purple.	Intense Purple	Citron.
Russet	Intense green.	Intense Green	Russet.
Olive	Intense orange.	Intense Orange	Olive.

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It is extremely useful to understand the theory of accidental tints, as a knowledge of it assists the artist to form a quick and correct conception of the exact character of the hues which local colors display.

To explain what is meant by a "prismatic spectrum," alluded to above; it is an artificial arrangement of colors, in which *pure red* is followed by red running into yellow, followed by *pure yellow*, followed by yellow running into blue, followed by *pure blue*, followed by blue running into the red first named—but leaving an interval of pure red between the red and blue, and the red and yellow following the pure red.

Fourthly. The actual tint, of any local color not very deeply obscured by shadow, may generally be discriminated or correctly inferred by the duly experienced artist, when the color is not very distant from the eye. And when an artist is about to represent a local color, it is of the highest importance that he should have the power to ascertain its actual tint, and endeavour to do so; because, in the first place, it is the color's actual tint as affected by light, shadow, contrast, reflection, and atmosphere, which produces the hue it displays whilst he is looking at it,—and, therefore, to know its actual tint will assist him in forming a correct conception of its hue; and because, in the second place, it is the *hue* alone, which the color displays, that he should depict.

The degree, to which the hue will bear a resemblance to the actual tint of a local color, will depend on the amount of influence that light, shadow, contrast, reflection and atmosphere exercise upon the local color.

But as this influence is very complex in its action, and produces a great variety of results, it is not possible to describe clearly the hues which local colors, through its operation, will display. The student, therefore, must study out this matter for himself by observing Nature constantly and closely—taking these few words, and those which follow on the subject, as mere hints relatively to what, amongst other things, he should devote his attention in the practice of water color painting from Nature.

Fifthly. Hues have a dependance on light, because light, according to its brilliancy and when illuminating a local color, renders its hue proportionally bright and distinct: also, because, according as it is a colored light of some kind or another, it will render the hue of the local color proportionally less like the actual tint of the local color.

The influence of light, when uniformly spread over a scene, however, as a rule, operates with decreasing force as distance increases: and beyond about two or three miles, unless the atmosphere be excessively clear and thin, merely tends to cause all local colors, relatively to their actual tints, to neutralize, or display hues of a lightish gray description; that is, hues becoming more indistinct in tint and tone as distance increases, and, in cases of extreme distance, so perfectly indistinct as to be representable according to circumstances by one or two uniform mixtures of pigments, roseate, orangish, orange-purplish, purplish, or perfectly neutral in coloring character, and used a little darker, on a painting's distance portion, in one place than another, as requisite to render the representation of distant objects sufficiently distinctive and characteristic.

When light is not uniformly spread over a scene (as it will not be, unless the day be either a sunless or a sunny cloudless one, and the atmosphere clear), then the light illuminating the scene will be a sun light that may act more powerfully on the distance than the middle distance and foreground of the scene, or otherwise variably, as it will be a fitful light. Hence, also, concentrations of light may ensue, and therefrom strong contrasts of light and shadow, which may cause local colors to display very bright distinct hues, where otherwise they would not.

Thus through this circumstance, it is possible at times to see very bright and distinct, but soft, red, blue, green, or any other tinted hues in extreme distances, and more especially, therefore, so in middle distances.

From the rising or setting sun a colored light, will sometimes emanate, causing the hues of a local color illuminated by the light, either to display mainly or in some lesser degree a tint bearing a similarity to that of the colored light, or else bearing some considerable dissimilitude to the local color's actual tint.

Sixthly. Hues have a dependance on shadow, because it tends to darken, and therefore neutralize the actual tints of local colors, and thus to render their hues dark and neutral hues.

Hence, in proportion as a local color becomes the more darkly shadowed, and is situated near to some large mass of brightly illuminated surface, its hue becomes the more intensely neutral in tendency, and the less like the local color's actual tint.

Thus, as a secondary or cast shadow, when it adjoins the primary-shadowed surface casting it, is always more intense than the primary shadow on that surface (see page 11), the hue of the local color underlying the secondary or cast shadow is always more intensely and perfectly neutral in tendency than is the hue of the color underlying the primary shadow.

The hues, of local colors which appear to be shadowed to more than a medium degree but yet not quite so deeply as they might be—without being blackly shaded,—will tend to be of one or other of the following tints, according to local color or other circumstances: namely, cool brown of some kind or other, cool russet, citron, olive, purple, violet or neutral hues—intense and distinctive in proportion as nearness to the eye increases, and occasionally showing, in the same proportion, some resemblance to the actual tints from which they emanate.

Hence, also, if a local color has the darkest possible shadow upon it—as that has which exists in the remotest parts of what appear to be holes, cavities and indentations, through which light cannot penetrate—then its hue will be almost perfectly black within a few yards of the eye; and a proportionally intense neutral tint beyond that distance—that is, a tint which diminishes in intensity as gradually as distance from the eye increases.

Yet when a large mass of shadow or shadedness of less than a medium intensity exists on the side of a street, of a house, on trees, fields or other parts of a scene,—then the hue of any local color, situated within the mass and subject to the influence of the shadow, may bear a strong resemblance to the local color's actual tint—but it will be, as a rule, a less bright and warm toned hue than it would be if not seen under the influence of shadow.

And where minute illuminated and shadowed particles of local color may be said to mingle over a surface,—as in cases of fields of grass, etc., of the foliage of trees, the rough indented surfaces of walls and roadways, and so forth,—then the hue of the surface color will appear bright rather than dull, yet not so bright as it would do if its brightness were altogether the result of the influence of light alone.

Consequently, also, unless a mass of tree or trees appears to have a decided light concentrated upon a particular part of it, the hues of those which are the lightest portions of the tree mass will tend to blend into the hues of its shaded portions without striking suddenness of transition; and where the tree mass is very distant, the one set of hues will hardly be perceptible from the other.

Seventhly. Hues have a dependance on contrast of colors in Nature; because it serves to impart a degree of distinctness yet assimilation, diversity yet harmony, to the hues of colors, that they would not otherwise display, and which materially tends to increase their general variety, concord and beauty.

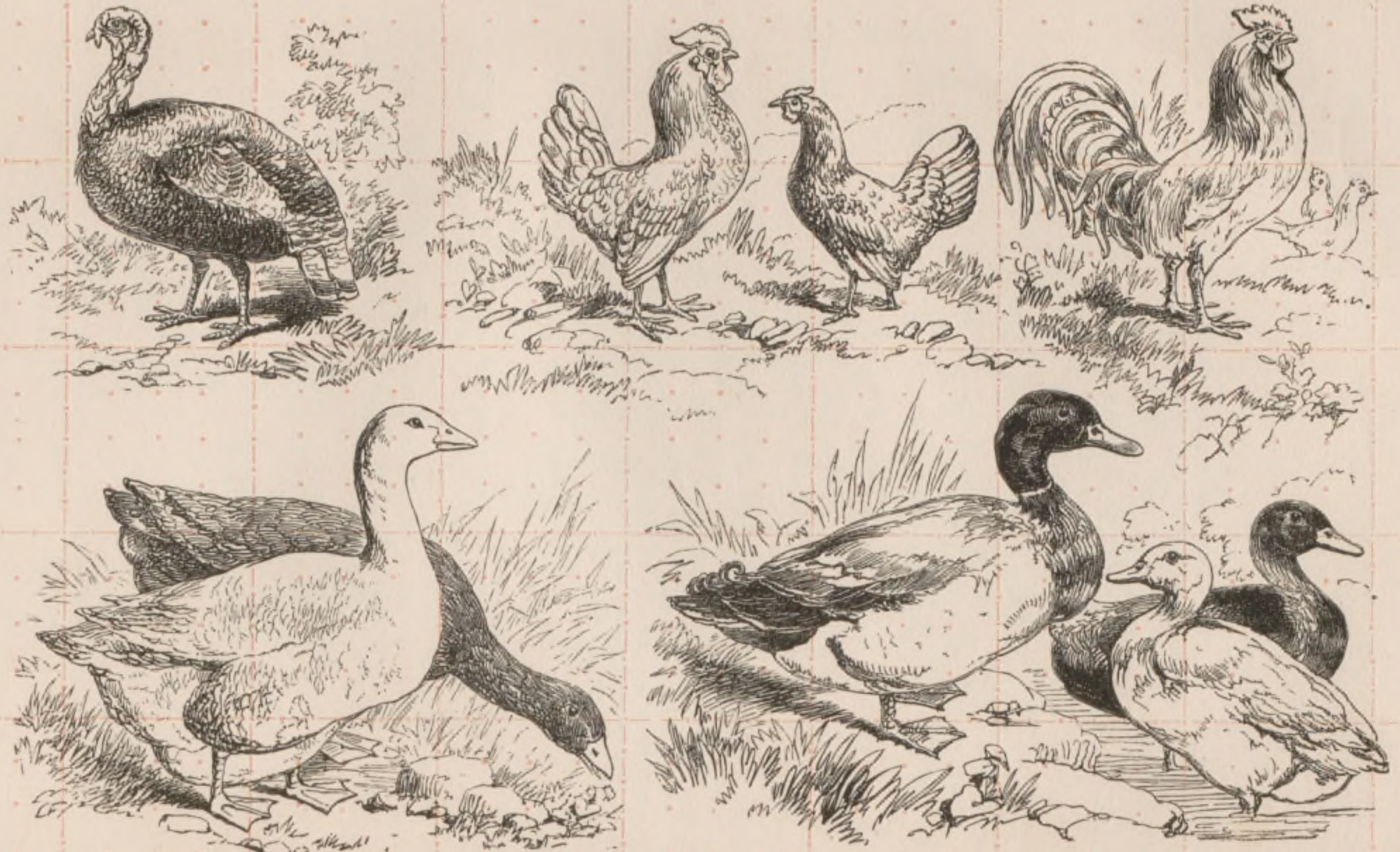
Its influence operates in different ways.

Thus, when two adjoining colors possess the same property in different degrees,—so that the one is less bright or anything else than the other,—then the richer gains and the poorer loses by the contrast that will ensue from their juxta-position. That is, for example, the brighter gains brightness and the less bright loses brightness, and so forth with respect to the difference existing between any of their resembling properties,—hence the hue of a color may acquire variableness, or not always be the same in tint.

Also, when two local colors adjoin each other, and the *accidental tint* of the one exactly corresponds with the *actual tint* of the other, and both are illuminated (as, for instance, when illuminated red and green adjoin) then the hue of each will appear of a brighter and more distinct character, and harmonise more perfectly together, than they would if the accidental tint of the one were not to closely resemble the actual tint of the other. (See table of accidental tints, page 70).

Again, according to what is the actual tint of one color that adjoins another, so is the other's tendency to display its accidental tint as forcibly as it can display it, or to have its own accidental tint forced into an influence on its own hue.

Thus white forces out accidental tint more than red; red more than orange; orange than yellow; yellow than green; green than blue; blue than purple. And though this influence of contrast can only produce almost imperceptible results, still it is of importance as a means of promoting the general diversity, harmony and beauty of hue that local colors display throughout every scene of Nature, and therefore worthy of attention.



A further consequence of contrast may be to diversify and harmonize hues, when juxta-positions and contrasts occur, such as are ensuingly indicated, and whence the following tendencies may arise, namely, a tendency, through juxta-position, on the part of—

Red to render Orange, yellowish.
" " Yellow, whitish.
" " Green, pure green.
" " Blue, blackish.
" " Purple, olivish.
Yellow to render Orange, reddish.
" " Green, bluish.
" " Blue, greenish.
" " Purple, pure purple.
Blue to render Orange, pure orange.
" " Green, yellowish.
" " Purple, reddish.
Orange to render Green, olivish.
" " Purple, bluish.
Green to render Purple, crimsonish.

Orange to render Red, yellow brownish.
Yellow " " vermillionish.
Green " " scarletish.
Blue " " crimsonish.
Purple " " roseateish.
Orange to render Yellow, lemonish.
Green " " orangeish.
Blue " " redish.
Purple " " pure yellow.
Orange to render Blue, pure blue.
Green " " purplish.
Purple " " violetish.
Green to render Orange, scarletish.
Purple " " citronish.
Purple to render Green, blackish.

Other juxta-positions producing contrasts, may lead to other modifications of hue; though they but remotely modify hues—yet as they do modify them, and aid in increasing their attractiveness, the student should not proceed in total disregard of their existence when he is endeavouring to represent Nature.

Eighthly. Hues have a dependance on reflection, because, when two colors face each other, and nothing intervenes between them, then one color will sometimes reflect the other, and thus modifications of hue will arise from the mingling, as it were, of their two tints and according to the color of them.

Thus, if red reflects blue, a tinge of purple may become manifest in the hue of the red; and so forth relatively to the colors reflecting and reflected.

By employing pieces of red, yellow, orange, blue, green, and purple glass, and various strips of paper respectively differing from each other in color, a great deal of useful and easily attainable instruction may be gained,—on placing them in the sun, and holding first one piece then another of the glass, first over one strip of the colored paper and then over another, so as to create all kinds of reflection of color for experimental purposes; and this proceeding will prove more especially available if the endeavour be made, at the time, to imitate the effects resulting from the reflections produced in the course of the process.

"The force of reflection is most evident on the shaded sides of objects: cast shadows, however, are but little, if at all, altered by it, except in the open air, where, in general, they are affected by the cool colors of the sky."—HARDING.

The color of water, also, is always greatly influenced by reflection of the color of the sky.

The high authority just quoted, likewise considers that the hue of the shaded side of an object depends, amongst other things, both on the color of the object itself and on the color of that which casts the reflection,—it can only do so, however, provided that the reflection is not at all deeply shadowed.

Ninthly. Hues have a dependence on atmosphere; through its creating a tendency to neutralization of local color—a tendency that operates increasingly as the amount of atmosphere between the eye and local colors increases in quantity or density.

Hence, it is only when a local color is an unshadowed one, uninfluenced by contrast and reflection, and seen very near to the eye through a clear atmosphere, that the hue bears a close resemblance to the actual tint of the local color in intensity and otherwise.

For, if the local color were to be removed from the eye, so as to cause an increase of the quantity of atmosphere between it and the eye, the further it were removed, without an absolute increase of light or shadowing upon it, the less close resemblance in intensity and tint would exist between the hue and the actual tint of the local color.

In a scene, viewed through a thick, misty or hazy atmosphere, the hue of every local color belonging to it, beyond a certain distance from the eye (in some cases not more than a few yards, and in others not more than a hundred or two), is only a more or less intense gray of some description or other (according to circumstances and the actual tint of the local color), or else a neutral tint. This may frequently be observed in the early

morning, at eventide, and also during the autumnal and wintry days: and when the atmosphere is merely hazy, a result of its influence is the production oftentimes of a most enchanting all-pervading hue, composed principally of but a few beautiful grays of varying intensities.

Atmosphere softens the edges of everything and causes hues, therefore, to tend to blend into each other to the prevention of the appearance of abrupt transition from one hue into another, especially as distance increases.

Consequently, beyond a short distance from the eye there is rarely any apparent decidedly abrupt transition from one hue to another, or harshness of edge displayed by hues; for there every hue generally manifests, at its edging, a strikingly graduating tendency to blend into its neighbour hue through this atmospheric softening influence.

Thus, on a clear day, observe a green hued tree which is close at hand, and other green hued ones that are situated at different considerably further distances from the eye,—for then, if the tops of all of them relieve against a blue sky, it will be strongly obvious that the hue, of either of these trees which is more distant from the eye than another of them, has, in proportion to that greater distance, a softer edging than the hue of the other has.

To acquire, however, a perfect knowledge of the extent to which hue depends upon atmospheric and other influences, every variety of scenery should be viewed, if possible, and studied during different states of the atmosphere and times of the day: whilst the right pursuit of it will be attended by a constant succession of gratifying surprises—so varied, unexpected, and beautiful are the phenomena of hue which will be met with during the process. Besides which the student, with reference to this matter, should zealously resort to Nature to ensure the easiest acquirement of truth and experience,—for she is the only safe teacher, and almost inspires with knowledge those who perseveringly refer to her for instruction.

Tenthly. Through the combined results of the influence of contrast, reflection, and atmosphere, every scene in Nature displays an invariable all-pervading harmony of color, or such a general effect that, whether warm or cold hues either predominate or not in the scene, still an assimilating tendency, one with another, of all the hues in the scene, and, as stated in Ninthly, a merging tendency of one hue into another, will present itself to the eye, and together completely preclude the possibility of an appearance of unpleasing harsh suddenness of transition from one hue to another,—or, as it may be, for example, from any red to any blue,—or from any one hue of the scene to any adjoining or more distant hue.

This harmony, however, as a matter of taste and perfect beauty, may be less agreeable to the eye in one instance than another; but it is in every scene an important feature as a main element of the cause why color, as displayed by Nature, never fails to produce a general effect calculated to gratify the truly artistic eye; and, for this reason, a feature always worthy the student's attentive study for the increase of his practical experience.

Likewise, it may not be possible at all times to represent this harmony, on account of the apparently incongruous character of some of its constituents, or the difficulty of finding materials to depict it. Nevertheless, rather than always avoid endeavouring to represent it when seeming incongruity of constituents exists, the artist should task his skill occasionally then to imitate it, as often, by essaying to accomplish that which is apparently impossible, though we may not succeed in our efforts, yet thereby we learn to do more than we have previously considered ourselves able to achieve.

The possession of the power of perfectly discriminating the extent of the influence which contrast, reflection, and atmosphere, and also light and shadow, exercise upon local colors and their hues, manifests the possession of that necessary attribute of a good artist, termed a sensitive eye, that is, of an eye strongly sensitive to color, or capable of discerning all peculiarities of hues, as regards individuality, intensity, tone, and general harmony, arising from any circumstance connected with, and calculated to affect, their appearances.

To render the eye sensitive to color, the closest and most persevering study of Nature, of course, is requisite; and not only is such study most necessary to qualify us to become artistic painters of Nature, but also to enable us to enjoy Nature thoroughly at all times and seasons. For many a landscape or scene in Nature may be of such an ordinary description, that its aspect can produce us barely any pleasure, if we are merely able to regard it as an association of certain uninteresting objects, having a particular disposition

or relationship of place to each other; but if, through possessing a good eye for color, we can, as we may often, discern in such a scene, hues and tones of great variety, beauty, and general harmony—here displaying a striking mass of richness, there a brilliant tint, elsewhere, in the distance perchance, delicate hues melting one into another as though the atmosphere surrounding the remoter objects of the scene, with their surfaces, were tinged with tender purples and grays and kindred hues of a magical loveliness,—then, however tame the object features of the scene may be, as regards form, still the scene may furnish a delightful picture, charming the eye through a beautiful combination of color, just as the most ordinary instruments may produce music charming the ear through a beautiful combination of melodiously associated notes.

Lastly. The student need not be discouraged by the foregoing remarks, as seemingly indicating that he has so much to study and attend to, and so many complicated results of diverse influences to imitate, that he can hardly hope, unless gifted with superior genius, to achieve an appreciable degree of proficiency in the practice of water-color painting from Nature, for she has greatly simplified his task by rendering her features and attractions, as respects color, largely dependent on the *assimilation of hues* arising from the sources of harmony.

Hence, on a preliminary careful inspection of any scene, he may intend to depict in color from Nature, he will find,—excepting with regard to foregrounds and distances immediately neighbouring them, and cases of exceeding brilliancy of light displaying itself on the distances beyond,—that, with these exceptions, all which ordinarily he will be required to represent in the main will be a few more or less widely spread grayish hues, roseatish, or orangish, citronish, russetish, purplish, violetish, or neutral in character.

Assimilation of hues, then it should be remembered in sketching from Nature, always prevents a scene from appearing *to be dotted over with small spots of strong dark, or intensely bright color* in any of those parts of the scene entitled to be considered as distance.

In the foregrounds of scenes, and adjoining parts, spots and larger sized masses of strong dark, or intensely bright *hues* of all kinds, and more or less pure red, or blue, green, yellow, etc., may be, and usually are, observable: and when visible should be represented faithfully, as the perfect representations of such *hues* will serve to impart graphic delineation, force, variety, general contrast, beauty of tone, and harmony to the picture, if those representations are not made to strike the eye more obtrusively than warranted by due attention to the unvarying color-harmonizing laws of Nature.

To promote the speedy progress of students, the following description of water-color pigments, and of their uses when employed in water-color painting, may prove serviceable.

When a water-color pigment is of such a character as to admit of any hue showing in a clear modified form through a wash or tinting of the pigment, then it is considered to be a comparatively transparent pigment; thus gamboge is so considered, for if we lay a wash or tinting of it over a blue, the latter will show through the wash so far as to appear in the clear modified form of green. A pigment is considered to be comparatively opaque when, as in the case of vermilion, no hue underlying a wash of it will show through the wash in a clear modified form.

How far any particular pigment is transparent or otherwise the student should ascertain by experiment, as it may be easily and quickly discovered, and a thus acquired knowledge of this matter will tend greatly to facilitate his progress in water-color painting.

The pigments which students will require chiefly, and some of their principal characteristics, are as follows:—

French blue, an excellent refined blue suitable for sky tinting, and when mixed with certain diverse hued pigments very serviceable for the production of various kinds of green, gray, etc.

Cobalt, a less powerful blue than French blue, but similarly serviceable.

Prussian blue, a rich deep transparent blue, very slightly greenish hued, and particularly useful for the production of bright greens.

Indigo, a more powerful though not so bright or transparent a blue as Prussian blue, but very serviceable for forming neutral and black tints, yet liable if too much employed to engender blackness, coolness, or heaviness.

Vermilion, a rich or powerful red, very opaque, and more or less scarlet in hue, but not suitable for the production in general of grays, or purples, or very often required for any purposes by the landscape painter.

Indian red, a very useful transparent red, which does not fade; clear and light roseate tintings may be produced from it, when used alone; also excellent purplish tints, and tints for deeply shadowed hills and stormy skies, may be made from it when mixed with indigo or Prussian blue. It may, however, create heaviness in distances, if employed therein very considerably.

Light red and Venetian red, produce beautiful purplish grays, when used with French blue, or cobalt, and such, as may be employed with advantage for the shade tintings of clouds and distances.

Rose madder, produces a permanent and beautiful tint, less powerful than carmine tintings, but more roseate and pure. Mixed with a little indigo, it forms a useful gray; and used alone, it is valuable in the representation of flesh, flowers, and roseate sky hues.

Crimson lake, a transparent substitute for rose madder, and more powerful than it, but not so permanent, unless used thickly.

Yellow ochre, slightly opaque, and useful for forming quiet greens for middle and extreme distances. Roman ochre is a rather richer yellow, and also very serviceable for distances.

Gamboge, a fine rich highly transparent yellow that may, however, be rendered more intense by mixture with Indian yellow, or less so by mixture with lemon yellow.

Indian yellow, a powerful transparent, golden-hued yellow, extremely serviceable for forming autumnal foliage tintings when it is mixed with brown madder, or burnt sienna.

Lemon yellow, a slight and delicate transparent yellow, that may be used in thin washes or tintings over other tintings to impart sunniness to them.

Orange chrome, a fine and useful orange, warmer, more transparent and more intense than yellow ochre.

Raw sienna, a cool transparent brownish yellow, useful in compounding browns and yellows.

Burnt sienna produces a rich orange red russet hue; highly suitable, often, for roadways, sand-banks, etc. By mixing it with yellow and indigo, fine green hues may be compounded with it, but principally for foregrounds.

Brown pink, a greenish orange brown, very serviceable for foreground foliage.

Brown madder, a russet hued pigment of the greatest utility; employed with blue, then, clear grays for skies,—and with indian yellow, or gamboge, rich autumnal foliage hues,—may be produced thereby.

Burnt umber, a transparent russet brown, warm, permanent and useful, in its effects.

Raw umber, a yellowish russet brown, rather opaque and cooler in its effects than burnt umber.

Vandyke brown, deep transparent and permanent; not so suitable for middle distance tintings as brown madder, but particularly useful for foreground work, draperies, and shadowings.

Sepia, a quiet neutral brown, highly serviceable in many ways.

Purple madder, a deep rich transparent and permanent purple; useful, in forming shadowing middle distance tintings, when employed with cobalt and French blue.

Chinese white, a useful white for producing strong lights, and for employing as explained in Page 63.

Ivory black, a rich and transparent black, which, used in thin washes, produces useful neutral grays, very effective occasionally when employed in representing clouds and distance. Blue black, lamp black, and Indian ink are also all serviceable blacks in their way.

For foregrounds, either of the above named pigments may be employed either singly, or in combination with any one or more of the others, according as required.

For middle and extreme distances, the pigments employed, should be, as a rule, more

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opaque in character than those used for foregrounds; whilst burnt sienna, Vandyke brown, Indian red, Indian yellow, and gamboge, should enter, but *rarely* into the composition of hues required for distances, unless a required effect cannot be produced without their presence.

To produce the largest and most important class of effective green hues, mixtures, composed of the following combinations, will be found serviceable, if properly compounded and employed.

COMBINATIONS.	RESULTS.
Indigo with sepia	a cool neutral, or blackish green.
„ „ Indian yellow and sepia	a fresh green often required.
„ „ brown pink	a dull citronish foreground green.
„ „ Vandyke brown	deep neutral foreground green.
„ „ raw sienna	a warmish green.
„ „ yellow ochre	a less warmish green.
„ „ Indian yellow, or gamboge	warm lively foreground green.
„ „ „ *and* Indian red	less warm and lively foreground green.
„ „ Venetian red or light red	fresh grayish green.
„ „ burnt sienna	dark warm foreground brownish green.
„ „ burnt umber	less „ „ „ „
Prussian blue with either of the above	brighter in each case.
„ „ „ lemon yellow	bright emerald green.
Cobalt or French blue with lemon yellow	emerald green.
„ „ „ „ Indian yellow	bright middle distance green.
„ „ „ „ raw sienna	less bright ditto.
„ „ „ „ yellow ochre	cool grayish distance green.
„ „ „ „ Vandyke brown	foreground neutral green.
„ „ „ „ gamboge & a little indigo	good russet green.
„ „ „ „ raw sienna „ „	a more sober russet green.
Indian yellow with black	bright distance greenish hue.
„ „ „ „ and sepia	intense solid „ „

A very little crimson or other lake mixed with some of the above combinations will produce purple greenish hues; while, according as blue predominates in any green mixture, the hue of the mixture will be cool and the less lively in proportion,—according as reddish or orangeish constituents predominate, the hue of the mixture will be warm, lively and resemble autumnal foliage hues.

The following mixtures either produce often required citronish hues; that is, reddish, orangeish, yellowish, or brownish, *broken green* hues; or else russetish, that is, more reddish, yellowish, or brownish, and less greenish hues, than citronish hues are.

Firstly, mixtures composed of a *medium* dilution of Prussian blue, or indigo,—or of French blue or cobalt *slightly* darkened by Prussian blue, or indigo,—combined:—

COMBINATIONS.	RESULTS.
With In. yel., or gamboge, or raw sienna, or yel. ochre	orangeish, or yellowish citrine,
„ Brown pink	dark brownish citrine.
„ Sepia, and any of the foregoing as well	dark neutral citrine.
„ Burnt sienna	darkish russet warm.
„ In. yellow, or gamboge and brown madder	„ „ less warm.
„ Yellow ochre „ „	„ „ still cooler.

Secondly, mixtures composed of sepia combined with In. yellow, or gamboge, or raw sienna, produce rich warm orangeish or brownish russet hues, inclining very remotely to a broken green; and sepia with brown pink produces a cool, dark, subdued, brownish russet, inclining remotely to a broken green.

Thirdly, sepia with brown madder and In. yellow, or with burnt sienna, produces a rich reddish brown russet, the latter combination especially.

The redder, or more red brownish either of the above-named mixtures is rendered, the more it will incline to a warm russet, and the less to a citronish hue; the bluer and less reddish, brownish, orangeish, or yellowish it is rendered, the more it will incline to a col dark olive hue, and be adapted for dark or neutral hued shadowings; whilst all those mixtures will be adapted for foregrounds and adjoining middle distances.

Brown pink	employed	alone,	produces	a pure citrine hue.
Indian red	„	„	„	a purple russet hue.
Burnt sienna	„	„	„	a rich orange red russet.
Brown madder	„	„	„	an intermediate russet hue.
Burnt umber	„	„	„	an orange brown russet hue.
Vandyke brown	„	„	„	a rich dark chestnut hue.

Autumnal foliage and other hues, all very powerful rich and warm, and suitable for foregrounds, may be produced out of—

Vermilion, with b. sienna, or b. umber, or r. sien., or yel. ochre.
Burnt sienna or burnt umber, with yellow ochre.
In. yel. or gamboge, with b. sienna, or b. umber. or r. sienna, or Ven. red.

Also out of intense b. sienna, or b. umber alone, and either of which, as well as either of the last-named combinations, produce a reddish, or orangeish or brownish hue.

Less rich hues of this class may be formed out of—

In. yellow, or gamboge with light red, or yel. ochre, or brown madder.
" " " brown pink, or Vandyke brown.
" " " crimson lake.
B. sienna, or b. umber " either of the above.

Darker foreground autumnal and other hues, may be compounded out of indigo, a lake and vandyke brown,—an extremely useful mixture for shadows, and forming a rich deep and coolish hue: likewise out of—

Pruss. blue or indigo, with brown pink and b. sienna, or b. umber.
" " " " In. yel. or gamboge.
" " " " Van. brown, or brown mad.
" " brown mad. and either of the above first five.
" " In. red " " " " "

Prussian blue, or cobalt, a lake and Vandyke brown.
Black with a lake and Indian yellow.
" " burnt sienna and Indian yellow.
" " Venetian red, or crimson lake.
" " Indian yellow or gamboge.

Purples may be compounded out of a blue combined with either In. red, or Ven. red, or brown madder, or purple madder, or a lake.

Useful and beautiful grays may be produced out of—

COMBINATIONS.					RESULTS.
Light F. blue, or cobalt, with				light red	aerial orange gray.
"	"	"	"	b. sienna	warm greenish gray.
"	"	"	"	b. umber	less warm ditto.
"	"	"	"	In. red	warm reddish gray.
"	"	"	"	brown mad.	" " "
"	"	"	"	Van. brown	cool neutral gray.
"	"	"	"	sepia	cool blackish gray.
"	"	"	"	lamp black	pure neutral gray.
"	"	"	"	yel. ochre	tender greenish gray.
The above blue, lake and r. sien. or yel. ochre					tender silvery gray.
"	"	yel. ochre and In. red or Ven. red			pure warm ditto.

Darker and cooler grays may be derived from the above combinations, if a light dilution of indigo be mixed with the French blue, or cobalt ingredient; and much darker and cooler, if the blue ingredient be simply a French blue, or cobalt of medium intensity.

Other grays may be composed out of dilutions, each of less than medium intensity of—

COMBINATIONS.					RESULTS.
Indigo, or Prussian blue with				light red	greenish gray.
"	"	"	"	Vandyke brown	rich greenish gray.
"	"	"	"	brown madder	purplish gray.
"	"	"	"	Indian red	" "
"	"	"	"	black	neutral cool gray.
"	"	"	"	sepia	neutral warm gray.
"	"	"	"	In. red and yel. ochre	warmish gray.
Black with Indian red					purple silvery gray.
"	"	Ven. or light red			warm silvery gray.
"	"	a lake			roseate silvery gray.
"	"	Yellow ochre			warm neutral gray.
"	"	sepia			neutral gray.

Black alone produces a neutral silvery gray; and a little crimson lake combined with any light blue dilution produces grays occasionally serviceable; whilst any kind of mixture when rendered very light with water produces a gray.

And, when a reddish, or orangeish, or yellowish ingredient in a gray predominates over

its bluish ingredient in the intensity with which it is used, then the gray becomes a proportionally warmish and reddish, orangeish, or yellowish gray. When the blue ingredient predominates over a gray's reddish, orangeish, or yellowish ingredient, then proportionately the gray becomes a cool purplish, bluish, or neutral gray.

But, with regard to grays, formed with a crimson lake ingredient an eminent master, of the present day, advises, that the use of them should be sparing for distances; as well as that the employment of positive purples, excepting to represent a purple hued object, should be avoided as much as possible.

Other masters, again, consider, that much indigo, Indian red, Indian yellow, or gamboge should not be employed in the representation of distances or skies, unless necessary on account of the peculiarity of effect to be represented; since indigo in distances tends to cause a picture to look black, and devoid of the effect of light, and the other pigments to cause it to appear devoid of atmospheric effect.

And it is as well to repeat here, that, as a general rule, the free use of vermilion, the siennas, burnt umber, and Vandyke brown, for any, but foreground purposes, is not advisable; and that for distance effects, the more opaque class of pigments is most serviceable, since dilutions of them are more *retiring* in character, or the less striking to the eye, when used, and therefore more *distance like*, than are dilutions of the highly transparent pigments.

On this latter point the authority above alluded to, Mr. Henry Warren, says as follows:—

"There is a quality of semi-opacity in most of the earth preparations which should recommend them. I say this advisedly, well knowing the natural predilection in favour of the more transparent colors; but I take this opportunity to notice a common error in regard to distance and atmosphere, when transparency is spoken of, as the perfection of their representation. Distance appears not as distance, *because*, it is transparent; on the contrary, it *is* so from the circumstance of a thin medium of *opaqueish* atmosphere floating between you and it; the further off, the more opaque the intervening medium, because, there is more of it to look through."

Again, light is accompanied by brightness, and ordinarily exercises a more powerful apparent influence, with regard to foregrounds, than distances; increase of atmosphere, or increase of distance is attended by increasingly diminishing brightness; and increase of absence of light, or increase of shadowedness also is so attended. Therefore, as the most transparent pigments produce more brightness of hue, or resemblance to the effects of light, than the more opaque ones, the former should principally be employed in representing bright foreground hues; and the latter, or more opaque ones, in representing distances and shadowedness.

To produce the blue required for skies, cobalt blue is most suitable. Sometimes, however, a delicate wash of French blue, over a wash of cobalt, imparts a desirable blueness to the latter; and occasionally, to lay a delicate wash of rose madder or crimson lake, where you are going to lay the cobalt, is serviceable. Cobalt, with madder brown, produces a beautiful tender gray hue for skies.

To produce sunset sky hues employ :

COMBINATIONS.		RESULTS.
Indian yellow, or gamboge with	vermilion	rich red orange.
" " " "	Venetian or light red	rich orange.
" " " "	lemon yellow	warm delicate yellow.
" " " "	rose madder	reddish-orangeish.
" " " "	brown madder	" "
" " " "	purple madder	purplish orange.
" " " "	Indian red	intermediate orange.
" " " "	light sepia	warm greenish orange.
The first five combinations	light Prussian blue	greenish orange.
Yellow ochre	brown madder	warm neutral orange.
Intense crimson lake	light Indian yellow or gamboge	orange crimson.
" " " "	" yellow ochre	cooler crimson.
" " " "	" brown madder	orangeish crimson.
" " " "	" vermilion	deep red crimson.
" " " "	" burnt sienna or Indian red	rich red crimson.

Also any one of the above list, employed alone, serves at times to produce brilliant, or effective sunset hues.

To produce sunset-cloud hues, of a purple character, employ the combinations which have been described as producing purple tints. To render the purple hues variable and darker, when required, employ French blue instead of cobalt, and indigo or black to render them very dark or almost neutral.

To produce the hues of the shadowed side of clouds, under any circumstances, employ as occasion requires:

Lamp black in thin dilution and alone; results cool.
" " " with indigo; " cool, darker, stormy, red.
" " " with sepia; " warmer.
Any blue with brown madder, or Indian red; results stormy and warm.
" " Venetian red or light red; " less stormy and warm.

For skies likewise employ, occasionally, cobalt and yellow ochre—result, delicate greenish blue; or rose madder and cobalt; but never employ indigo or Prussian blue with brown madder for sky hues.

The mixtures in the foregoing list are all such as can be recommended as well known serviceable ones. Necessarily, however, there are numerous other combinations of pigments which produce useful hues, and some of them having ingredients in them derived from pigments not named in the list, such as cadmium, mars orange, emerald green, etc.; but those hues are only required for the highly finished productions of the perfect artist. And should the student attempt to form a greater variety of hues than can be produced out of the combinations given in this work, he should endeavour to render those, as well as all others which he compounds, as clear looking as possible, or not dirty in appearance.

On mixing dilutions of pigments together, it will, of course, be found that, according to the intensity of the color of each dilution, will be the general character of the mixture's hue, as regards warmth or coolness, darkness or lightness, redness or blueness, yellowness or greenness, etc.

And as the best water-color pigments (which should always be employed in water-color painting if attainable) are rather expensive, those who wish to study water-color painting economically at first, may procure cheap tin cases of good pigments. These may be had containing—

							s.	*d.*		
6	whole	cakes,	or	6	pans	of moist pigments at	4	0	the	case.
8	"	"		"	"	" "	4	6	"	"
10	"	"		"	"	" "	5	0	"	"
12	"	"		"	"	" "	5	6	"	"
16	"	"		"	"	" "	6	6	"	"
18	"	"		"	"	" "	7	0	"	"
20	"	"		"	"	" "	8	0	"	"
22	"	"		"	"	" "	8	6	"	"
24	"	"		"	"	" "	9	6	"	"

Or the student may purchase half or quarter cakes of such pigments as he would like to possess.

Much most useful practice may be obtained out of the following cheap list of pigments, namely, lamp black, indigo, French blue or cobalt, crimson lake, light red or Venetian red, burnt sienna, Indian yellow or gamboge, and yellow ochre. Of these the lamp black, indigo, light red or Venetian red, burnt sienna, gamboge, and yellow ochre, will cost individually in whole cakes 1s. each, in half cakes 6d., and in quarter cakes 3d.: the crimson lake and Indian yellow, in whole cakes, 1s. 6d. each, in half cakes, 9d.: the cobalt, 2s. the whole cake, 1s. the half cake: and French blue, 3s. the whole cake, 1s. 6d. the half cake. Possibly quarter cakes of the last-named four may not be procurable; and there is this disadvantage attending the purchase of any but whole cakes of pigment, that the smaller cakes are the more wasteful purchase; still by careful provident use of the latter, they will serve to produce a large quantity of very improving practice.

When practising with the limited number of pigments just noticed, a most efficient substitute for sepia may be compounded out of them by mixing a dilution of the black with one from the burnt sienna; while a cool-toned substitute sepia may be produced by the predominance of the black, and a warm-toned one by the predominance of the burnt sienna. If the burnt sienna be made to predominate properly over the black, a substitute Vandyke brown of great use may be produced.

If gamboge be judiciously mixed with burnt sienna or light red, the mixture will serve as a substitute for Indian yellow; or if it be mixed with yellow ochre and considerably diluted, the mixture will serve for lemon yellow; if it be mixed with the Venetian or light red and a touch of burnt sienna, a substitute for a rich red orange may be formed. The further results to be derived from various mixtures composed out of the pigments which the student possesses, are matters that he should ascertain by experiment.

In fact, ere he employs the pigments for water-color painting, it would be well for him to stretch a large sheet of white drawing-paper on a board, according to the process described in page 59, and make a number of small tablets upon it (see Fig. 92), but about two inches square, and then to fill them with tintings obtained from pigment dilutions mixed so as to form varying intensities and kinds of hues. Having done this, and placed correct descriptions over the tintings of the means employed to produce them,—then he will find that he has formed for himself a most serviceable *color-metre*, to which he can refer with advantage at any time he may be desirous of speedily ascertaining what pigments will produce certain required hues.

Another such table of hues, that he may make with advantage to himself at his leisure, is one to be formed by the plan of tinting a tablet with a wash of a particular hue, as, for instance, of red, and then, when it is dry, laying another wash over it of another hue, as of blue, or green, or any other color. For by this process a set of hues will be produced, differing from those resulting from mixtures of various dilutions of pigments in one wash.

Thus, lay yellow over blue in one tablet, blue over yellow in another, and a wash of blue mixed with yellow in a third, employing in each instance the same intensities of blue and yellow pigments, and the three hues resulting from the proceding will be found to differ from each other very materially when compared together.

Hence hues may be varied almost *ad infinitum* without the use of more than eight or nine different hued pigments,—a most important fact, as lightening the artist's task, and aiding him in accomplishing it efficiently.

RULES OF PROCEDURE IN WATER COLOR-PAINTING.

1. To obtain as much brightness and purity of hue in a tinting as can be obtained, the tint solution, or wash employed for a tinting should be of the thinnest consistency that will suffice to produce its required hue. Also, in general, the tinting should be made of its proper hue at once, if possible,—that is, with one layer only of wash,—or if that be not possible, then it should be made with as few extra overlayings of wash as possible.

2. But more effectiveness of representation, as well as brightness, etc., of hue, especially as regards distance-grays, may be obtained at times otherwise than in accordance with Rule 1.; or, by making a tinting not quite of a required hue, and then tinging it up, when perfectly dry, to the required hue by means of one or more overlayings of suitable wash.

3. It is advisable not to employ more than three different pigments for any wash; for the greater the number employed therein the less will be the brightness and purity of hue resulting from the use of the wash; therefore it is advisable not to employ more than one pigment for a wash, if one will serve to render it suitable for its purposes.

4. On employing two or more different pigments for a wash, the dilution of each used therein should be kept free from sediment, as the presence of sediment in any component of a wash will cause it to create dirty streaks, spottiness, and unevenness in a tinting made therefrom.

5. A water-color painting, when being worked, should slope away from the body at about an angle of thirty or forty degrees; or even slope more when a wash is being laid upon it, that the wash may flow readily,—whilst, on so flowing, it will often spread accidentally in such a way as to serve the purposes of unstudied, yet pleasing and truthful effect, if proper advantage be taken of the circumstance.

6. The quantity of every description of wash, likely to be required for a mass of tinting, should be prepared in a separate receptacle before commencing to produce the mass.

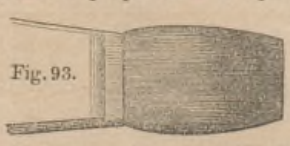


Fig. 93.

7. On employing a wash, for a large mass of any kind of tinting, use a large brush, such as a flat camel's hair brush, well filled with the wash (see Fig. 93, and the third paragraph, p. 60). But ere using the charged brush, the place over which it is to be passed to produce the tinting should

be slightly damped with a clean sponge and clear water, to facilitate the spreading of the contents of the brush. On having *somewhat* exhausted its contents, without having completed the mass of tinting, replenish it quickly, and continue the mass from its moist or moistened edges in the required direction.

8. To produce a tinting graduating from one hue into another, not only be careful to have the washes required to produce the hues ready beforehand, but also to work any one hue which is to adjoin another, from the moist or moistened edges of the latter, that the graduating places of the tinting may become indefinable, and its various hues melt insensibly one into another.

9. To produce a graduated tinting of one hue, varying from light to dark, or varying in intensity, commence with the darkest portion, and work gradually towards the lightest; and either employ, as you can best effect your purpose, various previously prepared requisite washes, or employ only the darkest requisite wash, and, when your brush is charged with it, judiciously take a little water into the brush from time to time, as you desire to obtain more and more lightness of hue.

10. On producing masses of sky tintings, the contents of the brush in some places may be often advantageously left in pools, which will dry into roundish and comparatively darkish forms; whilst, though the brush generally should be kept well charged with wash, sometimes its half or more exhausted contents should be worked over the places to be tinted, so as to lay over them only thin and light coatings of tinting: as by producing sky tintings thus, on proper occasions, an effective and natural-looking variety of hue, cloudiness, or other diversified appearance, may be portrayed.

11. The pleasing and frequent effect in Nature, of the blue or other hue of a sky breaking into white masses of hue, or of the hues of other places breaking into adjoining masses of hue, so as to produce diverse, small, connected, or detached forms, may be represented by dragging, as it were, a fittingly charged—almost dry—brush with a sharp jerking movement, at one point from the moist, at another from the dry edgings of a previously laid mass of tinting.

12. When a mass of tinting should appear to be distinctly varied, or stained, as it were, in a particular place with a definitely outlined increased intensity of hue, or a definitely outlined foreign hue, so to vary it, lay a fitting wash on the place when dry.

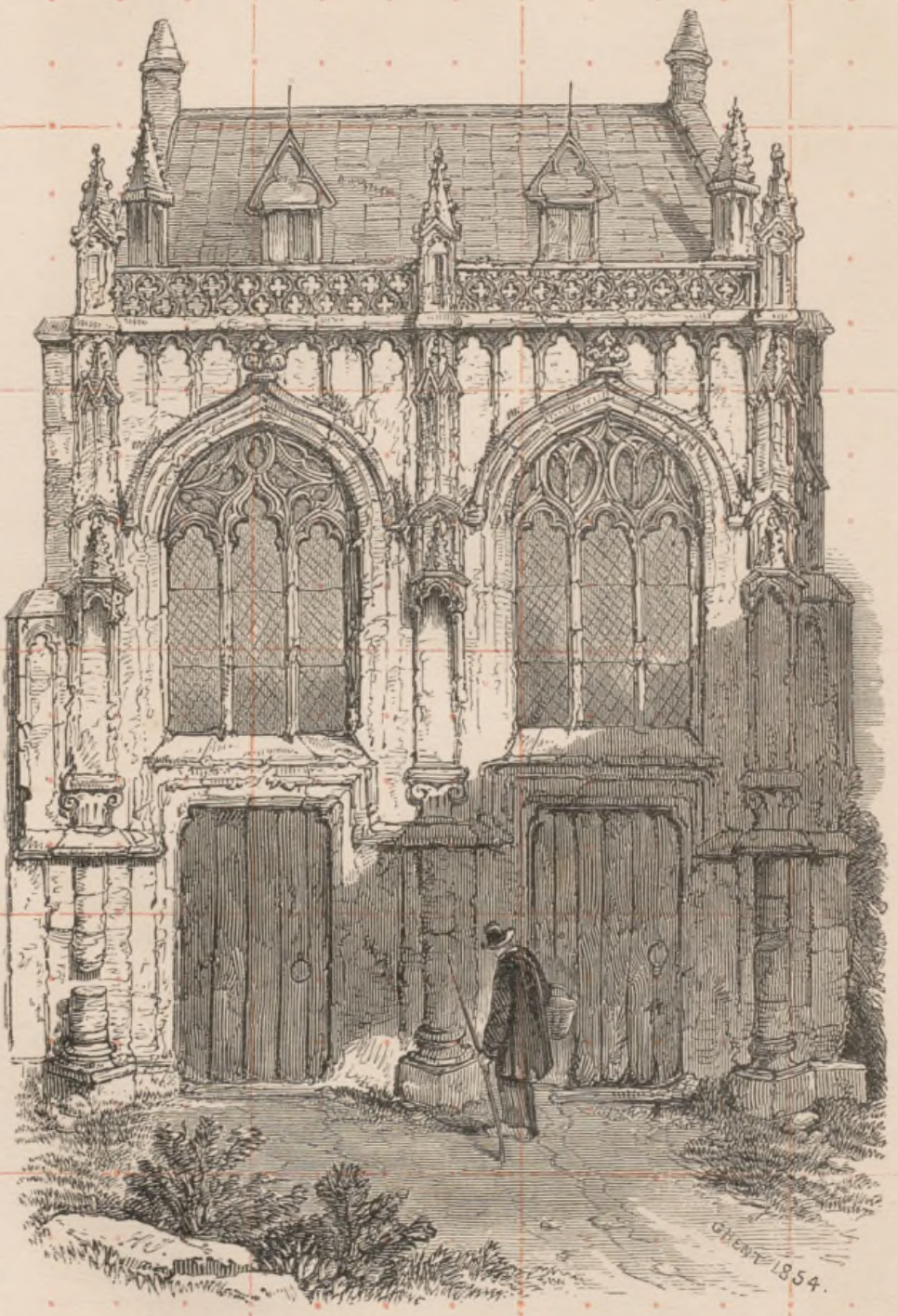
13. When a mass of tinting should represent a granulous, or dotty and specky appearance, it may often be made to do so by pressing it, whilst in a moist state, with a piece of clean white blotting paper.

14. A granulous appearance, also, may be represented by charging a brush with wash, either very moderately or in the slightest degree, and according to requirement, and by then dragging one of its sides over the surface, where the appearance is to be depicted, so that its central bulging part shall tinge with wash the projections only of the surface, and leave their interstices untinged.

15. On proceeding with the production of a water-color painting, it is advisable that all its requisite *foundation* masses of tinting should be worked in, as completely as they can be without the risk of erroneous procedure, before its requisite finishing touches are depicted on those tintings. Because, if they are worked in otherwise, or if each, on being produced, has finishing touches placed upon it, then, it is highly probable, more or darker touches may be so placed, than are necessary or suitable for the purposes of effectiveness of representation; and, therefore, it is also as probable that ultimately some of them will have to be taken out, or some to be reduced in intensity, to the detriment of brightness and purity of hue; or else that they will require labouring up to, or to be subdued into obscurity, by being contrasted with numerous neighbouring minute, or bold, or extra forcible touches, tending to render the picture overworked and heavy.

16. Whenever a required effect can be produced by means of a few touches of thin tint solution, instead of by means of more numerous touches of thick tint-solution, it should be so produced, as an unnecessary multiplicity of touches and thickness of tint-solution tends to militate against the perfect representation of air, light, and softness and distance, all of which every picture should represent to some extent or other, and perfectly.

17. Thicker solutions of tint should be employed in the representation of foregrounds than of backgrounds; and finishing touches, made by means of very thick solutions, should be laid sometimes on the parts of the foreground of a painting—here in expressive small touches, and there in blotches, assuming certain definite shapes, as of leaves, weeds, stone markings, roadway ruts, or otherwise representative of form.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18. A drag of the brush, moderately or very slightly charged with a tolerably thick and fitting tint-solution, often will produce a striking representation of the roughness of stone, of a roadway, and of the granulous surface of a sandbank, without labour, and better than laboured work can produce it; usually, however, some of the markings resulting from the drag will require additional finishing-touches to shape them into suitable representations of one kind or other—as into the representation of a particular kind of stone, or rut, or bark of a tree, and so forth. The place where the drag is made should be dry, and the drag frequently should be made to produce very decided dark markings.

19. Also, to produce on a dry previously-laid foreground tinting the representation of the granulousness of stones, roadways, gravel, sand-banks, and so forth, wrap a piece of clean linen or silk round one of the fingers, then dip it into clean water, and rub the finger over the tinting until the required granulousness is sufficiently produced.

20. Should the whole or part of a tinting, on adding finishing touches to it, or at any other time, appear too dark, or not quite of a proper hue, and therefore require to be reduced in intensity, or to be almost effaced, for the purpose of changing its character, then the tinting should be gently washed over with a clean sponge and clear water until sufficiently subdued or effaced. See pages 60 and 63.

21. When a brilliant light or white spot is required on finishing up a picture, and the place it should occupy has been tinted over, lay a little water on the place until it has softened its tinting, and then absorb its moisture into a piece of clean white blotting paper, and afterwards gently rub the place, ere it is dry, with a piece of clean linen, or silk, until it has become as white as required—unless to render it so will thin the paper under the place so considerably as to make it liable to crack: for in that case it should be whitened as much as it can be safely by rubbing, and then be rendered sufficiently white by the application of Chinese white.

22. Sometimes a light or white spot, when required in a particular place to be very sharp and decided in form, should be produced by cutting a hole into a piece of cardboard, or thick paper, of the required form of the spot, and by then placing the hole over the moistened place and rubbing the place delicately with a piece of clean India-rubber. Tintings that will efface the least readily by any process, are those composed of a blue pigment, especially if it be indigo or Prussian blue, and those composed of reds.

23. On having produced in places too much granulousness of appearance in any way, or too large white or light places, and when requiring on the first account increased evenness of tinting, or on the second to reduce the size of white or light places, either end may be obtained by means of stippling the place with a fine-pointed brush, or crow-quill, according to the directions given in the last paragraph but one, p. 60. And sometimes a mass of tinting may be effectively varied by stippling it over in suitable places with dots of a tint solution producing a different hue from that of the mass of tinting.

24. On making finishing touches to represent foliage, they should merely imitate the general appearance of its leaves as regards their being long or short, round or pointed leaves, their general hue in mass, and their general direction as respects its being a horizontal, pendant, or upward one, unless the foliage is to be represented as standing so close to the eye that all the characteristics of form and hue belonging to its leaves individually strike the eye in a marked manner whilst gazing upon the foliage; whilst the true shape of leaves should be more perfectly depicted on the edges of tree-representations and of their masses of foliage which are to appear illuminated than on the interior darkest parts of the representation.

25. On depicting very near fore-ground masses of weed-foliage, belonging to a scene, every characteristic thereof should be imitated faithfully, which naturally would strike the eye on viewing the scene.

26. On making finishing touches, as occasion seems to require use the point, or the side of the brush, in any direction; also, at one time with a quick jerky movement, at another with a slower movement; and let the brush be a tolerably large one, which, with equal facility, will both make a point, and spread out evenly and fan-like.

27. To produce a finishing touch, instead of employing a tint-solution obtained from a dry cake of pigment; it will save time usually, and be better to wet your brush suitably, and abstract, with its point, the required tinting material from a moist pigment, if you possess the right kind of moist pigment.

28. To ensure rendering your work, when requisite, pure and bright in hue, keep

your pigments clean; also, employ clear water and a clean brush for every tint-solution which you wish to preserve unsullied by any of the brush's previous charge of tint-solution; and, before using the brush's new charge for its purposes, ascertain whether the charge will produce the tinting you require, by testing its capabilities on waste paper.

29. To proceed in your study of water-color painting economically, avoid, as much as possible, taking more material from your pigments, for any purpose, than are likely to be required; and thoroughly clean and dry your brushes immediately after ceasing to use them, if they are not to be employed again for a lengthened period.

30. Water-color painting is usually practised on a rough, or roughish, white, or unbleached, or tinted paper. The papers generally used are termed "Whatman's rough imperial," "Harding's paper," and common firm rough cartridge. (See page 58).

31. At times, with advantage, to aid in depicting warm sunny effects, after a subject has been outlined on white paper, there may be made over all parts of it, not required for the representation of blue sky, white clouds, or snowy mountains, a primary delicate tinting produced from a thin dilution of yellow ochre with brown madder.

32. It is better, on at first laying in foundation-tintings, that a tinting should be produced of too warm, than a too cool, hue, and to lay in the warmer of a set of required tintings, before the cooler; for if too much warmth of hue results by proceeding according to this rule, it can easily be cooled down by the addition of a suitable cool tinging, where desirable; whereas, if, through not so proceeding, too much coolness of hue results, it will be found difficult, and often impossible, by any means, to impart desirable warmth.

33. Attention to contrast of color in water-color painting is essential, because proper contrast aids in creating the due representation of the hues, harmony, and effects of Nature.

34. Attention to contrast must be shown, by bearing in mind, and proceeding accordingly, that the quality of lightness adjoining that of darkness, of warmth adjoining that of coolness, of brightness adjoining that of dullness, and the qualities belonging to each of two adjoining different hues, will produce a contrast in each case, that will cause each quality to appear more prominent than it would if it were neighboured by a less diverse quality than it is. Consequently the contrast, of light with darkness, of warmth with coolness, of brightness with dullness, and that resulting from diverse adjoining hues, may be rendered either increasingly striking, in each case, by weakening the weaker, and strengthening the stronger quality; or else decreasingly striking, to any required degree, by properly strengthening the weaker, or weakening the stronger quality.

35. Two adjoining hues, also, may be forced into individual harmonious prominence, by imparting to each hue a tinging corresponding with the other's accidental hue. Thus, if it be desirable to force a green, and adjoining blue, each into additional prominence, tinge the blue close to the green with a reddish tinge, and the green close to the blue with an orangish tinge, and each, if properly tinged, will thereby acquire increased prominence. If it be desirable, only, to force one of the hues into prominence, tinge the other one only with the accidental hue of the one to be forced.

36. To produce assimilation between two adjoining hues, or to reduce their power of mutual contrast, impart to one, or each of them, a tinging corresponding with *its own* accidental hue. But all such tingings, as well as all those after-tingings of moist or dry foundation-tintings, which are certain to be required during the progress of a painting, must be managed with skill, or erroneous changes of hue may arise therefrom.

Lastly. In the early stages of the study of water-color painting, the student, to avoid the risk of discouraging failure, should limit his choice of subjects, for practice, to the easiest and simplest he can obtain. Hence, on at first working from Nature, he should confine his choice of a subject to the stem of a tree, or to a leafy branch, a roadside bank, a small plain cottage, or similar simple object; but it should not display sunshine, because, when sunlight beams upon anything, it renders its hues, ordinarily, so diverse from its local colors, and it changes its own place so rapidly, and is so liable to withdraw suddenly from the object, that in consequence more skill, than usually is possessed by the slightly practised student, is required to represent the object. However, by proceeding as above indicated, the student may soon become able to produce very pleasing water-color pictures of illuminated and combined objects, and securely pave the way to the attainment of high excellence in the practice of the art of water-color painting.

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ON PERSPECTIVE.

The general word "Perspective" has an extended signification. It applies to certain natural effects specifically termed Aerial Perspective, and Lineal Perspective; and it signifies, likewise, the science of perspective based on the above-named effects, and on this account divided into two branches—aerial perspective and lineal perspective.

Of aerial perspective it is requisite to say but little. In Nature it is an effect causing color, light, shadow, and form, to appear less intense and distinct than they are, in proportion as they recede the further from the eye.

The system and rule of aerial perspective considered as a branch of the science of perspective, therefore, requires, if we desire to produce the semblance of natural aerial perspective in a picture, that the color, light, shadows and forms, to be depicted therein, diminish gradually in intensity and distinctness as the parts of the objects on which they are to be represented *recede from* the base or bottom line of the picture (which is supposed to represent a point in Nature nearer to the eye than any other part of the picture does) *towards* that portion of the picture which represents the horizon.

Lineal perspective, in Nature, produces an apparent loss of size, or contraction of dimensions with respect to all objects visible to us, and which they display the more, the further they exist from us. For as Dr. Lardner, in his "Museum of Science," states, "when the same object is moved from or towards the eye, its apparent magnitude varies inversely as its distance; that is, its apparent magnitude is increased in the same proportion as its distance is diminished and *vice versâ*." Hence, if the distance of an object be doubled, the object will apparently diminish one half in size, or it will appear only one half as large at the distance of one hundred yards from us, as it does at the distance of fifty yards, and so forth, with regard to all distances; whilst, consequently, every object appears nearer to us than it is, to an extent equal to its distance from us.

Supposing, then, that a transparent surface of glass were to be placed before us, and any object behind it were visibly to recede from the eye, lineal perspective would render the face of the object *gradually smaller* in appearance, in the same proportion as its distance became *gradually greater* from us, and apparently *so near* as to seem to touch and lie on the surface of the glass, just as if it were a representation depicted thereon—or just as a representation of the object would actually lie on any surface of paper upon which it were drawn.

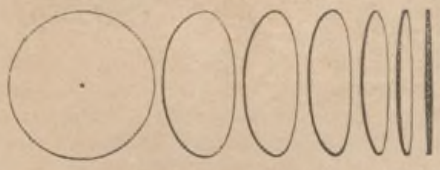
The perspective law, consequently, causes all the visible portions of the surfaces and

outlines of all objects to change their actual bearings in appearance relatively to each other and to us; because it not merely, as has been intimated, makes an object appear nearer to us than it is, but at the same time necessarily renders its particles nearer to each other and to us in appearance than they are; this perspective displacement of the parts of objects being an inevitable concomitant of the perspective contraction to which everything visible is subjected.

Thus, through the action of this law, the sides of a long and uniformly wide street, seem to approach each other the more and more (that is, the relative bearings of all their parts appear to alter more and more) as the sides recede from the eye, and seem almost to touch each other at their termination, if the street be very long.

From the same cause, a circle may appear to change into an oval, as can be proved by hanging up a hoop, standing at arm's length therefrom, with the eyes opposite to the centre of its circle, and by turning the hoop gently round: for then it will be seen, that, as the hoop turns, the influence of the law of perspective causes the receding side of the hoop (or the one moving the further from the eye) to appear gradually to approach its nearer side, and thereby destroys the perfect circle-form of the hoop more and more as the distances of the parts of the circle increase from the eye; until this influence, having gradually changed the appearance of the circle into that of a continuously narrowing oval, at length causes the two sides of the hoop to appear merged into one line, as represented by *h*, Figs. 95 to 101, producing this perspective effect exactly as the hoop has turned half way round.

Fig. 95 to 101.



This apparent change of relative bearings, however, is more evident in the case of a tunnel, than of any other object; for, as shown in Fig. 94, on the head of this section, a tunnel always seemingly tapers off or narrows, so as to appear as though it would come to a fine point if it were to extend to a certain *greater distance* than that to which it is there represented as extending; whilst, in consequence, its further aperture, compared with its near one, appears like a small hole.

Some of the general effects, then, that the lineal perspective law produces, it has been demonstrated, are such as must cause every visible object to be apparently in a state of contraction; and therefore such as equally must cause it to appear smaller than it is, nearer to us and to other objects than it is, as well as usually of a different shape in some of its parts to that which it is; and also, as though its visible surfaces were lying on an imaginary flat surface intervening, *as a pane of glass might intervene*, between them and the eye.

And owing to these effects, masses of the earth's face, and of objects, which together present an incalculable amount of surface to the eye, may be represented correctly on a flat drawing surface of almost the smallest comparative dimensions; whereas, but for their influence, such representations would be impossible.

Likewise, if all objects were so perfectly transparent that we could perceive the horizon line through them, or that apparent circular line which seemingly belts the globe when we look across the sea where land is not visible, and the sky, therefore appears to bound the sea; then, on projecting a straight-forward glance in any direction from any place, other general consequences arising from the action of this law would become obvious, which form the basis of correct pictorial representation, and are as follows,—relatively to any elevation of the eye from 5 feet and upwards.

Firstly. On projecting the glance, a certain point of the horizon-line, termed a *point of sight*, would terminate the glance; consequently, both the point of sight and the horizon line would appear to lie on the level of the eye whilst projecting the glance.

Secondly. During the time the glance of the eye was remaining perfectly unchanged, its terminating point or the point of sight would be the central point of what is termed the range of vision, or the central point of as great an amount of space as on that or any other occasion could be at any one moment at all distinctly visible to the eye without a change of position.

Thirdly. The horizon line would appear to run through the point of sight to the right and left of it, at a right angle with an imaginary line, extending from the eye to the

Fig. 102.

point of sight, and which may be fittingly termed the *eye's line of direction*. (See Fig. 102.)

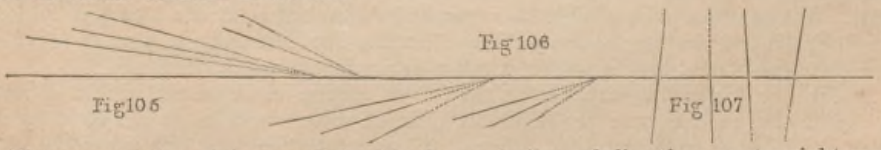
Fourthly. Also, as the presumable exterior boundary of the range of vision would have a form exactly like that of the exterior boundary of a perfectly cone-shaped funnel (see Fig. 103), and as this boundary would have a series of adjoining *parallel* diameters, the remotest of which would be the horizon-line and the nearest a mere point, and the length of each of which would be the *same as that* of its distance; then a further result of the action of this law would be to cause the apparent length of any one of these diameters to be co-equal with that of any other. While as each of those diameters would represent the width of the range of vision's boundary at the position it would occupy—and as we may suppose that such diameters exist, they may be fittingly termed widths of range; whilst the ordinary level of the earth's surface may be considered to be the presumptive position of these widths of range.

Figs. 103, 104.

Another effect this law produces is that of causing every line which lies in an *oblique direction*, or which does not lie on a vertical plane existing parallel with the horizontal line of a range of vision, to diverge apparently out of its true direction and to seem to converge towards a vanishing point—or point where the continuation of the line would vanish from observation if the line were an endless one. Therefore, if any point, from *any* position above or below the level of the eye, were to move in a straight line towards the horizon without *ascending* or *descending* from the *level* of its point of departure, it would appear as it receded from us, to approach the horizon in a gradually slanting direction and in such a manner, that if it were an endless line, it would, on attaining the distance of the horizon, apparently touch it, and there, where it touched it, *vanish* from our sight. Hence the horizon contains a series of vanishing points for all horizontal lines that do not lie parallel with the horizon line of a range of vision.

The reason of this is, that as the perspective law causes size to diminish apparently in the same proportion that distance increases, therefore necessarily it also causes the apparent level of the more distant of any two points, lying on one and the same level, to approximate to the level of the horizon-line in a closer degree than it causes the apparent level of the other or lesser distant point to approximate.

Hence when a horizontal line, lying in an oblique direction (or otherwise than parallel with the horizon line of a range of vision), exists above the eye, it appears to converge downwards out of its true direction, and towards a particular part of the horizon, as indicated in Fig. 105; and when it exists below the eye, it appears to slant upwards out of its true course towards a particular part of the horizon, as indicated in Fig. 106; the part of the horizon (or V.P., there), towards which a line will apparently converge, depending upon the actual direction of the line.



All horizontal lines, lying parallel with the eye's line of direction, or at a right angle with the horizon-line of a range of vision, appear to converge towards the range's point of sight; and, therefore, have the point of sight as their V.P.

Every set of parallel horizontal lines, which do not lie at a right angle with the horizon-line, converge to a V.P. on the horizon that would be the perspective position of the further extremity of any one line of the set, if that line were an endless one.

Every other set of parallel lines, which do not lie on a vertical plane existing parallel with a range of vision's horizon-line, has a vanishing point above or below the horizon, according to the actual position of the lines forming the set, or such a V.P. as would be the perspective position of the further extremity of any one line of the set, were that line to be an endless one; (see Fig. 107). Consequently, the apparent angle, formed by the junction of two lines, is necessarily different from the real angle they form, in those cases when one or each of them runs in the direction of the horizon. Under certain

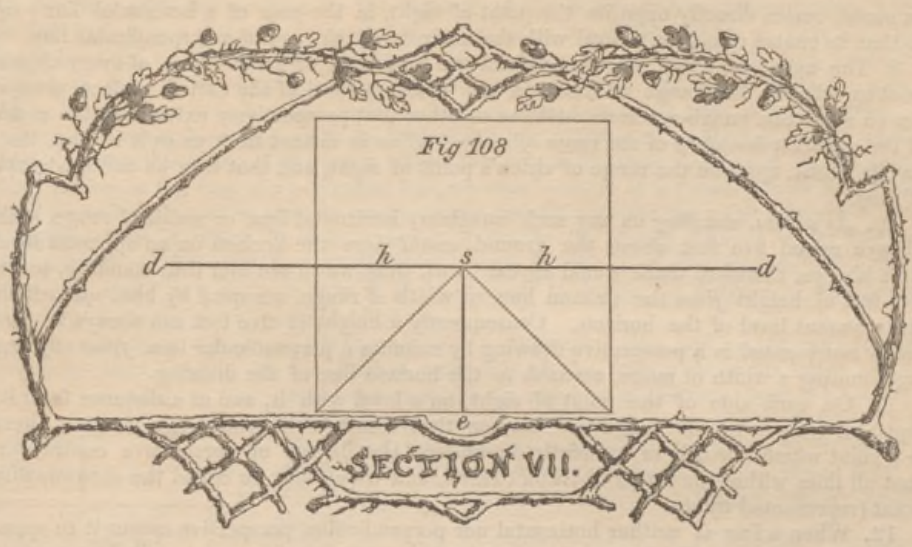
circumstances the apparent angle is less than the real angle: but under other circumstances the apparent angle is always greater than the real angle notwithstanding the space it encloses invariably exhibits perspective contraction: facts which should be borne in mind, because they show that the connection between vanishing points and apparent angles is so intimate, that the true apparent angle formed by two lines cannot be represented otherwise than in accordance with the true vanishing points of both lines.

With respect to all lines, within the range of vision, that are vertical, horizontal, or diagonal lines, lying on a vertical plane which exists parallel with the range's horizon-line, they do not perspectively converge out of their actual direction towards vanishing points, because no part of any one of such lines lies further back from the eye than any other part of it; and, hence, the perspective law of Nature exercises merely the simple effect upon the line of causing it, relatively to its actual distance from us, to appear shorter and nearer to us than it is, but not in an altered direction. Nevertheless, *the continuations of such lines* existing so as not to come within the range of vision when the eye is fixed on a point of sight, always *converge to vanishing points*: as may be proved by standing opposite to the centre of a long horizontal line at a distance from the line equal to its length, or so that it comes exactly within the range of vision; and by then advancing towards it so as to continue throwing more and more of it, equally to the right and left of us, out, as it were, of the range of vision: for if, whilst advancing, we turn our eye sufficiently to allow of our glancing along the whole of the line, a continuously increasing apparent convergence of the line out of its true direction will become manifest as we advance and approach the nearer to the line; because, as we turn our eye away from the centre of the line to take in its whole length clearly, the course or direction of the line relatively to our eye changes from a horizontal one to an oblique one—or the eye assumes a position in which its range of vision, its point of sight, and its horizon-line, *become different from what they were at first*, in which, therefore, lines will run in an oblique direction, or in the direction of the horizon, that before were horizontal, and hence perspectively converge to vanishing points. Also, if we were to stand opposite to the centre of a high tower, at a distance from it equal to the length of its height, or so that it comes exactly within the range of vision, its vertical lines would not appear to converge towards vanishing points; but could we approach nearer to it, as we approached, a continuously increasing perspective convergence of its vertical lines would become visible, if we were to glance upwards or downwards—or a complete change of perspective conditions and effects would ensue, corresponding with those just alluded to in connection with horizontal lines. These facts, proving that all perspective which we represent in a picture ought to belong to but one range of vision (that is, should come completely within its boundary) to be represented correctly, and to render the picture one that will present to our view what it is possible to see; and that a picture is a production totally inconsistent with Nature, and, therefore, so far faulty in the highest degree, if it represent a perspective that could not possibly be visible to us.

Now all the effects of perspective described in this section are intimately connected with a point which may be termed the *determinative point*, and which is, in fact, a vanishing point. Whilst if the point of sight be considered the central point of a length of horizon-line, which is twice as long as the portion of horizon-line belonging to a range of vision, then each end of that length will represent a determinative point.

And it may be found by experiment, that, if we require to represent widths of range as diminishing in the same proportion as distance increases, then we can do so by employing the correct representation, either of the determinative point existing to the right, or of that existing to the left, of the point of sight; as well as that we can, through the medium of the correct representation of widths of range, obtain or determine the true representation of any perspective effects, therefore it is on this account that that which is termed a determinative point may be fittingly so styled.

Finally, the principles which constitute the science of Perspective, and should regulate perspective representations, are only derivable from an intimate knowledge of the action of the perspective laws of nature; therefore, the assertion made in many works on perspective, that those principles can be deduced from the science of Optics, is an erroneous one, whilst it leads to mischievous results, or to much incorrect instruction and imperfect representation—results which are only to be avoided by studying the science through the medium of a system having a true basis, or possessing principles such as are developed in the ensuing section.



SECTION VII.

LESSONS ON PERSPECTIVE.

LESSON I.

ON GENERAL MATTERS TO BE ATTENDED TO IN PRACTICAL PERSPECTIVE.

As regards perspective in Nature, it has been shown in Section 6 that its effects are all relative to the following facts:—

1. When we look upon a scene, whilst the eye is raised five feet above the ordinary level of the earth's surface; there is, then, either visible or invisible, a line always opposite to us on a level with the eye (therefore apparently five feet above the ground) denoting where the sky seems to join the earth, and called *the horizon* (represented by *h h*, Fig. 108).

2. When the eye remains fixed on any particular part of the horizon, an imaginary line runs directly to it from the eye, and which may be called the eye's *line of direction* (indicated by *e s*).

3. At the horizon extremity of this imaginary line, or the part of the horizon on which the eye is fixed, a point is situated called the *point of sight* (represented by *s*).

4. Wherever on the horizon this point of sight may be, there, also, is situated the apparent central point of as great an extent of space as it is possible for us to see distinctly at one fixed gaze, without moving the eye—or, what is the same thing, the apparent central point of the *range of vision*.

5. The point of sight (i. e., the apparent central point) of a range of vision, primarily governs the perspective appearance of all lines visible to us within the range, but not that of any lines or portions of lines existing outside its bounds—such lines, etc., having their perspective invariably regulated by a different point of sight, or by one belonging to another range of vision. Consequently as a perspective drawing can represent but one point of sight, it can only represent correctly what comes within one range of vision.

6. What we see presents itself to the eye as if it were all lying upon an upright sheet of glass (as on a window pane) that has its centre on a level with the eye and point of sight, or directly between them, and which may be called a *perspective plane*.

7. Outside the edges of this plane, or imaginary surface of glass, nothing can be distinctly visible to us; and its edges, therefore, may be said to form the apparent boundary of as great an extent of space as it is possible to see distinctly at one fixed gaze, or to form the *apparent boundary of the range of vision*.

8. To bring either a horizontal, or a perpendicular line, exactly within the range of vision, so that we may be neither more nor less than just able to see both its ends distinctly at once, it is requisite to stand at a distance from it equal to its length, and so that

its centre comes directly opposite the point of sight, in the case of a horizontal line; or so that its centre comes on a level with the horizon, in the case of a perpendicular line.

9. The apex, or point, of each angle of the base lines, or ground plan of every object existing withing the range of vision on the ordinary level of the earth's surface, always lies on some one imaginary horizontal line or other that perspectively extends to the *width* of the *apparent boundary* of the *range of vision*—a line as distant from us as it is long, that has its centre opposite the range of vision's point of sight, and that may be called a *width of range*.

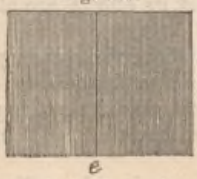
10. *As a man*, standing on any such imaginary horizontal line, or width of range, with his eye raised five feet above the ground, *would have* the horizon on an apparent level with his eye, therefore there would appear to us, were we to see him thus standing, to be five feet of height *from* the ground line, or width of range, occupied by him, *upwards to* the apparent level of the horizon. Consequently a height of five feet can always be correctly represented in a perspective drawing by running a perpendicular line, *from* any line representing a width of range, *upwards to* the horizon line of the drawing.

11. On each side of the point of sight, on a level with it, and at a distance from it, equal in length to the length of horizon that comes within the range of vision, there is a point which directly or indirectly determines the degree of perspective contraction that all lines within the range of vision exhibit, and which may be called the *determinative point* (represented by *d*).

12. When a line is neither horizontal nor perpendicular, perspective causes it to apparently converge out of its true direction towards a perspective point, called a *vanishing point*.

Or, supposing the ordinary level of the earth's surface, within the range of vision, to be covered with a series of parallel lines, adjoining each other, and each extending to the horizon, so as to form a right-angle therewith, then all of them would be parallel *with the eye's line of direction* (*e* Fig. 109); whilst any line, lying at any height above any portion of either of them, would be parallel with each of them, as well as, therefore, parallel with the eye's line of direction—and would perspectively converge with the whole of them towards a vanishing point on the horizon, or to the point of sight.

Fig. 109.



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Consequently, when lines parallel with the eye's line of direction are put into perspective on a drawing, they must be made to converge towards the point of sight represented in the drawing.

Supposing, next, the ordinary level of the earth's surface to be covered with any series of adjoining parallel lines extending to the horizon, so as to form other than a right angle therewith, then such series would perspectively converge towards a vanishing point, existing, according to circumstances, either to the right or the left of the point of sight; whilst any line, lying at any height above *any portion* of either of the lines of the series and parallel with *that portion*, would be parallel with the whole series, and perspectively converge to its vanishing point—a point on the horizon having a position dependent upon the actual direction of the series relatively to the horizon, and which point both can be correctly ascertained and represented.

There are, likewise, vanishing points situated above and below the horizon as well as upon it; but in this system of perspective it is not requisite to allude further to the fact.

LESSON II.

ON THE PARTICULAR EFFECTS OF PERSPECTIVE IN NATURE TO BE IMITATED.

Relatively to the particular effects of perspective in Nature are these facts:—

1. It causes apparent lineal magnitude to diminish in the same proportion as distance from us increases—or the apparent length of any horizontal or perpendicular line—within the range of vision—to become shorter, in exactly the same proportion as the line actually becomes more distant from us.

Consequently, in a perspective drawing—in order that it may be correct—it is requisite that the space, representing *one foot* of a horizontal or perpendicular line shewn on the drawing, should be only *half as long* as any corresponding space of the base line of

the drawing, *when* the position on the drawing of the horizontal, or perpendicular, is intended to denote a distance from us *twice as great* as the distance from us that the base line is intended to denote—only one-third as long when the position is intended to denote a distance from us three times as great—one-fourth, one-fifth, and so on, as long according as the position is to denote a distance from us four, five, or six, etc., times as great.

2. A line can neither appear to be horizontal, nor perpendicular, throughout its whole length, unless the whole of it comes within the range of vision; or, what is the same thing, unless, in the case of a horizontal line, we stand—*either* at a distance from it at least equal to its length, and so that its centre comes directly opposite the point of sight—*or* at a distance from it which is at least equal to double the direct distance of its further extremity from the eye's line of direction; and in the case of a perpendicular line, unless we stand at a distance from it at least equal to double the distance of its further extremity from the elevation of the horizon.

Thus supposing *a b* (Fig. 110) to represent a horizontal line, and *e s* the eye's line of direction—then *b* would be the further extremity of the former from the latter, and it would be requisite to stand at a distance from *a b* equal to double the distance of *b* from *e s*—or if the distance, in a direct line, were twenty feet, we should have to stand at a distance of at least forty feet from *a b*, in order that it might appear to us to be horizontal throughout its whole length.

Fig. 110.

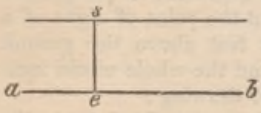
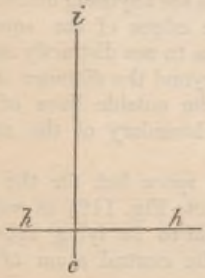


Fig. 111.



Or supposing *h h* (Fig. 111) to represent the horizon's elevation of five feet above the ground, and *c i* a perpendicular line—then *i* would be the further extremity of the perpendicular from the elevation of the horizon, and if it were thirty-five feet therefrom it would be requisite to stand at a distance of seventy feet from the perpendicular for it to appear vertical throughout its whole length.

For if we were to stand one foot nearer to either of such lines than as just specified with reference to each of them; then it would extend, at its further end, one foot beyond the range of vision; and every foot we were to stand nearer still thereto, would cause the line to extend an additional foot beyond the range—but after a certain time half of the foot at one end of the line and half at the other—that is, provided we kept the eye during the whole time fixed continuously on one point of sight; whilst, likewise, the portions extending beyond the range *would converge*, but only those portions, *out of their true direction* towards some particular vanishing point.

Consequently, to correctly represent a line as being horizontal, or perpendicular, we must represent it, in the case of a horizontal line—either as standing at a distance from us at least equal to its length, and so that its centre comes directly opposite the point of sight—or at a distance from us at least equal to double the distance of its further extremity from the eye's line of direction; and in the case of a perpendicular line, we must represent it as standing at a distance from us at least equal to double the distance of its further extremity from the elevation of the horizon. Hence, also, the base line of a perspective drawing should always be made conformably to these circumstances; since, independently of other reasons, necessarily it represents a horizontal line, and cannot represent one partly horizontal and partly diagonal or convergent—and at the same time, hence likewise, the soundness of the principle of optics noticed in Lesson I. 8.

Lastly, all actually equal spaces on any horizontal and perpendicular line existing within the range of vision at the same distance from us, *necessarily have an equal apparent length*—so that whatever may be the distance of such an horizontal and perpendicular, and the apparent size according to that distance of one of their feet, the apparent size of any other of them will be the same.

LESSON III.

ON THE REQUIREMENTS OF A PERSPECTIVE PLAN OR DRAWING, ETC.

A perspective plan or drawing, *to be correct*, should be made, so as to conform to the following circumstances as well as to what has been stated in the preceding two lessons. Namely to the circumstance:

I. That if on the ordinary level of the earth's surface at a distance of 10 feet from us, we could place a horizontal line 10 feet long, composed of the smallest possible equal sized atoms of glass; if we could place a similar line 10 feet long directly above that one; join the two by two similar lines, so as to form a square; place another so as to run 5 feet from the grounds or from the centre of one side of the square to the centre of the other; with, also, a series of such lines, adjoining each other, so as to fill up the square, as indicated in Fig. 112, and make a sheet of glass, and we were to *keep* the *eye immoveably fixed on the central atom* of the central line of the whole set; on having done all this—

Fig. 112.

we should have before us that which would represent a perspective plane; whilst its central atom would represent the point of sight of a range of vision; the central line running 5 feet above the ground would represent the horizon of the range; and the whole would indicate the perfect form of a perspective plan or drawing:

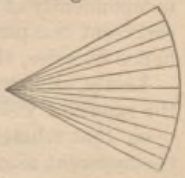
2. That then, also, provided we kept our eye fixed upon the central atom of glass, we should not be able to see anything distinctly, existing outside any part of either of the edges of the square; but that as great an amount of space as it would be possible for us to see distinctly at one fixed gaze, or that can come exactly within the range of vision beyond the distance of 10 feet from us, would be apparently surrounded by the edges of the outside lines of the square, so that those lines would form, as it were, the apparent boundary of the range of vision:

3. That we should not be able to see distinctly this amount of space but for the fact that every atom of every line of the square (represented by the dots Fig. 112) as well as every atom of the *scene* existing beyond its surface so as to appear to be lying upon or touching it, would have the same apparent distance from us as the central atom of the square would have.

For although the central atom of glass would actually be the *nearest to the eye of the atoms* both of the glass and of the scene; nevertheless as the effect of perspective in Nature, within the range of vision, causes one thing existing in the range to apparently approach *more* towards the eye than another, to *the same extent* as that one is the more distant of the two from the eye, it would necessarily cause each of those atoms, that would be *more* distant from the eye than the central atom would be, to approach the eye *so much the more* than it would cause the central one to do,—or cause each to assume an apparent distance from the eye exactly corresponding with that of the central atom.

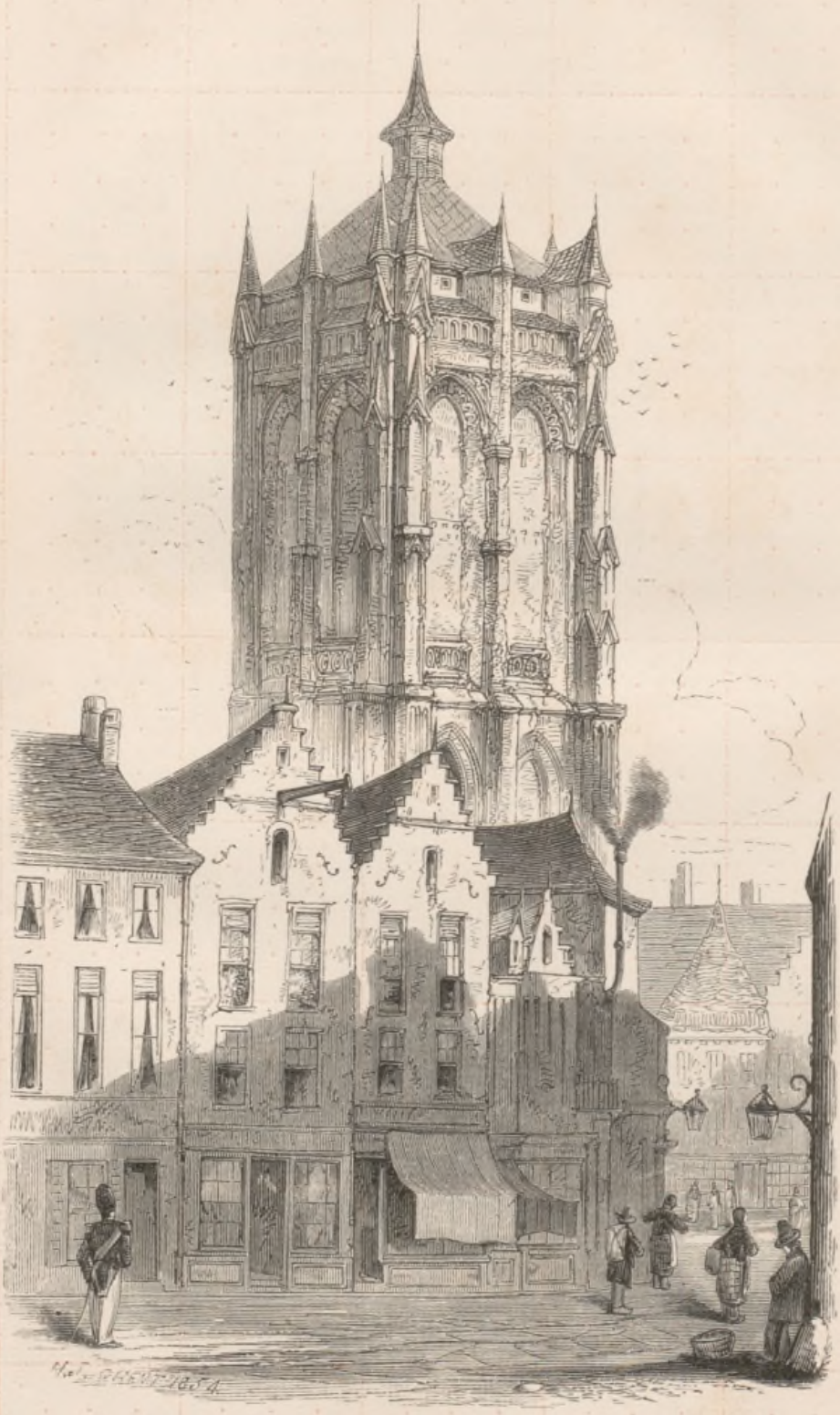
4. That, therefore, it would cause all the atoms to apparently approach the eye so that they would together perspectively form a concave surface, as indicated by the circle in Fig. 112, and radii from all parts of which, such as visual rays, would converge to the eye and be of equal length (see Fig. 113).

Fig. 113.



5. That the atoms of glass would form a series of lines, which in a horizontal direction would be horizontal, and in a vertical direction would be perpendicular (see Fig. 112 again) and which would necessarily appear to be not only curved or concave lines (only possible however to be represented by means of straight lines) but also to have a common apparent length, and distance from us.

6. That, likewise, every equal portion of each of these lines, as for instance every foot's space, would have one, the same apparent length, as the other. For the greater degree of real length, as compared with one another, *each* foot's space would perspectively lose from the circumstance of its being, as it would be, actually somewhat more distant from the eye than the central horizontal or perpendicular foot's space of the square of glass would be, *each* would regain by its parts being, as they would be, perspectively brought forward to the eye, in the way that has been just described in paragraph 3.



7. That each horizontal and perpendicular line of the *scene* visible through the square of glass would appear to be parallel with and to be, as it were, conjoined with some one or other of the horizontal or perpendicular glass lines of the square; therefore, the latter would become, as it were, representive lines, and necessarily whatever portion of any one of these glass lines were to represent the apparent magnitude of a foot of any seemingly conjoining line, any other equal portion of the same glass line would do the same, that is to the limits of the seeming conjunction.

Hence it is a proof of correct perspective, as regards a horizontal and perpendicular line placed in a particular part of a drawing for the purpose of denoting two such lines standing one at the same distance from us as the other, when any one foot of either of them is represented by a portion of line as long as that which represents any other foot's space of either of them.

8. That as the apparent length of a horizontal line, diminishes in the same proportion as the distance from us of the line increases, and therefore any such line which is as distant from us as it is long (or width of range) must have the same apparent length as any other such line that is as distant from us as it is long, (that is as any other width of range); also as the portion of horizon that comes exactly within the range of vision and apparently extends across from one side to the other of the glass square or perspective plane, and the length of ground line (10 feet distant from us and 10 feet long) occupied by the base line of the plane, are lines, each of which is as distant from us as it is long (or each of which is a width of range), one must consequently have the same apparent length as the other.

Hence as the base, as well as the horizon line, of a perspective drawing should represent a width of range, its base and horizon lines should be of an equal length.

Lastly, as the base line of a perspective drawing should represent a width of range, it may represent either of the glass lines lying beneath the horizon one, that is either the glass line lying on the ground, or the one above, or the next to that, etc.—For every one, if the line underneath it were removed, would still appear to be in contact with a line of the ground as distant as it is long, or to be in contact with some one width of range or another, and denote its apparent length.

LESSON IV.

ON THE DEFINITE PRINCIPLES WHICH SHOULD GOVERN THE FORMATION OF A PERSPECTIVE DRAWING, ETC.

The following definite consequences necessarily ensue from the consideration of the facts enumerated in the foregoing three lessons.

1. Anything, which does not come within the range of vision, is subject to perspective conditions differing from those to which such things are subject which come within the range. See Lesson I.—5.

2. A perspective drawing can only represent one set of perspective conditions.

3. Any scene the drawing can correctly represent must, therefore, be entirely composed of that which does not extend beyond the limits of the range of vision.

4. The limits of the range of vision, at any particular distance from the eye are formed by two directly opposite points existing there, as far apart as is equal to the length of that particular distance, and equi-distant from the eye.

5. The point directly opposite the eye wherever its gaze is immoveably fixed on the horizon is the point of sight. See Lesson I.—2, 3, 4.

6. As much space can be distinctly visible to us, without moving the eye, on the right as on the left of the point of sight, whether it be space on the horizon of the range of vision, or space on any other horizontal line coming like the horizon entirely within the range.

7. Every horizontal line, lying on the ordinary level of the earth's surface, and that comes exactly within the range of vision, has its centre opposite to us and is as distant from us as it is long—or is a width of range.

8. The base line of a perspective drawing should represent a width of range.

9. The horizon line of a range of vision has its centre opposite to us, and is a line as distant from us as it is long—or is a width of range.

10. The apparent length of any one width of range is the same as that of any other;

therefore, whatever length of line in a drawing represents its base line should represent its horizon line.

11. Every horizontal line that is as distant as it is long, or width of range, when represented in a drawing, should be so by a line that is as long as the base line of the drawing.

12. The horizon is always considered in perspective to have an apparent level or elevation of five feet above every width of range. See Lesson I.—10.

13. Directly upwards, from any width of range, to the horizon depicted on a drawing, therefore, should represent five feet of perpendicular height.

14. The apparent length of any one foot of a perpendicular standing upon a width of range, or on any other horizontal line, is the same as the apparent length of any foot of that width of range, or horizontal line. See Lesson II.—lastly.

15. Therefore the portion of a width of range, or of a horizontal line, on which a perpendicular is depicted as standing, that represents one foot, should represent one foot of the perpendicular—or, for instance, the portion of an *actual foot*, say a tenth or a hundredth, or any portion of it, that represents a foot of the one line should represent a foot of the other.

16. As the apparent length of a horizontal or perpendicular line within the range of vision diminishes in the same proportion as its distance from us increases;

17. Therefore, *according* as a horizontal or perpendicular line should be depicted in a drawing as being two, three, or more times more distant from us than is the line represented by the base line of the drawing, *so* the portion of the line that represents one foot should, in the first case, be only half as long—in the second, only a third as long, etc.—as the portion of the base line that represents one foot. See Lesson II.—1.

18. Whilst as the effect of perspective in Nature, the above rule is based upon, causes the apparent length of a horizontal or perpendicular line to diminish one-half when its distance from us is doubled, or to be only half at the distance of twenty feet from us that it is at the distance of ten feet, and so on; by putting lines into perspective, conformably with the rule, we shall find that any portion of line that represents in our drawing one foot of a horizontal or perpendicular line, depicted as standing at a particular distance from us, will be only half as long as the portion that represents a foot of a horizontal or perpendicular line depicted as standing at but half the distance from us of the former lines.

19. There is a perspective determinative point situated on the horizon, which should be represented in a drawing in a position analagous to its position in Nature (see Lesson I.—11).

20. Lines that are parallel with the eye's line of direction, perspectively converge out of their true direction towards the further extremity of the eye's line of direction, or to the point of sight (see Lesson I.—12).

21. Any line lying on the ordinary level of the earth's surface, inclining away from us towards the horizon, and every line parallel with that line, converges out of its true direction towards a particular common vanishing point (see Lesson I.—12).

22. A horizontal line will not come within the range of vision unless we stand at a distance from it at least equal to double the direct distance of its further extremity from the eye's line of direction; that is, supposing, for instance, its nearer extremity to be ten feet from the eye's line of direction, and its further one to be thirty feet from it, unless we stand at a distance from the line at least equal to sixty feet.

23. Therefore no horizontal line should be represented in a drawing as standing at a distance from us less than equal to double the direct distance of its further extremity from the eye's line of direction (see Lesson II.—2).

24. The whole of a perpendicular line, standing on the ordinary level of the earth's surface, and extending more than five feet above the horizon, will not come within the range of vision unless we stand at a distance from it at least equal to double the portion of it that extends above the horizon.

25. Therefore no such perpendicular line should be represented in a drawing as standing nearer to us than double its length, minus ten feet; though, as we should require room for sky in a drawing, it should be a rule never to represent a perpendicular as standing at any distance nearer to us than one equal to double the length of the perpendicular (refer to Lesson II.—2).

26. When the base line of a perspective drawing fully represents a width of range ten

feet distant from us and long, or a ten feet width of range, then the height of the drawing should be equal to the length of its base line.

27. When the base line fully represents a width of range remoter than a ten feet one, —as a twenty feet, or thirty feet width of range, etc.,—the height of the drawing above its horizon line should be equal to half the length of the base line.

28. As there is a notion prevalent among artists, that a drawing appears more agreeable to the eye when its horizon line lies above its base line, at about one-third of the height of the drawing; the horizon line can be correctly represented in such a position by making the base line of the drawing so as to represent a twenty feet width of range.

29. Should it, however, be desirable to make the base line represent a width of range remoter than a twenty feet one, as, for instance, a width of range thirty feet distant from us and long, or a thirty feet width of range; as that would cause the horizon of the drawing to come nearer to its base line than would admit of the former lying above the latter at a third of the height of the drawing: artists may still cause the horizon line to correctly occupy the position they fancy is most desirable, by adopting proceedings according to a rule, which a little reflection and experiment will impart.

30. The point of each angle of the base lines, alluded to in Lesson I.—9, lies, also, at a certain distance from the eye's line of direction, either to the right or the left of it.

31. *To put the base lines of an object or of its ground plan into correct perspective*, it is necessary, therefore, *to ascertain what width of range each point of each of its angles lies upon relatively to our station*, on our actually or presumptively viewing the object; and, *also, at what distance that point lies, on that width of range, from the eye's line of direction, as well as on which side thereof it lies;* thus, for instance, one point may lie upon a sixty feet width of range, that is, on a horizontal ground line sixty feet distant from our station, and sixty feet long, whilst it may also lie twenty feet from the eye's line of direction, either to the right of it, or the same to the left of it; and we can only place it in a correct position on a drawing by making thereon a sixty feet width of range so as to intersect a line representing the eye's line of direction, and by then marking off twenty feet on the width of range, to the right or left of the eye's line of direction, according as required, —a process that in practice will be found to be simple and certain in its results.

32. Correct perspective, consequently, cannot be produced in a drawing *unless we know and work according to the length of every line, and the distance from us of every line*, to be put into perspective therein; but as on sketching from Nature we cannot readily ascertain the length and distance of every line to be represented in our sketch, we should determine in our minds, as nearly as we possibly can by careful comparison and consideration, the relative lengths of the lines requisite to be represented, as compared one with another, and work according to our conclusions on the matter; for if we depend upon the eye alone, let it be ever so correct in its general powers of judging lengths and distances, it is, nevertheless, sure to deceive us when we are sketching, as then it must be kept moving about and away from the point of sight of the scene we wish to represent.

33. The two general principles being correct, namely, that the apparent length, either of a horizontal or a perpendicular line diminishes in the same proportion as the distance from us of the line increases; and that with regard to such lines we must stand at a distance from each line at least equal to its length, etc. (see Lesson I., 8), to be able to see both its ends distinctly at once without moving the eye; it then follows, that any perspective drawing that does not conform to rules and principles corresponding with those laid down in this lesson, cannot be correct and true to Nature; that is, if it be a drawing representing a scene the elevation of the horizon of which is but five feet above the ordinary level of the earth's surface.

LESSON V.

ON THE FORMATION OF A PERSPECTIVE DRAWING, ETC.

As a perspective drawing should have a base line representing a width of range, or horizontal ground line, as many feet distant from us as it is long:

1. The base line when drawn should be divided into as many equal parts as it is to represent feet, whilst it is advisable it should always be made to represent a width of range the number of feet in which can be divided by five, as thirty, thirty-five, &c.

2. From the centre of the base line, and at a right angle therewith, a line should be drawn, of a length equal to that of the portion of the base line representing five feet, that it may denote the eye's line of direction as well as a perpendicular line five feet high. As *e s*, Fig. 114.

3. As the horizon has an elevation five feet above a width of range, and an apparent length corresponding with that of the width of the range, a line drawn evenly parallel with the base line of the drawing, and so as to exactly touch the extremity of the eye's line of direction, will correctly represent the horizon of the drawing.

4. The upper extremity of the eye's line of direction, or the centre of the horizon of the drawing, will correctly represent the point of sight of the drawing.

5. On each side of the point of sight, on a level with the point, and at a distance from it equal to the length of the drawing's horizon, a dot should be placed to represent the determinative point of the drawing; whilst it should be remembered that whenever the determinative point is used, all determinative lines carried to it for the purpose of producing *widths of range* should invariably intersect the eye's line of direction. —See Lesson I.—11.

6. As lines running parallel with the eye's line of direction—one foot, two feet, three feet, etc. from it—perspectively converge in Nature out of their true course and towards the point of sight (see Lesson I.—12) we can always correctly represent, in a drawing, the progressive gradual perspective diminution of *any space of uniform width*, existing parallel with the *eye's line of direction* and having its further side one foot, two feet, or any other number of feet distant therefrom, by running a line *to* the point of sight *from* a point on the drawing's base line that denotes the required distance from the eye's line of direction of one foot, two feet, etc.

Thus, as *e*, *s*, Fig. 114, represents the eye's line of direction, and the point 1 shewn on the base line width of range 20, indicates one foot from the said line of direction—then if a diagonal line, as 1 *s*, be carried up to the point of sight, the space between 1 *s* and the eye's line of direction, all the way up to the point of sight, will correctly represent the space of one foot perspectively diminishing in size in the same proportion as distance from us increases until it at length becomes obliterated through excessive distance and arrives at its vanishing point on the horizon—if a diagonal line, as 2 *s*, be drawn, the space between it and the eye's line of direction, all the way up to the point of sight, will represent the space of two feet perspectively diminishing in size, etc.; if a diagonal, as 5 *s*, be drawn, the space between it and the eye's line of direction will represent the space of 5 feet perspectively diminishing in size in the same proportion as distance from us increases, and so on.

These lines may be called point of sight diagonals (P. S. diagonals), and they perspectively represent distances from the eye's line of direction of one foot, two feet, etc., not only on the width of range represented by the base line of the drawing, but also on any other width of range *made to intersect them*, as they do, for instance, on the widths of range represented in Fig. 114, and marked 20, 23, 30, 34, 40, and 80.

LESSON VI.

ON THE PROPER MODE OF REPRESENTING WIDTHS OF RANGE EXTENDING ONE BEYOND ANOTHER.

1. As regards those existing at a greater distance from us than the one exists that is represented by the base line of a drawing, it is requisite to proceed as follows:—

1stly. To represent a width of range, that exists at a distance from us, *half, or less than half as far again* as the base line width of range—a determinative line must be drawn from the point on the base line indicating as many feet from the eye's line of direction as are equal to the number of feet in the additional distance, then a line drawn evenly parallel with the base line, through where the determinative line intersects the eye's line of direction, will correctly represent the required width of range.

(N.B. A determinative line is a line that always runs to the determinative point—see Lesson IV.—6thly again. A line evenly parallel means thus ═══ and not thus ═══.)

Thus, supposing the base line of the drawing represents a 20 feet width of range (as 20, Fig. 114), then it represents one that exists at the distance of 20 feet from us,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supposing, also, we wish to represent, for instance, a 23-feet W. R. (as line 23, Fig. 114), or one that exists but, for instance, three feet further away from us than the base line width of range (20) exists—then a determinative line (as 3, *d*) running from the base line point, that denotes three feet from the eye's line of direction, and intersecting said E.L.D., will ensure our purpose; a line (as 23) drawn through the intersection, and evenly parallel with the base line, being the required width of range, or a line indicating a horizontal one lying on the earth's surface at the distance of twenty-three feet from us, and that is twenty-three feet long.

2. As regards *any* W. R., that exists at a greater distance from us than another does, whether the other be a base line W. R. or not; we may proceed as follows:—

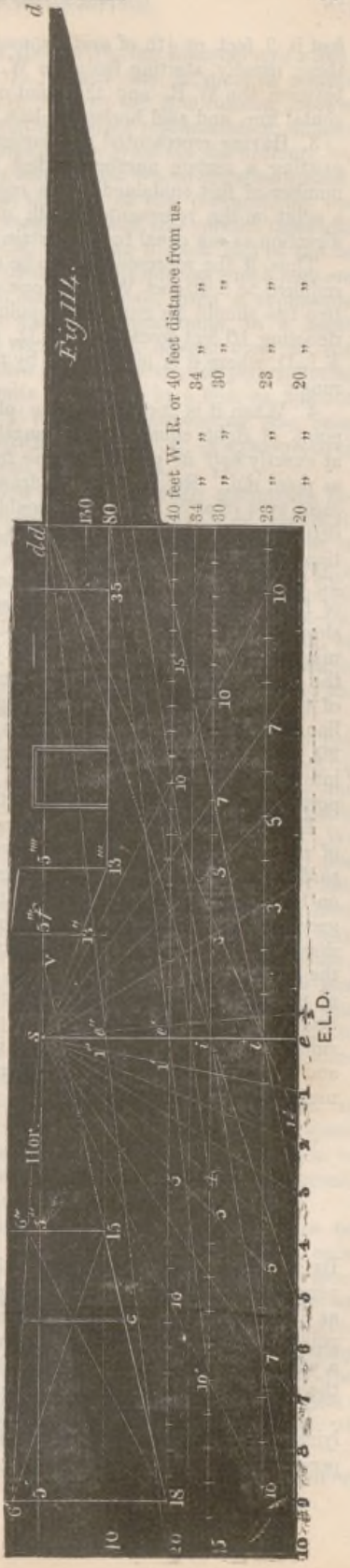
2ndly. To represent a W. R. that exists at a distance from us, *one half greater* than that of any particular W. R. we may have already represented;—draw a line, exactly parallel with the represented W. R., through a point exactly *one third* up the portion of the eye's line of direction that there is between the represented W. R. and the horizon line; the *horizontal line* drawn, will be the required W. R.; as the line 30, Fig. 114, relatively to the line 20, because a distance of 30 feet, is one half greater than a distance of 20 feet.

3rdly. To represent a W. R. that exists at a distance from us *double* that of any represented W. R.—draw a line, evenly parallel with the represented W.R., through a point exactly *half way* up the portion of the E.L.D that there is between the represented W. R. and the horizon line; the horizontal line drawn, will be the required W. R.; as the line 80, Fig. 114, relatively to the line 40, because a distance of 80 feet is double the distance of 40 feet.

4thly. To represent a W. R. that exists at a distance from us *three times* greater than that of any represented W. R.—draw a line as before, and through a point exactly *two thirds* up the portion of the E.L.D. that there is between the represented W. R. and the horizon line; the horizontal line so drawn will be the required W. R.

5thly. To represent a W. R. that exists at a distance from us *four times* greater than that of any represented W. R.—draw a line as before, and through a point exactly *three fourths* up the portion of the E.L.D. that there is between the represented W. R. and the horizon line; and so on.

6thly. Also, when the distance of a *required* W. R. is one fourth, one fifth, and so on, of *said distance*, greater than the distance of any *represented* W. R., the required one may be produced by *measuring off the proportion*, upon the E.L.D, extending between the represented one and the point of sight, and by then running a line through the proportion mark. For instance, if the represented W. R. be a 45 feet W. R., and the required one be a 54 feet W. R.—as a distance of 54



feet is 9 feet, or $\frac{1}{6}$th of *said distance* greater than the distance of 45 feet, then proceed thus; namely, starting from the W. R. 45, take off one-sixth of the E. L. D. extending between the W. R. and the point of sight, and through the one-sixth mark draw a horizontal line, and said horizontal line will denote a 54 feet W. R.

3. Having represented any particular width of range, and requiring to represent one as existing a certain number of feet beyond it—but which number is *less* than *half* the number of feet contained in the represented one's length,—run a determinative line from a point on the represented width of range, denoting as many feet from the eye's line of direction as are equal to the certain number of feet, etc.

Thus, if the represented one be a 30 feet W.R., as line 30, Fig. 114, and the new one required be a 40 feet W.R., or one existing 10 feet beyond the former, then a determinative line should be run from a point, on the represented one (as from point 10′, line 30) denoting 10 feet from the E.L.D., and a horizontal line, as line 40, drawn through the E.L.D. where it is intersected by the determinative line, will be the required width of range.

4. When it is inconvenient to place the determinative point at a distance from the point of sight, equal to the length of the *full* horizon of a perspective drawing; then at exactly *half its proper distance* from the point of sight, a substitute point can be used; as point *d.d.* But, instead of drawing a determinative line to this substitute from the same spot of a W.R. that we should work from on using the true determinative point, the determinative line must run from a spot that is *one half nearer* to the eye's line of direction than the first named. Thus, if the substitute point *d.d.* were used to produce a 23 feet W.R., the determinative line should run from the spot marked $1\frac{1}{2}$, line 20, instead of from that marked 3; if employed to produce a 30 feet W.R., the determinative line should run from the spot marked 5, line 20, instead of from that marked 10; for determinative lines running so, (see Fig.) intersect the E.L.D. *e.s.*, where it is intersected by the determinative lines running from 3 and 10 to *d*. The W.R. 80 is produced by means of the substitute *d.d.*; for although there are but 20 feet represented from *é* to 20, line 40; yet, as the point *d.d.* has a double power, the determinative line running to it from 20, gives the same result, or intersects the E.L.D., where a determinative line would intersect it, if it were to run to *d* from a point twice as far from *é* as 20—that is from a point representing forty feet from the E.L.D. See twelfth paragraph (*) Lesson X.

By adopting the foregoing method of proceeding, the true representation of any width of range, may be obtained; or, even a perfectly correct PERSPECTIVE MAP of the earth's surface be produced, shewing a gradual perspective contraction of the space existing on the latter between the eye and the horizon; that is, provided during the process the greatest possible accuracy is observed, in dividing lines into requisite portions, and in drawing lines through the intersections made on the eye's line of direction, by means of the determinative lines that must be used in the process. But, without such accuracy of proceeding in the above named respects, the perspective of Nature cannot possibly be represented correctly; since a portion of a line made too large or too small, or a line *running above* or *below* any point it should *pass through with exactitude*, may cause lines, and consequently objects, to appear, to be many feet greater, or smaller, more distant, or nearer than they should appear.

LESSON VII.

HOW TO PROCEED WITHOUT VANISHING POINTS; AND HOW TO PRODUCE THEM, IF DESIRABLE.

BY putting objects into perspective, in accordance with the rules of this system of perspective, the use of vanishing points *may be entirely dispensed with*, when desirable; as it often must be desirable, since, to make a large drawing by means of vanishing points requires materials that are frequently either not attainable, or not at hand—namely, a very large sheet of paper, affording space for placing such points a long way out of the plane or beyond the boundary of the picture, and a very long ruler.

1. To dispense with their use; firstly, in the case of any perspectively converging line lying on the ordinary level of the earth's surface: it is only necessary to represent perspectively the width of range belonging to each end of the line, or that each end lies

upon, and also the *distance* that each end, on its own W.R., lies from our eye's line of direction to the right or left thereof; and then to connect the perspective positions of these ends by a line—as positions 18 and 15, Fig. 114, by the line running between them from 18 to 15; the connecting line being a perfectly correct representation, obtained without the aid of a V.P., of a perspectively converging line lying on the ordinary level of the earth's surface,—*a perspectively converging line* being a line whose *apparent* course is neither horizontal nor perpendicular. Secondly, in the case of any perspectively converging line lying above the ordinary level of the earth's surface and parallel therewith: it is but necessary to represent perspectively the W.R. belonging to each end of the line (that is, the W.R. which each end *lies perpendicularly above*) and the *distance* which each end, on its own W.R., lies from our E.L.D. to the right or left; then, from a represented W.R. point denoting an end's said distance, to raise a perpendicular to a height indicating *the height* such end lies above the earth's surface; and, having done so with regard to both ends, so that two perpendiculars have been produced, (as perpendiculars 18—6″ and 15—6′, fig. 114), to connect the summits of the two by a line, as summits 6″ and 6′ by the line running between them from 6′ to 6″; the connecting line being a correct perspective representation, obtained without the aid of a V.P., of a perspectively converging line lying as above described. See the end of Lesson XI.

2. Thus, if we require the perspective representation of a perspectively converging line that lies on the earth's surface, with its nearer end 40 feet from us, or on a 40 feet W.R., and 18 *feet* from our E.L.D, to the left; and with its further end 80 feet from us, or on an 80 feet W.R., and 15 *feet* from our E.L.D. also to the left of it. We can produce the line, without the aid of a V.P., by representing a 40 feet width of range, as line 40, Fig. 114; and then marking off thereon from the represented E.L.D., or as from *e.—s.*, a distance denoting 18 feet, and as point 18 on the line 40: by next representing an 80 feet width of range, as line 80, then marking off thereon from the E.L.D. a distance denoting 15 feet as point 15 on line 80; and by connecting the points 18 and 15; the connecting line, as line 18—15, being the required representation.

3. Or should we require the representation of a line lying parallel with the *real* line just represented perspectively, yet existing for instance, 6 *feet above it*: that is of a line having its nearer end 6 *feet* perpendicularly above a 40 feet feet W.R., and 18 feet from our E.L.D., to the left of it; and its further end 6 feet perpendicularly above an 80 feet W.R., and 15 feet from our E.L.D., likewise to the left thereof. We can produce it without the aid of a V. P., by, as before, representing a 40 feet W.R., and denoting a distance thereon of 18 feet from the E.L.D. *e.s.* to the left, as the point 18 on line 40; by then making (as line 18—6′) a perpendicular, from the point 18, sufficiently long for its summit to correctly denote a height of 6 feet, the height that the line, to be put into perspective, rises above the earth's surface; by next representing an 80 feet W.R., and denoting a distance thereon of 15 feet from the E.L.D. *e.s.* to the left, as point 15, on line 80; by then making (as line 15—6″) a perpendicular from the point 15, and sufficiently long for its summit to denote a height of 6 feet; and by connecting the summits of the two perpendiculars by a line, as by line 6″—6′, the connecting line, being the required representation.

(N.B. The perpendiculars to be used in the foregoing case can be produced, as before shown, by making each one required, as many times as long as the space representing 1 foot of the W.R., or horizontal line, on which the perpendicular is to be represented as standing; and which space is to be found by means of a P.S. diagonal. See Lesson V.—6, and Lesson IV.—15.)

4. The correct perspective position on a drawing, of the ends of any line to be depicted, may be produced, therefore, by merely representing the distance its ends exist from us, (or the widths of range on which they lie,) and the distance of each from our E.L.D.; so that it is obvious, without further demonstration, that the use of vanishing points may be entirely dispensed with, by putting objects into perspective in accordance with this system. And not only can it be so, but when perfect accuracy is necessary, more correct perspective frequently can be produced by means of the process here detailed, for doing without vanishing points, than by the aid of them; since it is oftentimes impossible to render the position of a V.P. so defined that we can run lines to or from it with exactness.

(N.B. For the same reason that it may often be desirable not to use vanishing

points, it will likewise be so, to employ the substitute determinative point instead of the real one. See Lesson VI.—4, again. And a substitute point may be employed, not only ½ nearer to the point of sight than its proper distance therefrom, but likewise, for instance, ¾ths. nearer, by running a determinative line, to the ⅔ths. substitute, from a spot on a W.R., ¾ths. nearer to the E.L.D. than the spot said line should be drawn from if the true determinative point were employed,—and so on.

5. Should it be advisable, however, as unquestionably it often is, that the vanishing point should be used of a perspectively converging line lying on the earth's surface, in such case the proper position in which to place the V.P. on a drawing may be ascertained by the following simple process. Firstly, represent as by line 60, Fig. 116, the W.R. on which the nearer end (as *e* 15) of the line lies, and the distance that *that* end lies from our E.L.D., and denote the said distance on the drawing as by point *e* 15; secondly, represent, as by line 120, the W.R. on which the further end (as *z* 4) of the line lies, and the distance that *that* end lies from our E.L.D., and again denote the said distance as by point *z* 4; and thirdly, run a line *from* the perspective position of the nearer end as from point *e* 15, *through* the perspective position of the further end, as through point *z* 4, until the line touch the horizon, for the point of contact with the horizon, as *v*, will be the true V.P. of the line.

6. To represent, by means of vanishing points, the perspective convergence of lines existing on the side of any structure and parallel with a converging ground line lying on the earth's surface. Firstly, represent the converging ground line as inclining towards its proper vanishing point on the horizon, and according to the process described in the preceding paragraph; then from the nearer end of the represented line, as from 18, Fig. 114, draw a perpendicular so many times as long as the space denoting 1 foot of the W.R. on which the said nearer end lies, as will be equal to the number of feet in the height, of the highest converging line, above the ground converging line; secondly, from the summit of perpendicular run a line to the V.P. *v.*, of the converging ground line, and from the further end, (as 15) of the converging ground line, draw a perpendicular until it meets the converging summit line, as 6′—6″; thirdly, take between the points of a pair of compasses a *space* representing one foot of the perpendicular *first* drawn,—from its lower end, as from 18, measure off so many such spaces as are equal to the number of feet contained in the height above the ground of any other converging line of the structure; and from the point denoting the height, draw another line towards the V.P. *v.*, but stopping at the last drawn or remotest perpendicular—or as at that rising from 15. Thus the converging of each line may be produced, as well as the proper perspective lengths of the two perpendiculars it extends between, by the aid of the vanishing point *v.* of the converging ground line.

As the sides of a machine or other structure, as well as of a building, may have lines running from the side perpendicular lines of the structure, the rules for producing the converging lines of the one serve for producing those of the other.

(N.B. From *e′* to 1′ on the line 40, Fig. 114, represents one foot; because the P.S. diagonal 1—*s*, running from the line 20, denotes the space of 1 foot perspectively contracting, between the said P.S. diagonal 1—*s.*, and the eye's line of direction *e.*—*s.*, all the way up to the point of sight, and therefore one foot of each width of range it intersects. See Lesson V.—6, again.

The space from *e′* to 1′, line 40, is only half as large as the space from *e.* to 1, line 20, because the latter represents a foot's space, which is but 20 feet from us, whereas the former represents one which is 40 feet from us, or twice as far from us; that is, the former represents 1 foot of a 40 feet W.R., and the latter one foot of a 20 feet W.R. See Lesson IV.—16, 17.

The space from *e′* to 18, line 40, is 18 times as long as the space on the same line from *e′* to 1′, because it represents 18 feet from the E.L.D.

The space from 18 to 5′ is 5 times as long as the space from *e′* 1′, because it represents a height of 5 feet, or the apparent height of the horizon line above a width of range. See Lesson I.—10, and Lesson IV.—14 and 15.

The space or perpendicular from 18 to 6′, is 6 times as long as the space from *e′* to 1′, because it represents 6 feet of a perpendicular line, standing on a horizontal line. See Lesson IV.—14 and 15.

The space from *e″* to 1″, line 80, represents one foot. Refer to Lesson V.—6.

From e'' to 15, line 80, is 15 times as long as the space from e'' to $1''$, because it represents 15 feet.

The perpendicular from 15 to $5''$, is 5 times as long as the space from e'' to $1''$, because it represents a height of 5 feet, or the apparent height of the horizon line, &c. See Lesson I.—10.

From 15 to $6''$ is 6 times as long as the space from e'' to $1''$, because it represents 6 feet of a perpendicular line, standing on a horizontal line.

8. The vanishing point for a line that exists parallel with our eye's line of direction, is the point of sight, as stated in the first Lesson. To depict the perspective convergence of such a line towards its V.P., represent the width of range on which its nearer end lies, (as W.R. 80,) and from the point on the W.R. (as from $13'''$) denoting the distance of the said nearer end from our eye's line of direction, run a line (as line $13'''$ *s.*) to the point of sight; the line thus produced will represent the convergence of the line—or, of a line each end, and every part of which, lies 13 feet from our E.L.D., and the nearer end of which is 80 feet distant from us.

9. As the positions of the vanishing points of lines depends on the apparent angles their real angles would form with the horizon were the lines to extend to it, and could be readily described; consequently the positions on the horizon line of a drawing in in which to represent the vanishing points of lines forming in Nature a variety of angles with the horizon, could be given here, but are not, as it is an easy and instructive exercise for students to ascertain for themselves where a V.P. should be placed.

The methods, however, taught in other works on perspective, for producing the vanishing point of a line inclining towards the horizon, and, therefore, perspectively converging towards a V.P. situated thereon, differ altogether from the method here detailed; but at the same time they are unquestionably erroneous methods. Amongst the valid objections against them all, there being one in especial against the method most usually taught; namely, this, that it makes the *real* angle of direction formed with the horizon by a line lying parallel with the *actual* inclination of the perspectively converging line, and starting from our feet or station point, produce the vanishing point; instead of making, as it should, either this parallel line's, or the perspectively converging line's *apparent* angle of direction produce it.

LESSON VIII.

ON PREPARING A GROUND PLAN TO BE PUT INTO PERSPECTIVE.

To depict anything in perfectly correct perspective as actually, or presumptively, standing on the ordinary level of the earth's surface, and seen by us with the eye raised 5 feet above the same level, it is requisite to have a ground plan, as lines *a. b. e. z.* Fig. 116, or geometric drawing of the *base lines* of that which is to be perspectively depicted, and showing their forms, relative positions, and lengths. This ground plan, also, should have a *scale* annexed to it, giving the length of line that represents on the plan, 1 foot, 2, 3, 4, 5, and 10 feet; and it is advisable to assume the following circumstances with reference to the plan, whilst we are making a perspective drawing of it, and that they should be, so far as possible, indicated on the plan.

1. It is advisable to assume, that the lines of the said ground plan actually lie on the earth's surface; that each is so many real feet long, according to its scale feet length; and that we are viewing them, so that the whole of each of them comes entirely within the range of vision. See Lesson IV.—1, 2, 3.

2. That whilst we are viewing this ground plan, it lies in a particular way relatively to the course of the horizon line of this range of vision. See Lesson I.—1.

3. That our eye, at the same time, is not only 5 feet above the earth's surface but remains so, and fixed on one particular part of the horizon, or on a point of sight; consequently that the eye has a specific line of direction with regard to this horizon line, (see Lesson I.—2, 3, 4, 5,) and therefore with regard to the ground plan.

4. That one part of this ground plan lies more remote from us than any other part; as point *z.*, Fig. 116.

But to assume these things readily, the plan, as in Fig. 116, should indicate said eye's line of direction, as by line **E.L.D.**; whilst *the E.L.D.* should be placed on the plan

according to how we wish to perspectively represent it. That is, whether we wish to represent it so that any particular line of it shall appear horizontal, or otherwise, on the perspective drawing of the plan; experience, taste, judgment, or specific instructions from the designer of the plan, being, however the only regulators of what should be the course of the horizon and eye's line of direction, and the position of the point of sight, relatively to a plan to be perspectively represented. Though should it be required that any particular line of it should appear horizontal when perspectively represented, then *that line* of the plan will truly indicate the course the E.L.D. of the plan should take, inasmuch as in such case it must always be at a *right angle* with that line; or should it be required to represent any particular line of the plan as being parallel with the plan's E.L.D., then the plan's E.L.D. must of course run parallel with the said particular line.

5. Having assumed, and a plan prepared, as above described, supposing also the plan to be as lines *a. b. e. z.*, Fig. 116; then, two W. R. lines, at a *right angle* with the E.L.D., should be drawn exactly through the remotest point of the plan, as through point *z.*, and through the nearest point, as through point *a.*; whilst, when drawn, the ends of one of them (or of the lower one, W.R. 45) should lie as far from each side of the plan E.L.D. as the plan's right and left extreme points lie—that is, as far as point **L** lies from one side of the plan's E.L.D., and as point **F** lies from the other—and so that said lower line may serve as a *width-line* of the plan, and the line of the E.L.D. extending between the lower and the upper W.R. lines (45 and 120), or as from **E.L.D.** upwards, may serve as a *depth-line* of the plan.

6. Next, to ascertain at what distance from us to depict the remotest point (*z.*) of the plan, as existing—that is, in strict accordance with the rule respecting the distance at which we should stand from lines to bring them within the range of vision (see Lesson II.—2),—it is absolutely necessary to proceed as thus: namely, when a *perpendicular* line is to be depicted on the perspective drawing to be made of a plan, the scale length of which line is greater than the scale length of the plan's *width-line*, but *less* than the scale length of *half* the *plan's depth-line*: in this case, multiply the scale length of the plan's *depth-line* by 2, and from the result deduct double the difference existing between the scale length of the perpendicular and the scale length of *half* the plan's depth-line; and whatever may be the product, represent the remotest point of the plan as existing on a W.R., at a distance from us at least equal to the number of feet in said product.

When said perpendicular is *longer* than the plan's width-line, and *also* than half the plan's depth-line, in such case, multiply the scale length of *the perpendicular* by 4, and from the result deduct double the difference existing between the scale length of the perpendicular and the scale length of half the plan's depth-line; and whatever may be the product, represent the remotest point of the plan as existing on a W.R. at a distance from us at least equal to the number of feet in said product. When there is no perpendicular line to be considered; or, when the scale length *of the plan's width-line* is greater than the scale length of a perpendicular to be considered (and the longest one to be depicted on the perspective drawing of the plan, is the one which should be considered); then proceed in both cases as above described, but relatively only to the scale length of the plan's width-line, instead of to that of any perpendicular. See the end of Lesson XI.

7. Next a W.R. line parallel with the upper and lower W.R. lines first drawn, should be run (as W.R. line 60) through the angle points *b.* and *e.* of the plan, as they are, according to the position of the plan's E.L.D., at an equal distance from us. And through each angle or extremity point of every main line of a plan, a W.R. line should be drawn.

8. The *scale distance* of the lower or nearest-point W.R. line (as of line 45) from the plan's remotest-point W.R. line (as from line 120) should be accurately ascertained, by measuring from the one to the other along the eye's line of direction running between them; this distance should be deducted from the denomination of the remotest point line; then as said *scale distance* 75 feet, from 120, leaves 45, the nearest point line should be marked 45, to *indicate* that *that* nearest point lies at the distance of 45 feet from us; and so on with regard to any line directed to be drawn in the preceding paragraph.

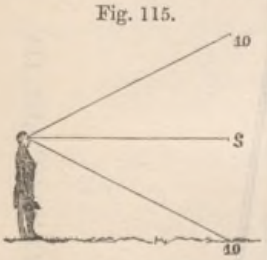
9. The *scale* distance of each angle point of the plan *from its* E.L.D., and in a *horizontal direction* (*i. e.* along the point's W.R. line), should also be found and denoted on the plan by numerals: as that of point *a.*, and which is 5 feet from the plan's E.L.D.;

that of point *b.*, which is also 5 feet therefrom; that of *e.*, which is 15 feet therefrom, and that of *z.*, which is 4 feet therefrom. See Lesson IV.—30. 31.

Thus we have a plan, as Fig. 116, displaying these different features relatively to what it has been stated, in paragraphs 1 to 4 of this lesson, should be assumed. First, its remotest point, as *z*, exists at a distance of 120 feet from us, or on an 120 feet width of range, and 4 feet from our E.L.D.; secondly, its next less distant point, as *b*, exists at the distance from us of 60 feet, or on a 60 feet width of range, and 5 feet thereon from our E.L.D.; thirdly, its point, *e*, likewise exists at the distance from us of 60 feet, or on a 60 feet width of range, and 15 feet thereon from our E.L.D.; and fourthly, its nearest point, as *a*, exists at the distance of 45 feet from us, or on a 45 feet width of range, and 5 feet thereon from our E.L.D.

But as any such nearest point of a plan, as the one just above alluded to, never ought to be represented close to the base line of the perspective drawing of the plan, it is therefore necessary to determine upon a position to be represented as in advance of the said points, or as 5, 10, 15, 20, etc., feet nearer to us. How much nearer, however, than the said point, depends upon the taste and special requirements; so that sometimes it is advisable to represent a position considerably nearer to us, and sometimes but slightly so. Nevertheless the position the base line of the perspective drawing of the plan should represent, as a rule, should *not be less than* 10 *feet from us*,—for, whilst the eye is raised 5 feet from the ground, and kept fixed on a horizon point of sight, no line lying on the ground, and that is nearer to us than 10 feet, by any possibility can be distinctly visible to us, or come within the range of vision—and the base line of a perspective drawing, as a rule, should represent a line lying on the ground. See Fig. 115, where the man is represented as 5 feet high—the line from his eye to *s.* (or his eyes' line of direction) shews the apparent level of the horizon and point of sight—and the lines from his eye to 10—10 show the direction of the boundary of the range of vision; anything existing outside of those lines not being clearly visible to him, or within his range of vision, without a movement of the eye—a condition that must not be regarded, if we wish to make a perspective drawing in strict conformity with Nature, or *her law of perspective.* See Lesson I., 4, 5, and Lesson IV., 1 to 4.

Fig. 115.



LESSON IX.

ON MAKING A PERSPECTIVE DRAWING FROM A PREPARED GROUND PLAN.

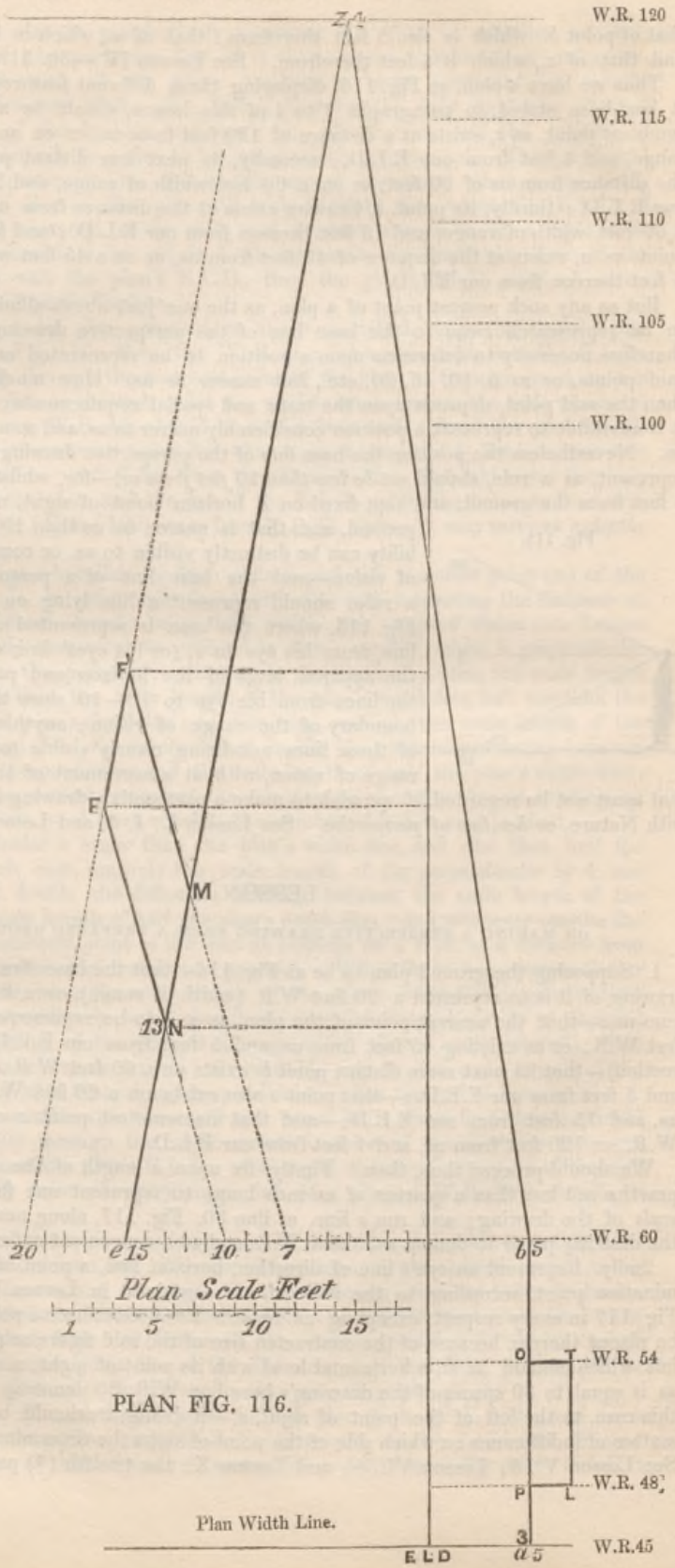
1. Supposing the ground plan to be as Fig. 116—that the base line of the perspective drawing of it is to represent a 30 feet W.R. (width of range), or a line 30 feet distant from us:—that the nearest point of the plan, as *a*, is to be represented as being on a 45 feet W.R., or as existing 45 feet from us, and 5 feet from our E.L.D., (eye's line of direction)—that its next more distant point *b* exists on a 60 feet W.R., or 60 feet from us, and 5 feet from our E.L.D.;—that point *e* also exists on a 60 feet W.R., or 60 feet from us, and 15 feet from our E.L.D;—and that its remotest point *z* exists on a 120 feet W.R., or 120 feet from us, and 4 feet from our E.L.D.

We should proceed thus, then. Firstly, fix upon a length of line (for the purposes of practice not less than a quarter of an inch long) to represent one foot of the *base line scale* of the drawing; and run a line, as line 30, Fig. 117, along near the lower edge of the drawing paper to denote a 30 feet W.R. and to a convenient extent.

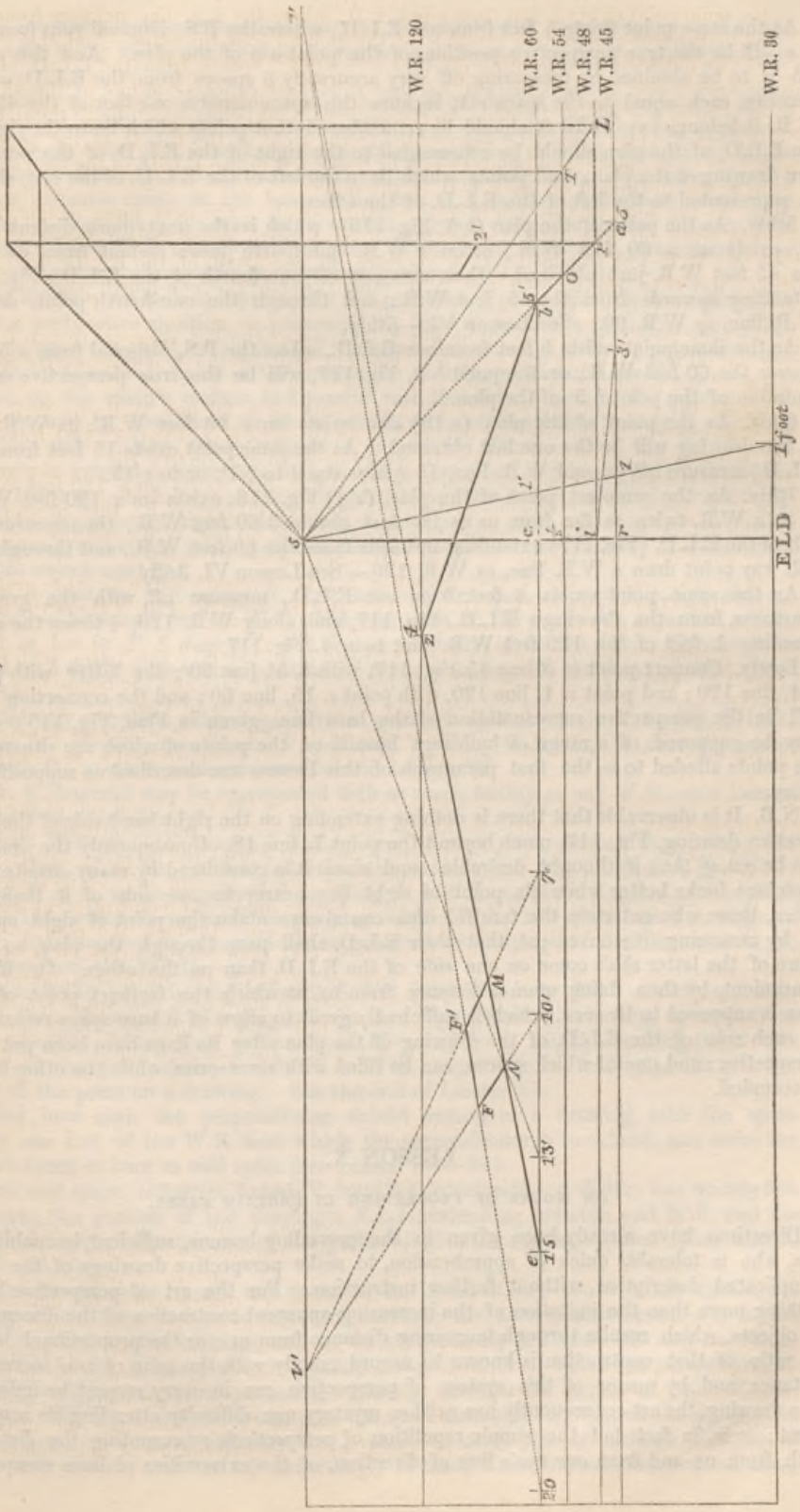
2ndly. Represent an eye's line of direction, horizon line, a point of sight and a determinative point, according to the instructions contained in Lesson V., and as shown in Fig. 117 in every respect, excepting as regards the determinative point, which could not be placed therein, because of the contracted size of the said figure or perspective drawing, but which should be on a horizontal level with its point of sight, *s*, and as far therefrom as is equal to 30 spaces of the drawing's base line W.R. 30 denoting 1 foot, as well as in this case, to the left of the point of sight, *s*,—it being, it should be borne in mind, a matter of indifference on which side of the point of sight the determinative point is placed. See Lesson V., 5; Lesson VI., 4; and Lesson X., the twelfth (*) paragraph.

3rdly. Represent on the base line (according to its scale) 1 foot, from the E.L.D., and run a line, or P.S. diagonal, to *s*, the point of sight. See Lesson V., 6, again, especially the last paragraph of that lesson. It will be useful also to divide the first foot's space, extending from the drawing's E.L.D. on the one or other side of it, into four equal parts, to denote quarters of a foot, and then to run P.S. diagonals from each division to the point of sight, to indicate quarters of a foot diminishing perspectively all the way to the distance of the horizon.

4thly. As the point of the plan (*a* 5, Fig. 117), the nearest to us that is to be perspectively represented, exists on a 45 feet W.R., and as the base line of the drawing represents a 30 feet W.R. then as 45 feet are one half more than 30, measure off ⅓rd of the E.L.D. extending upwards from the drawing's base line W.R. 30, or as to *r*, and through the ⅓rd point, *r*, draw a W.R. line, as W.R. 45 for all parts of this line will perspectively represent a distance of 45 feet from us. See Lesson VI.—2.



PLAN FIG. 116.



PERSPECTIVE DRAWING, FIG. 117.

As the same point exists 5 feet from our E.L.D., where the P.S. diagonal runs from *a* 5 to *s* will be the true perspective position of the point *a* 5 of the plan. And this point, *a* 5 is to be obtained by measuring off very accurately 5 spaces from the E.L.D. of the drawing, each equal to the space *r* 1, because this space denotes one foot of the 45 feet W.R. it belongs to; whilst it should be remembered that points which lie to the right of the E.L.D. of the plan should be represented to the right of the E.L.D. of the perspective drawing of the plan; and points, which lie to the left of the E.L.D. of the one, should be represented to the left of the E.L.D. of the other.

5thly. As the point of the plan (*b* 5, Fig. 116), which is the next more distant from us, exists on a 60 feet W.R., or on a W.R. one-fourth more distant from us than the 45 feet W.R. just obtained,—then measure off one-fourth of the E.L.D., Fig. 117, extending upwards from the 45 feet W.R., and through the one-fourth point, draw a W.R. line, as W.R. 60. See Lesson VI.—6thly.

As the same point exists 5 feet from our E.L.D., *where* the P.S. diagonal from *a* 5 to *s* crosses the 60 feet W.R., or the point *b* 5, Fig. 117, will be the true perspective representation of the point *b* 5′ of the plan.

6thly. As the point of the plan (*e* 15) also exists on a 60 feet W.R., its W.R. line on the drawing will be the one last obtained. As the same point exists 15 feet from our E.L.D., measure off, on said W.R. line, 15 spaces equal to *c* 1′, or to *e* 15.

7thly. As the remotest point of the plan, (*z* 4) Fig. 116, exists on a 120 feet W.R., or on a W.R. twice as far from us as the last obtained 60 feet W.R., then measure off half of the E.L.D. (Fig. 117) extending upwards from the 60 feet W.R., and through the half way point draw a W.R. line, as W.R. 120.—See Lesson VI. 3rdly.

As the same point exists 4 feet from our E.L.D., measure off, with the greatest exactness, from the drawing's E.L.D., Fig. 117, and along W.R. 120, 4 times the space denoting 1 foot of the 120 feet W.R.; or, to *z*. 4, Fig. 117.

Lastly. Connect point *a*. 5, line 45 Fig. 117, with *b*. 5′, line 60; the latter with point *z*. 4, line 120; and point *z*. 4, line 120, with point *e*. 15, line 60; and the connecting lines will be the perspective representation of the base lines given in Plan, Fig. 115; or, it may be supposed, of a range of buildings' base lines, the points of which are situated as the points alluded to in the first paragraph of this Lesson are described as suppositively being.

N.B. It is observable that there is nothing extending on the right hand side of the perspective drawing, Fig. 117, much beyond the point L. line 48. Consequently the drawing can be *cut off there* if thought desirable; and since it is considered by many artists that a picture looks better when its point of sight lies nearer to one side of it than the other, those who entertain the fanciful idea can always make the point of sight appear so, by arranging, if convenient, that their E.L.D. shall pass through the plan, so that more of the latter shall come on one side of the E.L.D. than on the other. Or, if not convenient, by then fixing upon a distance from us, at which the furthest point of the plan is supposed to be seen, which is sufficiently great to allow of a bare space remaining on each side of the E.L.D. of the drawing of the plan after its lines have been put into perspective; and one of which spaces, can be filled with accessories, while the other is left unoccupied.

LESSON X.

ON MODES OF PROCEEDING IN CERTAIN CASES.

Directions have already been given in the preceding lessons, sufficient to enable any one, who is tolerably quick of apprehension, to make perspective drawings of the most complicated description, without further instruction. For the art of perspective being nothing more than the imitation of the increasing apparent contraction of the dimensions of objects, which results through increasing distance from us; as the proportional degree or ratio of that contraction is known to accord exactly with the ratio of said increasing distance, and by means of this system of perspective can in every respect be indicated in a drawing, the art consequently has neither mystery nor difficulty attending its acquirement; or is, in fact, but the simple repetition of *perspectively* representing the distance, both from us and from our eye's line of direction, of the extremities of lines composing

forms—a distance it is comparatively easy to represent with regard to any point, the process only being more troublesome, or requiring more care and patient pains-taking in some cases than in others.

To perceive the truth of this, it must be borne in mind, that if, as in substance before stated, a point exists at a certain distance from us, it must also lie either on, or perpendicularly above, some one imaginary horizontal ground-line or other that exists at the same distance from us, and forms a *width* of the range of vision. Consequently, if a point, for instance, exists at the base of the face of a building at the distance of sixty feet from us, then the point must lie on a *width of range* that is sixty feet distance from us, or on a 60-feet W.R.; or if another point exists on the same face, immediately over the first-named point, it must lie perpendicularly above a 60-feet W.R.

When, likewise, we look at anything for the purposes of perspective representation, the eye has a perspective position, or presumptively fixes its gaze on a particular spot of the horizon, termed the point of sight; and therefore, from the eye to this point, a line may be considered to extend, styled in this system the *eye's line of direction*, or E.L.D.

Whilst, on the earth's surface, and parallel with this E.L.D. both to the right and left of it, there may be considered to be an infinite series of imaginary lines lying adjoining each other, and existing respectively at a progressive distance from the E.L.D.,—or successively in general numbers one foot, two feet, three feet, and so on, distant therefrom (see Fig. 109); yet which lines, as they are parallel with the E.L.D., must all perspectively converge to the point of sight,—becoming in consequence what in this system are called *P. S. diagonals*, and either on, or perpendicularly above, some one or other of which *every point* of an object must lie.

Hence a point, on our seeing it, must not only lie upon, or perpendicularly above a W.R.—or, so to speak, *has its W.R.*; but also must do the same with regard to a P. S. diagonal, or *has its P. S. diagonal*; but always relatively, of course, to our distance from the point, and to the perspective position of our eye as respects the point of sight above alluded to.

Perspectively represent a drawing's horizon, point of sight, determinative point, E.L.D., and base line properly (see Lesson V.—1 to 5), and any W.R. may be correctly represented with the greatest readiness, as shown in Lesson VI.

Any P. S. diagonal may be represented with as much facility as any W.R.—see Lesson V.—from 6 to conclusion.

A point's W.R. and P.S. diagonal having been correctly represented in a perspective drawing, then, *where the one intersects the other*, will be the true perspective position of the point, if it is to be represented as lying on a W.R. and P.S. diagonal. See point 13″, Fig. 114, which is represented as lying where W.R. 130 intersects P.S. diagonal 13‴—s; and therefore is perspectively represented as existing 130 feet distant from us, and 13 feet from the E.L.D.

Or, should the point lie, for instance, 5 feet perpendicularly above a W.R. and P.S. diagonal, then, the summit of a perpendicular line represented as extending upwards from their perspective intersection (or as from 13″), and to a height denoting the 5 feet elevation of the point above said W.R. and P.S. diagonal (or as to 5‴ *f.*), will give the position of the point on a drawing. See the end of Lesson XI.

To find how high the perpendicular should extend in a drawing, take the space denoting one foot of the W.R. from which the perpendicular is to extend, and make the latter five times as long as said space (see Lesson IV.—14).

To find said space, either see Lesson V. from 6 to conclusion; or divide, into exactly five equal parts, the portion of the drawing's E.L.D. extending between said W.R. and the drawing's horizon line, and one of the parts will give the required space. (See Lesson IV.—12 and 13.)

(*) And should there remain any doubt in the mind of any one who has studied the preceding Lessons, as to how to represent correctly the determinative point—by means of which required widths of range are to be perspectively produced—it may be represented, whether for the purposes of ordinary perspective, or of bird's eye perspective, by adopting this simple method of proceding; namely, between the points of a pair of compasses, and *with the utmost accuracy*, take the space denoting one foot of the perspective *drawing's base*, or bottom boundary line; then, *as many feet of distance from us* as *this base line denotes*, measure off accordingly so many times the said foot's space along

the horizon line, from the point of sight and on either side of it—the end of the last space will be the true perspective position of the determinative point. (Refer to the second N.B. paragraph, Lesson VII).

To find said foot's space, if doubtful how to ascertain it; then, when the level of the horizon of the drawing is to be 5 feet, divide into exactly five equal parts, the E.L.D., which extends upwards from said base line to the drawing's horizon line, (when the level is to be greater or less than 5 feet, divide the E.L.D. accordingly) and one of the parts will give the required space. Also, upon representing any W.R., it is advisable first to run P.S. diagonals from feet spaces of the drawing's base line, as each after represented W.R. will be rendered a *scale line* by the process, or become marked out into spaces, that will denote on it $\frac{1}{4}$, $\frac{1}{2}$, 1 foot, 2, 3, etc., feet. (See Fig. 114).

Consequently, the art of perspective cannot be said to be in the slightest degree difficult either to comprehend or practise—although unquestionably one demanding the most minute particularity of proceeding; a circumstance it is as well again to remark, which must never be overlooked. Nevertheless, in addition to the directions above alluded to, the following rules for proceeding in certain cases are given, as they will assist the student to master the art, practically, sooner than he would be able to do if left to his own resources.

1. When, on a ground plan, a recess-form, or other break (as P—O, base line *a*—*b*, Fig. 116), occurs between the two ends of a base line actually lying parallel with the E.L.D., and therefore perspectively converging towards the point of sight:—

To represent the perspective position of plan point P of the break, proceed thus; namely, on the plan, and parallel with its E.L.D., place a ruler so as to extend from P to said base line's (*a*—*b*'s) *nearer end* W.R. 45, or to 3; and measure *plan scale feet distance* between P and said W.R. 45, to ascertain how much further from us P lies than the W.R. does—or, to ascertain P's W.R.

Next, in the drawing, on the represented base line's nearer-end W.R. (as on W.R. 45, Fig. 117) from where it is crossed by the E.L.D. as at *r*, and according to the space (*r*—1) on said W.R. denoting one foot, measure off distance corresponding with the above-named plan scale feet distance, or as to 3′.

Then, from distance-mark 3′, and to the *determinative point*, run a line so as to intersect the E.L.D. as at *i*: next, draw a W.R. (48) or horizontal line through intersection *i*, so as to cut the represented base line *a*—*b* as at *P*, and point *P* will perspectively represent plan point P.

For when a point lies on an already represented base line, which converges towards the point of sight, and it is required to find the position of the point, it is only necessary to represent its W.R. intersecting said base line as W.R. 48 intersects base line *a*—*b*, the point of intersection being the required position.

N.B. Refer to the twelfth (*) paragraph of this lesson; and to the second N.B. paragraph, Lesson VII.

2. To represent plan point O's W.R. and position on the drawing, either proceed as directed in the case of plan point P; or, as O lies on a 54-feet W.R., that is, on one 9 feet further from us than W.R. 45; produce O's W.R. by marking off $\frac{1}{6}$th of the E.L.D., extending between W.R. 45 and the point of sight; and through the $\frac{1}{6}$th mark draw a W.R as W.R. 54—for where it intersects base line *a*—*b*, as at *O*, will be the perspective position of plan point O. See Lesson VI.—6thly.

3. Plan point P, being a point forming one end of a line receding from a base line denoted by *a*—*b*; and the other end L lying on the same W. R. as P does, as it must do, since this receding line is a horizontal one, under these circumstances, and in the case of every horizontal line, the perspective position in a drawing of both ends of the line will be on the same W.R., or as on W.R. 48.

4. Required to represent the length of said receding line P—L;—measure the plan scale feet distance existing between the two ends of the line;—then, from the point in the drawing representing one end of the line (as from P, Fig. 117), measure off the corresponding distance along said point's W.R. 48, and according to the scale of the W.R. or space thereon denoting one foot—the termination of said corresponding distance (as *L*.) will give the true perspective position of the other end of the line; whilst the required length will be represented by the space extending from *P*. to *L*.

5. Should a plan line as L—T, Fig. 116, lie parallel with a base line, as with *a*—*b*, then

a line converging in the drawing, as from *L.*, Fig. 117, towards the point of sight, will represent said plan line's perspective direction. Represent its other end's (T's); W.R. 54, in the drawing, as intersecting said converging line *L*—*s*, then the point of intersection as *T* will give the true perspective position of this other end.

The perspective representation of plan line T—O will be the portion of said W.R. 54, extending between *T* and *O*, Fig. 117.

6. Supposing four perpendiculars are to be depicted on the drawing as standing on the four plan points, P. O. L. T, of this recess, to represent four rods of equal height: then on the drawing, and according to as many feet as there are in this height, either make each perpendicular so many times as long as the space denoting one foot of the W.R. on which it is to be represented as standing; or, in the same manner, make the nearer two (those rising from *P.* and *L.*, fig. 117) each so many times as long as said space, and, therefore, as they rise from the same W.R., make each of an equal height;—next, from the *summit* of each run lines towards the point of sight, and afterwards draw perpendiculars from points *O.* and *T.*, so that each perpendicular contacts with one of said summit lines.

7. Join the summit of the rod rising from *P.*, with that rising from *L.*; also the summit of the rod from *O.*, with that from *T.*; and the perspective outline of a roof frame, supported by four rods, is obtained.

8. Run a line towards the point of sight from any point of the nearest rod (that rising from *P.*), or, for instance, as from 2′.; imagine the rod to be cut away from beneath the line, and it will virtually represent, in correct perspective, a window's bottom line, lying two feet above the ground. Whilst the rods from *P.* and *O.*, with the summit line running towards the point of sight, and connecting the summits of the two rods, will virtually represent a doorway, 10 feet high, on the side of a house.

And this is how every doorway and window should be represented perspectively, when its top and bottom lines converge in Nature towards the point of sight: as they always do; when, firstly, the summit of one of its side lines lies at the same height from the ground that the summit of the other side line does; when, secondly, the lower end of the one line also lies at the same height from the ground that the lower end of the other does; and when, thirdly, said side lines at the same time lie on the face of a building which exists parallel with the E.L.D.

N.B. If attainable, use screw dividers, with very fine points, to ascertain required foot spaces. When used, never dig the points into the paper, so as to make the slightest hole; and let the paper be fastened as firmly and flatly as possible on a drawing-board. Also, when measuring off distance, height, or length spaces, either on a plan, elevation, or the W.R. of a perspective drawing, be careful invariably to test the correctness of the foot space taken, from the scale of either one or the other, between the points of the dividers or compasses for the purposes of the required measurement. In the case of a plan or elevation, see that five successive foot spaces made by the dividers *exactly* accord with the *five feet space* of the plan, or elevation, scale; and in the case of a perspective drawing's W.R., see that five successive foot spaces made by the dividers *exactly* accord with the portion of the E.L.D. extending between said W.R. and the point of sight; that is, if the horizon is represented but as having an apparent level of five feet above the ground—should it be represented as having a higher level, test accordingly.

LESSON XI.

ON GENERAL MATTERS, BIRD'S-EYE PERSPECTIVE, ETC.

1. When a recess-form, or other break occurs between the two ends of a base line that neither lies horizontally, nor parallel with the E.L.D., and which, therefore, perspectively converges in Nature out of its true direction towards some other vanishing point than the point of sight,—or such a break line as is indicated by N—M, base line *e*—*z*, Fig. 116.

To find in a drawing the proper position of either point of the break, or, for instance, of its nearest point N, proceed thus:—

Namely, ascertain the point's (as N's) P.S. diagonal on the plan:—or, at a *right angle*

with the plan's E.L.D. place a ruler so as to extend from the E.L.D. to point **N** as the dotted line does; then measure the point's plan scale feet distance from the E.L.D.

Next, on the perspectively represented base line's (*e*—*z*, Fig. 117) nearer-end W.R. 60, and *from where* the E.L.D. intersects it, measure off distance corresponding with above-named plan scale feet distance, and according to the space on said W.R. 60 denoting one foot, or measure off to 13′; and from the distance-mark 13′ draw a P.S. diagonal to the point of sight, and it will intersect said base line, as P.S. diagonal 13′—*s* intersects base line *e*—*z*—the point of intersection *N*. being the perspective position of plan point **N**.

2. Supposing plan point **N** to be the nearest point of a recess line **N—F**, extending from a base line *e*—*z*, and it is required to produce the vanishing point of said recess line, and, therefore, of all lines lying parallel with it, as well as the perspective convergence of this recess line; also that said point **N** is represented, as by *N*, Fig. 117.

On the plan place a ruler along the recess line **N—F**, and so that the ruler contacts, as at 10, with said *base line's* (*e*—*z*) nearer-end's W.R. 60, and *along said W.R.* measure plan scale feet distance between said contact point 10 and the E.L.D.

Then mark off corresponding distance on the represented base line's nearer-end W.R. 60, according to its scale, or mark off the space from the E.L.D. to 10′ W.R. 60, Fig. 117. Next, from distance-mark 10′ run a V.P. line through point *N*, until the line touches the horizon; the point of contact, *v*′, with the horizon line being the V.P. of plan recess line **N—F**, as well as of all lines lying parallel with it, whether below or above the horizon; and a portion of the said V.P. line, extending from *N* towards the horizon, being the required perspective convergence of said plan recess line.

N.B. The required V.P. and convergence, also, can be obtained by means of finding on the plan, and representing in the drawing, the W.R. and P.S. diagonal respectively belonging to its points **N** and **F**.

3. Required to represent the length of plan line **N—F**, or that it extends from base line *e*—*z*; place a ruler on **F**, and parallel with said base line, likewise so as to contact, as at 20, with said base line's nearer-end W.R. 60; and measure, along said W.R., plan scale feet distance between said point of contact, 20, and the E.L.D.

Then, from the drawing's E.L.D., mark off corresponding distance on the represented base line's nearer-end W.R. 60, according to the said W.R.'s scale, or mark off to 20′; next, from the distance-mark 20′ draw a V.P. line (20—*v*) to the V.P. (*v*) of said base line *e. z.* (see Lesson VII.—5), and where said V.P. line intersects the previously produced V.P. line 10—*v*′, as at *F*, will be the perspective position of plan point **F**; whilst the length of line between *N* and *F* will be the required representation of plan line **N—F**.

At the same time, should the recess on the plan shew a back line, as **F—F′**, lying parallel with the base line *e*—*z*, a portion of the last produced V.P. line 20—*v*., extending from F on the drawing towards the V.P. *v*, will correctly represent it.

4. Required to represent plan points **M** and **F′**, and line **M—F′**. Either find on the plan each point's P.S. diagonal, or distance horizontally from the E.L.D.; then, where **M**'s represented P.S. diagonal, in the drawing, is made to intersect the V.P. line, extending from *N* to *v*, as at *M*, will be plan point **M**'s perspective position; and, where **F′**'s represented P.S. diagonal is made to intersect the V.P. line, extending from *F* to *v*, as at *F*′, will be plan point **F′**'s perspective position; whilst a line drawn from *M* to *F*′ will be the required line.

Or proceed thus: place a ruler along plan line **M—F′**, and so that it contacts with the nearer-end W.R. 60 of the base line from which it runs, as at 7; and, along said W.R. 60, measure plan scale feet distance between said point of contact and the E.L.D.

Then, mark off corresponding distance on the represented base line's nearer-end W.R. 60, according to its scale, or mark off the space from the drawing's E.L.D. to 7′, W.R. 60, Fig. 117. Next, (as plan line **M—F′** lies parallel with plan line **N—F**, and, therefore, must converge in Nature, as towards *v*′, the same V.P. that **N—F** does), from distance-mark 7′ run a V.P. line to *v*′. For, where said V.P. line 7′—*v*′ intersects the V.P. line, running from *N* to *v*, as at *M*, will be the perspective position of plan point **M**; and where it intersects the V.P. line, running from *F* to *v*, as at *F*′, will be the perspective position of plan point **F′**; whilst the portion, of the *last-produced* V.P. line, 7′—*v*′ running from *M* to *F*′, will be the required length of plan line **M—F′**.

5. Recess as well as any other lines, converging towards *any* V.P. and said V.P., may be produced in a perspective drawing by adopting modes of proceeding corresponding with one or other of the foregoing.

6. The perspective convergence of a line, however, may be produced without representing its V.P. For, supposing, for instance, it were requisite, without enlarging the paper of Fig. 117, to draw, thereupon, a line, the V.P. of which, if used, would have to be placed two actual feet from the point of sight *s.*; then, the convergence of the line could be produced by merely representing one end of the line's W.R. and P.S. diagonal, intersecting each other; and the other end's W.R. and P.S. diagonal, also intersecting one another; and by drawing the converging line between the two intersections—that is, should the line be a *ground line.*

Should it lie above the ground:—raise perpendiculars from each W.R. that each end of the line is to be represented as lying above, and of a proper height according to the scale of said W.R.; then run a converging line from the summit of one to the summit of the other perpendicular. See Lesson VII. again.

7. The side and perspectively converging lines of doorways, windows, or of any other form, may be easily represented, as must now be obvious to the student, either by means of first producing whatever W.R.,—P.S. diagonal,—or V.P., may belong to each end of every line; or, by means of producing only the W.R. and P.S. diagonal of each. Refer again to the first seven paragraphs of the previous lesson.

8. To produce the W.R. of any previously represented point, as of point *M.* or *N.* Fig. 117:—run a horizontal line through the point and across the drawing.

N.B. See the last paragraph of previous lesson again.

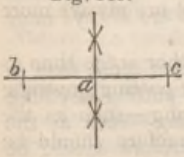
9. To find the perspective centre of any represented space, when required quickly and its top and bottom lines converge to a common V.P., and also are connected by two perpendiculars representing, one the same height as the other. Run diagonal lines from the diagonally opposite ends of the perpendiculars,—a perpendicular line drawn through the intersection of the diagonals will be the perspective central line of the space. See Fig. 114, diagonals 18—6′, and 15—6′, and centre line *c.*

10. To represent a circle in perspective:—enclose it in a square, and run lines through its centre, as shown in Fig. 118; then, make a plan of it with an E.L.D., and find the W.R. and P.S. diagonal of each point of contact that the circle makes with the accessory lines shown in the diagram. Next represent the perspective position of each point of contact, and connect the represented points with a circular line running from one to the other, taking care that it flows with freedom and does not bulge out with an unnaturalness of appearance in any one part.

Fig. 118.

11. To make one line at a right angle with another:—draw one line; then open a pair of compasses and place one of its legs where the right-angle line is to run from, or, as at *a*, Fig. 119:—mark off on each side of *a* an equal space, as *b*, *c*; then open compasses a little wider and from *b* and *c* make intersections above and below *a*; next place a ruler, along *a* and the two intersections, and draw a line upwards or downwards as required; the line so drawn will be a perfect right-angle line if the operation has been carefully performed.

Fig. 119.



On using the compasses see that they are sharp pointed, and do not allow their points to indent the paper.

12. A plan of an object is generally accompanied with an elevation of the object. To make a perspective drawing of the elevation, make an E.L.D. upon it, corresponding in position with that of the plan's E.L.D., for the purpose of ascertaining the distance of points of the elevation, from the E.L.D. Also, whatever level has been employed, for the apparent level of the horizon above the earth's surface, in the perspective drawing of the plan, it will be found convenient to draw an horizon line across the elevation to represent a level corresponding with the level denoted by said perspective drawing's horizon line.

The limits of this work do not admit of further directions being afforded with reference to ordinary perspective. Nor are they requisite in fact, this system of perspective being a proof that the science may be practically acquired through merely knowing a few leading principles. For it is simply the result of a knowledge of the three main principles of perspective—namely, that apparent contraction increases exactly as distance from us increases; that, consequently, parallel lines, under certain circumstances converge out of their true directions towards a common V.P.; and that we ought not to represent a line as existing nearer to us than a certain distance regulated by the length of the line—though the system has been carefully tested before being advanced in this work.

13. To represent a bird's eye view, or anything seen by us with our eye raised more than five feet above the ordinary level of the earth's surface, proceed thus:—

Ascertain, or determine, the number of feet that the eye is raised above said level then represent the base line of the perspective drawing to be made; from the point of said base line, from whence the E.L.D. is to run, draw a perpendicular to represent the height of the eye above the earth; represent the horizon as passing through the upper end of the line, and said upper end will denote the point of sight; whilst the perpendicular will not only denote a line the summit of which exists on a level with the apparent level of the horizon, but also the E.L.D. of the perspective drawing.

And according to the height of the eye above the earth's ordinary level will be the height of the apparent level of the horizon above any W.R. that may be represented on the drawing, whether a base line W.R. or not, and one scale foot of the line indicating said height (or of the E.L.D.) will be equal to one foot of the W.R.; therefore divide the E.L.D. extending between the base line W.R. and the horizon point of sight into as many equal spaces as there are feet in said height of the eye—consequently if there should be 100 feet in said height, divide the perpendicular into 100 equal parts—to find the space denoting one foot of the base line W.R.; remembering that by dividing the base line into feet spaces of the size of said portion, and by running, from the limit of each foot space, a P.S. diagonal to the point of sight, then, wherever the so-obtained P.S. diagonals may intersect any after produced W.R., from one P.S. diagonal to the next will indicate one foot of said W.R., as well as of any perpendicular to be drawn upon it. See the twelfth (*) paragraph, Lesson X.

Bearing in mind, and attending to these facts, the perspective position of all the points of any object to be drawn may be produced on a drawing, by, otherwise, proceeding according to the directions given for producing ordinary perspective; taking especial care, the while, that all points, which do not lie so high above the earth's surface as the apparent level of the horizon, are represented of their proper height, but beneath the drawing's horizon, etc.

Nothing has hitherto been said in this treatise respecting perspective views relatively to which the level of the eye is less than five feet. The reason of this is, that if it be considered how contracted the *apparent* depth of space between the eye and our position would be on looking at a scene with the eye raised less than five feet above the earth's ordinary level, a perspective drawing correctly representing a space so contracted would seem to be unnatural. It is not advisable, therefore, to adopt a minimum height less than five feet for the level of the eye relatively to perspective. Neither is it judicious, unless requisite under very special circumstances, to work according to any other than this minimum height of five feet, as drawings made in accordance with it are always more pleasing than when not so made.

N.B. The term "perpendicular" is never used in this work in any other sense than as meaning a *vertical* or perfectly upright line. Also, remember that after putting anything into perspective, all accessory lines which have been used in the drawing—such as the dotted and W.R. lines in Fig. 117—should be carefully effaced, and therefore should be drawn at first as lightly and thinly as possible.

The study of landscape-drawing from Nature, amid country scenes, is one of the most delightful occupations we can pursue, creating refined enjoyment and contributing to excite a cheerful, happy, grateful frame of mind, akin to the purest and best sensations we can experience.

Judgment, taste, imagination, memory, each is stimulated and disciplined by the pursuit, so that we can hardly engage therein without improving ourselves, not merely as artists, but in other important respects.

To understand how this can be, it is only necessary to bear in mind that sketching from Nature usually tends to bring a great variety of scenery and objects under our notice. This leads us to compare their different picturesque characteristics one with another, and to discriminate their beauties, or to the exercise of judgment and formation of taste. At the same time, surrounded by an exquisite diversity of natural objects and charming pictorial effects, fancy and imagination, even though not originally active, throw out new tendrils into the world of wonders that lies beyond the domains of materiality. For Nature is a twofold world—a material world, to which the sluggish fancy alone clings, and a spiritual world, into which the quickened imagination branches forth, receiving from its magical influences nourishment and support, engendering those immortal fruits that assume a form in the works of the artist and poet. Lastly, memory is exerted and strengthened by the constant direction of the attention to the objects being sketched, and which cannot be imitated, unless remembered whilst the eye is withdrawn from them to guide the operations of the hand.

When, therefore, it is also borne in mind that a mere copyist of the drawings of others can never become a thorough artist, it will be perceived how great are the inducements to sketch as much as possible from Nature, and the important results arising from doing so —results no one can fail to derive, who is earnest, industrious, and persevering—who is not easily discouraged by failure, and frequently uses his pencil and brush at various times and seasons, abroad as well as at home.

But a knowledge of the following principles of proceeding will greatly facilitate the first attempts of art students to sketch with purpose and utility.

What shall I sketch? may be a question arising in the minds of some, when they determine upon extending the sphere of their efforts. The answer to this question is,—That which you prefer, provided you have the opportunity so to do; or, if you have not, then, from the scenes which are accessible to you, select a subject the most in accordance with your inclinations. Yet the end a student has in view in studying art should always govern his choice of subject. Should he wish, consequently, to excel in, or the bent of his genius tend towards, the representation of mere landscape, or of landscape and figure objects combined, he should concentrate his efforts accordingly. He must not forget,

however, that a picture, to be estimable, must have all its parts true to Nature—that a well-imitated man, animal, or tree, etc., does not save a picture from being a bad one, if the other portions of it are not truthful imitations; and thus, that whatever may be the main object of his work, he ought not to be content with the execution of its accessories, unless he has made them as perfect imitations as he can produce—a degree of perfection, also, that may be of a high character, since it is not possible to be able to represent one kind of object very faithfully, without having the power—latent, or developed—of representing other things with considerable accuracy,—the ability requisite for the former sufficing for the latter.

Supposing—to proceed methodically—you have selected a subject (a subject either being a single object, or a scene composed of several objects), so as to be able to stand before it on the ordinary level of the earth's surface,—that is, not on a marked elevation, —and that the eye is raised five feet above the ground; also, that you have at hand a BB, B, HB and F pencil, with a *square sketch book*, and fully comprehend "the general matters to be attended to in practical perspective," referred to in Lesson 1, Section vii.

1. You should, then, adopt a *fixed station* relative to the subject, so that the *eye's line of direction* will, as it were, divide the subject in such a manner that a certain portion of it shall appear on one side of the E.L.D. and the remainder on the other. And this station should be taken according to the position that seems to afford the command of the greatest amount of picturesque material for a drawing,—consistently with the laws that govern perspective and vision; the one, a law modifying form in a way that must be strictly regarded, and the other only enabling us to see certain portions of these modified forms at once, or whilst the eye remains perfectly stationary, gazing on the point of sight—as the eye must always be presumed to remain when we are drawing or sketching. For though, of course, it is a fiction that it does remain so, yet as it is the fact that the point opposite the eye, or "point of sight," apparently attracts the ends of certain lines out of their true course towards it, and indirectly influences the apparent course (or divergence from their true course) that any other lines may assume, that fact, consequently is one that must be considered and acted upon in art. Since, if we were not to act upon it, and were to depict a line, solely in accordance with its appearance when we turn our eye, for the purpose of imitation, specifically towards it, we should necessarily represent it so as not to assist duly in conveying a true idea of the form to which it belongs,—a circumstance that it may be difficult for the inexperienced readily to understand, but which any one will soon comprehend who studies perspective and reflects upon its principles and the conditions that must unavoidably control our powers of representation.

2. Having taken a station, as indicated above, note very carefully the *farthest visible point* on a level with and directly opposite the eye, or forming the further end of your eye's line of direction, as that point will be the point of sight of your subject. And it may be a point on a tree, on a building, or on an elevation—or even on the actual horizon; that is, in the latter case, a point existing somewhere on the line that the apparent junction of the sky with the earth seems to produce, it being certain to be in such a position if the subject be a sea-scene, or if water of any kind meets the sky in your eye's line of direction. Whilst, wherever it may be, remember (according to the circumstances now being treated of, namely, that you are standing on the ordinary level of the earth's surface, with your eye raised five feet above the ground), that the point of sight, and your horizon line running visibly, or invisibly, through the point—can only have a level five feet above the ground upon which you stand; and that all lines of your subject, which are actually parallel with your eye's line of direction terminating in the point of sight, will converge, or appear attracted out of their true course, towards the point of sight, and must be represented as so doing. See Lesson I,—12, Section vii.

3. Exactly half way between the top and bottom lines of a square sheet of your sketch-book, sketch in or draw a line to represent your horizon line, and place a dot on the centre of the line to represent your point of sight,—having provided beforehand that your paper is as large as you can conveniently obtain and use, and, if possible, that it comes *flush* with the edges of your sketch-book.

4. Ascertain relatively to your subject what comes within your range of vision. (See Lesson I,—4, 5, Section vii). To do this—place your square sketch-book exactly as far from your eye as is equal to the length of your *sketched* horizon line, and so that its point of sight shall, as nearly as you can manage it, cover the actual point of sight of your

subject. Having so placed the book, and holding it steadily, carefully observe, by turning the eye without moving the head, what parts of the ground and other objects appear to come in contact with the edges of your book—for those parts will form the apparent boundary of your range of vision, and nothing existing beyond them should be depicted in your sketch. All, however, that is covered by your book, and that you could see through it if it were transparent, will come within your range of vision, and may be represented. (See Fig. 115).

Though, should you not desire to represent all that your book covers, it is not necessary to do so. Also, should you wish to represent a line further away from you than the line of ground which appears to come in contact with the bottom edge of your book when held as described above (and which ground-line will be a line exactly 10 *feet long and* 10 *feet distant* from you, or a 10 feet width of range) you can effect your purpose by marking off a portion of the lower part of the sketching-paper, where the ground line you wish to represent projects beyond the sides of your book as indicated by Fig. 120.

Fig. 120.

Or should you wish to bring within your sketch *more* than you find your book covers, when held as directed between your eye and subject's point of sight; then, if possible, retire backwards, holding the book as before, until you find precisely as much becomes covered by it as you wish to depict.

If not possible to retire, it is requisite—but difficult to manage without considerable practice—to make the bottom edge of your book represent a width of range longer and more remote than a 10 feet W.R., and to imagine the ground line the bottom edge of your sketch-book appears to come in contact with, to be the longer and more remote width of range. To do this, take an extension of your ground line contacting with the bottom edge of the book, and equally on each side of you, and according to the extension consider this ground line to be so much the more distant from you than 10 feet; or should the extension render the line 20 or 50, or any other number of feet long, *consider the line to be that number of feet distant from you*, and divide the base line of your sketch (*i.e.* the bottom edge of your book) into as many equal spaces as there are feet in this extended ground line which it is to represent, that each space may denote one foot.

Then draw a perpendicular line from the centre of the base line, and equal in length to 5 of its feet spaces, and *exactly* through the summit of the perpendicular run a line to represent your horizon line, making it at the same time evenly parallel with the base line. For by proceeding thus, you can readily ascertain at what distance from the point of sight to represent the *determinative point* of your sketch should you be inclined to amend its perspective defects at home, and put it into as perfectly correct perspective as it is possible to do, under the circumstances that whilst sketching according to such a principle of proceeding, *there are no means of ascertaining, but by inference*, the distance from you and from your eye's line of direction of the various lines represented in your sketch.

Though the power of making this inference, so as to approximate remarkably closely with the truth may be acquired by frequently sketching subjects from Nature, and carefully ascertaining (through means that suggest themselves to the reflective and ingenious) the relative proportions that one line of a subject bears to another, as regards apparent distance from us, and from our eye's line of direction, and also as respects apparent length.

N.B. With regard to the determinative point, refer again to Lesson I,—11, and to the twelfth paragraph, Lesson X.; and recollect, therefore, that, as there shown, the mere length of the base line does not, as some works on perspective virtually teach, regulate the distance from the point of sight that the determinative point (called in those works the point of distance) should be placed, unless that length represents the whole ground line of a full range of vision; but as before stated, as many scale-feet of the base line as correspond with the number of feet that there are in the distance from us represented by that base line—for the base line of a drawing or sketch must always represent an imaginary line lying at some certain distance from us. (See also the second N.B. paragraph, Lesson VII.)

5. Assuming now, however, that you wish to proceed methodically, and, therefore, that you have a square sheet of sketching-paper, the edges of which are flush with the edges of that on which it is fastened; that you have represented a horizon line on your

sketch, so as to run completely across its central part; an eye's line of direction, so as to run from the centre or point of sight of the horizon line, to the centre of the bottom edge of your book—the base line of your intended sketch; and that the said base line represents a ground line 10 feet distant from you and long, or a 10 feet width of range.

Divide the base line into exactly 10 perfectly equal spaces; or, so that 5 of them may be precisely as long as the eye's line of direction; and to indicate 10 feet, the length of the ground line the base line represents. Refer to Lesson V.—6; and to Lesson X., fifteenth paragraph, Section VII.

6. Objects always have apparent points of contact, one object with some other; for if you look at anything, a part of something else will appear to touch it, or come in contact with it. For example, it will come in contact, apparently, with a particular line of it, or at a certain distance from each end of a particular line thereof, or with some part of one of its side, or top or bottom lines; and the art of sketching, partly, is the imitation of these points of contact, and likewise the representation, on a reduced scale, of the relative apparent distances of the points of objects from each other, which if skilfully effected, will amount to very closely indicating the proportional distance from you, and from your eye's line of direction of every point of the subject of a sketch. Consequently, on depicting a subject from Nature, the points of contact and relative distances above alluded to, must be most carefully studied and ascertained, as far as any means admit of, before the sketch is commenced.

As one of the best means select the most prominent vertically perpendicular line of your subject;—then hold the sketch-book at a distance from the eye exactly equal to the length of the previously sketched horizon line;—move the book until one side of it appears to touch the selected perpendicular—taking care during the whole process that the sketched horizon line, all the while, as nearly as possible, covers the *actual* horizon line of your subject;—and where *each* end of the selected line appears to touch the side edge of the book, make a mark.

Next—holding the book as before, but with the sketch point of sight covering your actual point of sight (see 2 and 3 of this Lesson)—bring the top edge of the book, without moving it to the right or left, into contact with the summit of the selected perpendicular;—then, draw a perpendicular line from the point of contact downwards, and two horizontal lines from the two points of contact marked previously on the side edge of the book, and the portion of the depicted perpendicular extending between the two horizontal lines will represent the selected perpendicular.

By means of a similar process represent the most prominent vertically perpendicular line connected with the one last represented; and if the two are joined together by lines running from their summits and lower ends, then join the two depicted perpendiculars with corresponding lines.

To obtain the proper position on the sketch, as regards height, of any other particular point to be represented, hold the book as before; then, with the horizon of the sketch covering your actual horizon line, move the book until one side of it appears to contact with the point, and make a contact mark.

To obtain the proper position on the sketch in which to place a particular point of your subject existing on either side of your *actual* point of sight, hold the book as before, but with the sketch point of sight covering your actual point of sight; then carefully lower or raise the book, without moving it to the right or left, until its upper or lower edge contacts with said particular point, and draw a perpendicular from the point of contact; and, having previously ascertained said particular point's height on the side edge of the book, according to the directions given in the preceding paragraph, draw a horizontal line from the side edge height-mark until it touches the perpendicular, as where the two lines touch will be the proper position of the point.

These rules show the importance of determining in your mind, before you begin to sketch a subject, where you will consider its horizon line to run and your actual point of sight to exist, and of having a corresponding horizon line and point of sight marked on your sketching paper—also of *only moving the eyes* and not the head whilst sketching.

7. When you require to sketch a bird's-eye view, proceed according to the rules given in Lesson X.—12.

8. How much of a subject should be sketched, as respects its outlines, now becomes a point for consideration. The general rule in this matter is, to depict as much of the

outline as in your judgment is particularly striking and characteristic, and so that it will cause your sketch to impart a clear idea of the form of the object. To do more prevents the possibility of a broad effective treatment of the subject when it is being finished up, as it crowds a drawing with little details that escape the eye in Nature, excepting on closer inspection of its features than requisite for the ends of representation, and which, therefore, are not usually such as it is desirable to depict. Nevertheless, on making regular studies from Nature, copy very faithfully whatever is at all peculiar about the outline appearance of an object, since those who do so obtain a knowledge of characteristics of appearance that prove highly useful, when designing anything similar to objects they have once imitated minutely.

Observation, likewise, should be directed towards the picturesque features of all that you may see when out on a sketching, or even ordinary ramble. For Nature is a storehouse, always open to the artist, of the richest and most varied materials suitable for his work; and to refuse to enter and avail yourself of her treasures, when the portal is invitingly left open with hospitable intent, is to manifest an indifference to art that promises badly for the chance of achieving success in its pursuit. In fact, the true artist never misses an opportunity of advancing himself in any available way; and richly is he repaid for his energy and determination, not merely by their consequences as regards his productions, but in his enjoyment of existence, which becomes marvellously increased by continuous converse with Nature throughout a life devoted to communion with her, for the purposes of portraying her truly matchless charms.

9. Modifications of proceeding, deviating from the foregoing routine, are admissible; but the adoption of them is not to be recommended to the student until he understands perspective, has had considerable practice in sketching, and can work perfectly according to rule. They are likewise such as will suggest themselves to the mind, after a while; and although there can be no objection to the judicious employment of them, yet *that* may lead, if not guarded against, to the gradual formation of a habit of drawing in a careless, *tricky* manner—a habit that is certain to place a student, at the best, but on a level with the mass of slovenly artists whose ambition is limited merely to obtaining a livelihood by the practice of art, and never rises to the desire of achieving success for the pleasure of so doing.

The principal modification practised is that of endeavouring to represent more, than according to rule, can be properly represented in one drawing or sketch. On attempting it, the effect may be rendered not glaringly opposed to Nature, by causing the lines denoting a series of actually parallel lines to converge towards a common V.P., or by proceeding as consistently as possible with the principles of perspective; while the practice of it has its fitness when strict imitation of a scene is not requisite, and a certain license in making one object appear to be either more or less prominent than it actually appears is desirable.

10. The amount of finish that should be put into a sketch next claims attention, and depends upon the circumstance whether the sketch is to imitate form alone, or form and effect combined.

If the sketch is to represent form only, then but so much finish should be employed as will suffice to bring out the form into its true proportions, relative bearing, and character; or to make the small appear small, the large to appear large, the round to seem round, etc.

If the sketch is to represent forms and effect, then (after the forms have been carefully depicted) on the parts of your sketch, corresponding with those parts of your subject where you see *an absence* of strong distinct light, work in a very slight shading tone of color, or pencil, and as rapidly as possible, that the effect before your eye may not change sufficiently to create confusion of purpose in your proceedings. In succession, according as you see darker and darker masses of shading, or local color, about your subject, imitate them quickly to the best of your ability, so as gradually to work up darker and darker masses of shading on your sketch, judiciously reserving, however, some portions of the middle distance, and especially of the foreground of your drawing, for working upon, in specific imitation of the surface of objects.

But more cannot be said here on this subject, than that to produce Nature semblances the rules and principles of effect, given in Section IV. of this work, should be observed; whilst the pencil or brush should be frequently and carefully employed in depicting the surfaces of objects, until the imitation of them, in every respect, becomes as perfect as the skill of the artist student can render it

11. Before sketching the human figure, or an animal, it is advisable to consider well the relative proportions of the various lines composing its form; and to notice what parts of it will have to be represented as appearing fore-shortened (see page 32), and what different degrees of curvature of line will be required to produce a striking imitation of the object to be sketched. Then commence with the head, and the main line running therefrom on the portion of the object which is nearest to you; and unless you can draw expertly and correctly at once, only make your first sketching-line, of all the parts of the object, very slight—a rule that should be adhered to, also, in the case of landscape drawing.

All the principal parts of your subject having been sketched in with a slight line, on finding that line to be correct to the best of your judgment, proceed to re-draw the said line with a firm yet delicate touch where delicacy is requisite, and a vigorous one where vigour will impart due force and truthfulness.

But sketching should not be confined to open air scenes, such as landscapes, or to figures. The objects, for instance, belonging to a room, especially those having round forms, should likewise be sometimes sketched; as the hand will gain the firmness and the eye the precision, indispensable to render landscape and figure-sketching fully serviceable, by being employed in delineating such objects,—provided, after you have sketched them, you measure their proportions to ascertain whether they have been correctly imitated or not. Yet, should they not have been so, you should not correct your sketch by actual measurement but by means of the eye alone, or re-draw the object until depicted properly.

By proceeding with assiduity, thus occasionally, and otherwise, as recommended in this Section, students will make a rapid progress both as regards masterly vigour of touch, and correctness of eye.

And as a parting word of advice to the student, in conclusion of this work, he is earnestly counselled to pursue art strenuously—not to take to it by fits and starts, nor ever abandon the study of it in despair, in consequence of the non-fulfilment of his first sanguine expectations of success. For in order to succeed in anything requiring experience and skill, we must persevere undaunted by difficulties, and make up our minds resolutely to undergo considerable pains-taking labour. By Divine blessing, however, we are generally certain to reap a reward at last, fully commensurate with our deserts, and which, in the case of art, is more than an equivalent for our exertions, inasmuch as its successful pursuit is usually a constant source of advantages, ensuring us a passport wherever we may chance to go—great consideration in the estimation of others—a lucrative and highly-pleasant profession, if required—and days abounding with gratifications, refined and elevating in their character and influences.

THE END.

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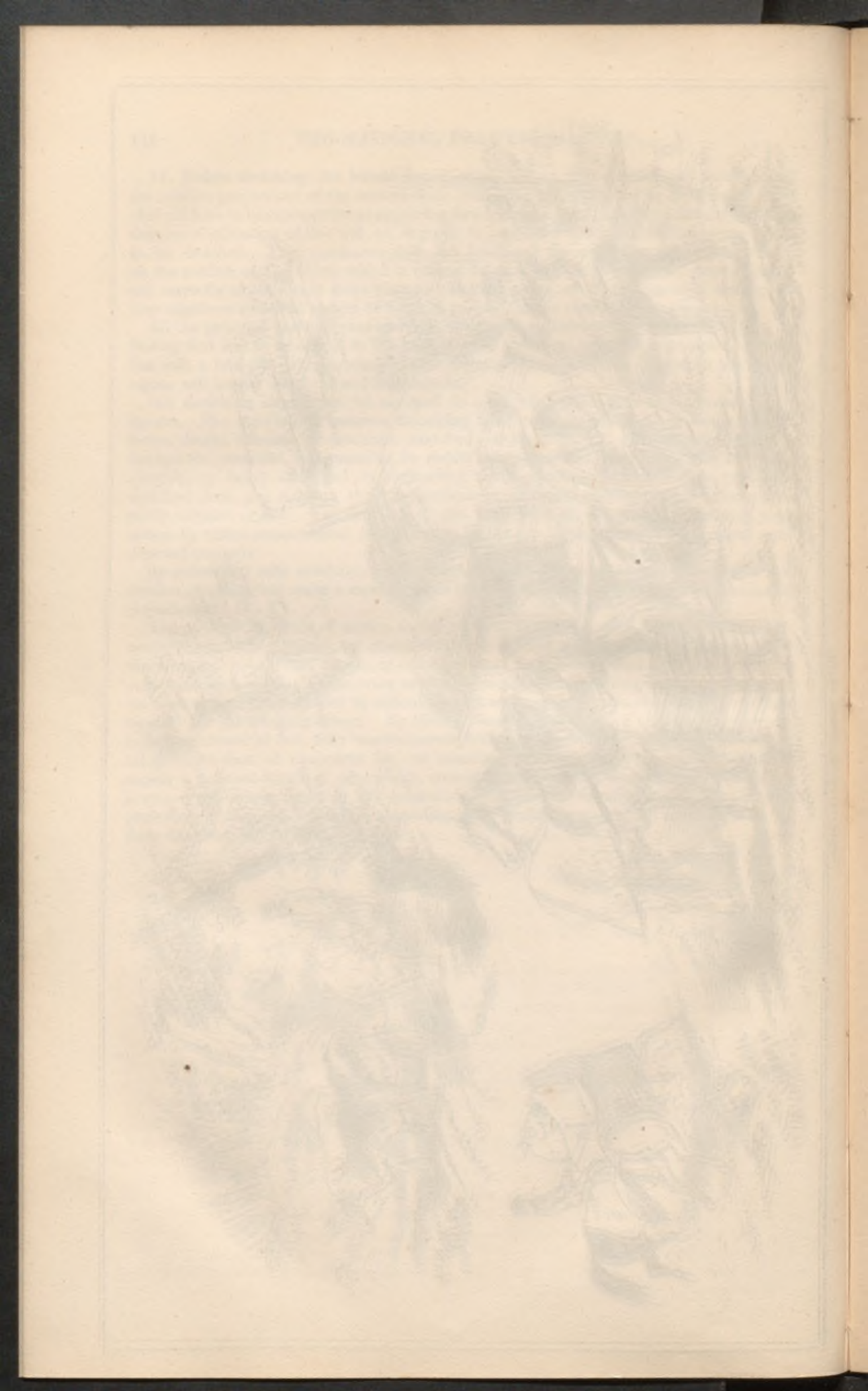


APPENDIX.

APPENDIX on SKETCHING.

A WORK like the National Drawing Master, to further its aims effectually, cannot too persistently direct the attention of the art student to the notice of the fact, that if he desires to become a genuine artist, he must learn to sketch from Nature with fidelity; nor can it too urgently stimulate and encourage him to endeavour to become one.

With the view, then, of rendering it qualified so to direct his attention, and to assist him to acquire, with as much facility as possible, the art of sketching and truthfully representing Nature, this Supplementary Appendix is introduced into the work; by means of which introduction, the Author trusts many will be enabled, without expense or much difficulty, to add to their sources of occupation, recreation and enjoyment, one the possession of which cannot be too highly appreciated. For, as the emanations of Nature are so varied and abundantly attractive as to be always novel and captivating, however often we may come into contact with them, rarely can anyone be occupied in studying and sketching from Nature, without finding his moments, at the time, passing replete with happiness; whilst, on re-viewing the results of his labours, they must afford him the most refined pleasure, if carefully executed, as in that case, though they may not be perfect, they are certain to be more or less successful and valuable representations of some of Nature's beautiful picturesque characteristics.

Gratification of the highest order, in fact, must await on moments engaged so innocently, so pleasantly, and so usefully as they may be when we are employed in sketching natural scenes and objects. Not that there can be no feeling of alloying disappointment attending that gratification; on the contrary, such a feeling there may be on perceiving that our skill is unequal to the perfect execution of the task we have in hand when sketching; but if we do not allow ourselves to be discouraged thereby, it will speedily vanish, and leave no sensation behind it, other than the beneficial one of an increased zest for our occupation, spurring on exertion, and leading to ultimate success, far more securely than the absence of that feeling would lead.

Further, it is in the power of almost anyone, by studying art assiduously with Nature for a model, to become a genuine artist; and not only to his own advantage, but equally to that of others,—inasmuch as, having become one, then whether he follow art professionally, as an amateur, or pursue any other vocation, it will be his own fault if his artistic abilities do not prove generally serviceable in one way or another. "Ah! how I wish I had perseveringly studied art, and were able to draw well," is often the unavailing cry of many, both in and out of business, who have neglected the opportunity of acquiring artistic skill; and, "Would that my work-people possessed the taste and invention a practical knowledge of art imparts, their services then would be doubly valuable to me and to themselves," being the frequent exclamation of our manufacturers. Also, be it remembered, that to the exercise of the artist's talents, his fellow men are indebted for much that enhances the delights and value of existence; through its surrounding us with

graceful forms and beautiful embellishments, which charm the eye and fancy in countless gratifying ways; as well as by its supplying us with representations of natural objects, to the promotion of our welfare as advancing knowledge, refining taste, enriching the imagination, and elevating whilst amusing the mind.

Such practical study of art, likewise, may be considered as an element that the education of everyone should include. For whilst nothing more is required, than determination of spirit properly directed, and a little diligent careful daily application bestowed on the exercise of the pencil, and the mastery of certain general rules and principles, to assure the attainment, in a reasonably short space of time, of a highly useful degree of art proficiency; that degree, besides being otherwise a most important acquisition to anyone, tends to render the ordinary character of his ways and sentiments peculiarly genial and enlightened.

To learn to sketch well, if you have the opportunity, commence to practice sketching early in life, whilst enthusiasm animates exertion and quickens the faculties of observation, discernment and ingenuity; also begin as soon as the power of depicting straight and curved lines, by means of one decisive movement of the pencil, and with tolerable accuracy, has been acquired. At all events, when prompted to practise sketching, take your sketch-book and pencils in hand, resolved to work undiscouraged by difficulties, or lack of immediate success; and select an eligible study or subject from Nature, adapted to the peculiarity of your tastes,—not too ambitious for your powers of delineation, yet at once sufficiently so, and interesting, to excite your utmost skill, and an ardent desire to depict the subject truthfully.

For instance, if you are impelled to commence to practise within doors, during the leisure of a winter's evening, or otherwise, select an open work-box, a plain jug, or some other piece of furniture, the outline of which is simple and easily comprehended by the eye; or, if led to make your first efforts abroad, select a simple landscape form, such as a picturesque water-trough, pump, window, doorway, house-gable, tree-stem, set of palings, etc., or one having an outline that your eye can trace distinctly. Then, when you have made a passable representation of the selected object, choose another having an outline slightly more difficult to depict than that of the first chosen object proved to be, and sketch it,—proceeding afterwards to increase the difficulty of your task as your skill in sketching increases.

But do not attempt to sketch more than one object at a time; that is, do not try to represent two or three together in a group, until you know something about the leading principles of such rules as will be found, following these instructions, in a series of lessons intended to afford a practical guide to sketching students under all circumstances of study and practice. Confine your first efforts as here advised, and you may advance yourself in artistic execution; extend them beyond that point, before being qualified to do so advantageously by a general knowledge of those rules, and in all probability, unless you possess an unusual genius for drawing, you will fall into a habit of representing Nature incorrectly, not to be readily overcome.

When about to sketch a single object, without that general knowledge, it is desirable that you should, before commencing the sketch, determine whether you will stand or sit whilst making it, and whichever you determine to do, you should proceed as follows:—

1stly. You should decide which way of your sketch-sheet of paper you will consider to be what may be termed its horizon-line way, or its right and left sides,—whilst a convenient size for the sheet to be, would be 12 inches each way, or 12 inches one way, and 9 the other, though any other size will do that is square, or proportioned as 4 to 3;

2ndly. You should, for the purpose of representing the horizon-line, draw a faint horizontal line, from right to left, completely across the sketch-sheet above its bottom edge, and half way between that and its top edge, if it be a square sheet; or rather more than a quarter of the way, if it be not a square one;

3rdly. You should make a dot on the centre of the represented horizon-line;

4thly. You should decide which side of the object you will sketch;

5thly. You should also decide upon your *point of sight*, relatively to that side; that is, towards the central part of it, you should direct a fixed glance, which tends neither upwards, downwards, to the right, nor to the left, in the least degree (or a straight forward glance), and consider the point, on the central part of the object's side, terminating your glance, to be the point of sight

6thly. You should next take up a *proper sketching position*, relatively to that which you intend to sketch; that is, you should place yourself at such a distance from it, that no portion of it will be visible to you on your holding your sketch sheet parallel with the face, and at a distance therefrom equal to the length of the sheet's horizon-line,—but with that horizon-line running from right to left parallel with the ground, and its central dot existing exactly opposite to the eye, so as to cover, as perfectly as you can manage, your previously decided on point of sight. (See Fig. 117.)

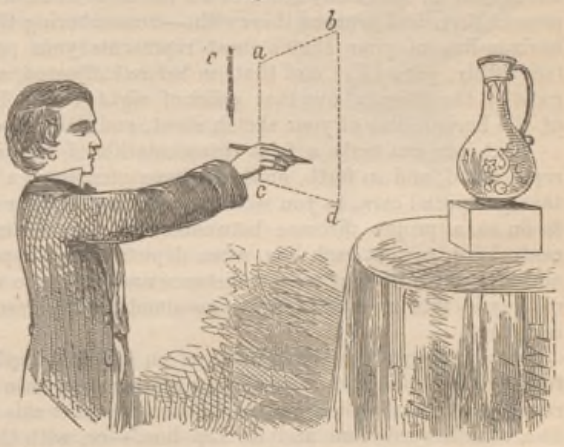
Fig. 117.

It is obvious, therefore, if you should find, on first taking up a position before the object you intend to sketch, that you cannot render it invisible to you, on holding your sketch-sheet as described in the directions contained in the preceding paragraph; that, in such a case, to make your position, relatively to the object one conforming to those directions, it will be necessary then to proceed as thus;—namely, continuously to keep your point of sight exactly opposite to your eyes, without turning them about to do so, and if the object be a stationary one, to retire away from it, and if it be a movable one, either to retire away from it, or to increase its distance from your first position, until in each case conformity is attained.

And the sketching student should never overlook the fact, as insisted on elsewhere in this work, that no object or scene can be sketched properly by him, unless, at the time of sketching it, he stands in a proper sketching position with reference to it, and in accordance with the 6th set of the foregoing directions, or set 6thly. To sketch it, whilst standing, or sitting at a lesser distance from the object than that position would admit of, would only lead to the sacrifice of truthfulness, or agreeableness of portraiture in some respect or other, and, consequently, should not be attempted, excepting as a matter of necessity.

On having taken up a proper sketching position with respect to the object which you are about to sketch, you should, without moving the head, next stretch out your right arm at full length, with a long pencil in your fingers, as if you were going to use it; and, imagining that there is a transparent drawing surface (as *a. b. c. d.*, Fig. 118,) through which you can see the object, situated at the point of space to which your pencil reaches, then move the pencil about, so as to trace, as it were, the outline of the object on the imaginary transparent surface,—for the purpose of obtaining a clear idea of the following matters:

Fig. 118.



1. Of the apparent form of the object's outline, as seen by you when standing in the proper sketching position;

2. Of the portion of that outline which lies above your point of sight, and which, therefore, should be represented above the central dot of your sketch sheet's horizon-line;

3. Of the number of separate lines composing that apparent form;

4. Of the character of each of those lines; that is, as to whether it be a straight, curved, or composite line;

5. Of the apparent direction of each of those lines; that is, as to whether it runs horizontally, or vertically; or slopes upwards, or downwards from its end which is the nearer to you of its two ends;

6. As to the relative apparent lengths of the various lines of the form: of which you can readily judge by noticing whether your pencil makes a longer movement in one case

than another, when tracing each line from end to end; since the difference, occurring betwixt the respective lengths of the movements, will indicate correctly how much one line differs in *apparent length* from another,—that being the difference you will have to take into consideration to represent the outline of the object in the form in which it presents itself to your eye whilst tracing it.

And do not allow it to influence your judgment if, on tracing, as it were, from one end to the other of the line, the movements seem to be shorter than, according to your notion, the actual length of the line warrants. You have, to a great extent, when sketching (as will be hereinafter explained) only to represent the *apparent*, and not the *actual form* of the outline of objects; and a tracing movement, such as that above described, made from a proper sketching position, will show you the apparent lengths of all the lines composing any outline you may wish to sketch,—which, and their apparent directions, constitute all that it will be requisite for you to attend to, on endeavouring to represent the outline correctly.

The recommended tracing process, consequently, forms a particularly useful preliminary method of proceeding, for unpractised sketchers to employ; as, if properly managed by them before commencing a sketch, and the information to be acquired thereby be duly borne in mind, it will greatly facilitate their producing faithful representations of objects. Previously, then, to sketching an object, that process should always be adopted by every student sketcher who is desirous of progressing quickly and surely in the art of sketching. And, on employing the process, after having placed himself in a proper sketching position before the object, he should, on no account, move his head about, but merely his eyes. Also, he should most carefully observe what the apparent length and direction is of each line composing the object's outline, so as to be able to make the issue of his observations a serviceable groundwork for his sketching operations. Whilst, during these operations, he should keep his person and head situated exactly as they were during the employment of the preparatory tracing process; for, if he do not, the apparent form of the object he is sketching will vary to his eyes as he varies the situation of his person and head.

After obtaining, by means of the tracing process, a clear idea of the lineal characteristics of the outline of the object you are purposing to sketch, proceed to make a faint representation of that outline's principal right, or left side-line; or, if you cannot determine which that is, select any other of its foremost exterior lines which you think it best to represent first, and proceed therewith,—remembering the while, that the central dot on the horizon-line of your sketch sheet represents your point of sight relatively to the object (see fifthly, page IV); and that, as before intimated, all lines, or portions of lines, which exist on the object above that point of sight, should be represented above the central dot of the horizon-line of your sketch sheet, and, therefore, above that line.

Next, you can make a faint representation of any line adjoining the one you have first represented, and so forth, until you have completed a faint sketch of the object's outline; taking especial care, as you work, to preserve on your sketch, as closely as you can manage to do so, a proper distance between every part of each of its lines, and its horizon-line central dot, so that each line, when depicted, may appear of its right relative length, and all its opposite lines of a right distance apart; and do not rest satisfied with the faint sketch until you feel assured it bears an unmistakable resemblance to the object which it is to represent.

But, to begin the faint sketch of an object's outline with the representation of its two foremost side lines, and then to represent its base and opposite top line,—or, with the representation of either one of its two foremost side lines, and then to represent its base line, its other side line, and its top line,—or, with the representation of its top line, and then to represent the adjoining side lines and the base line, are either of them excellent alternative modes of working, and should be employed by turns during practice in sketching different objects. Whilst the lines contained within the exterior outline of an object should not be represented until the exterior outline has been sketched, and then be so with a slight line, in the order of their superior prominence of appearance when compared one with another.

And if, when making a faint sketch, you feel in doubt about the direction in which you should depict any representative line you wish to delineate,—from not being able to judge of what is the exact direction of the line to be represented thereby, through the prescribed process of tracing on an imaginary surface, or otherwise,—the right direction to adopt

may be ascertained by means of the following process. Hold one end of a long pencil, or of a long, thin, straight strip of wood, quite between the tips of two or three of the fingers of your right hand, so that the implement held between them runs from the fingers *towards the left hand;* then, if the line to be represented be neither a horizontal, nor vertical line, move the implement so that, by sloping it upwards, or downwards, from the fingers *towards the left,* it will lie parallel with, and seem wholly or partially to cover the line. Thus held (see Fig. 119), the direction of the implement should be carefully noted, as to whether it runs upwards or downwards from the fingers towards the left, and whether slightly or otherwise,—for the particular degree of its upward or downward slope will furnish the required direction in which to depict the representative line you wish to delineate, and which, therefore, should be drawn in on the sketch in that direction, and from the right towards the left.

Fig. 119.

To regulate your proceedings, as regards determining what length of line to employ in delineating a representative line, it is advisable to do as follows. Take your guaging implement, such as a light thin strip of wood, of a length equal to the horizon-line of your sketch-sheet, and holding one end of the implement quite between the tips of two or three of your right-hand fingers, place it exactly at a distance equal to its length away from the eye (see Fig. 120); yet so as to lie parallel with and cover the ends of the line to be represented; and then note with the left hand the two points of the implement that the covered two ends of the line seem to touch; for the space existing between those two points will give you the length of line you may employ corectly on depicting the representative line,—whilst the correct length to employ, on delineating every line contained in the outline of the object to which the line to be represented belongs, may be ascertained by adopting the last described process, with respect to each line. But the process will not be serviceable unless you stand in a proper sketching position relatively to the object according to 6thly, page V; neither will this process, or that previously described relatively to determining the right direction to adopt on delineating lines, prove useful, unless, each time either process is employed, your head is held in *exactly* the same position, facing the object, as that in which you first maintained it on commencing to sketch the object, and also with one of your eyes closed.

Fig. 120.

To ascertain the direction or length of line to employ on delineating a representative curved line hold the gauging instrument, in either case, so as to cover those points which appear to be the two ends of the curved line to be represented,—proceeding, according to the circumstances of the case, in accordance with the previous directions given with reference to the use of the instrument. To ascertain the sweep or depth of a curved line, hold the instrument, in accordance with the same directions, in such a way that the finger-held end of the instrument appears to cover the central point of the straight line running between the apparent two ends of the curved line, and likewise so that some spot of the other part of the instrument shall cover the central point of the curved line,—for the distance existing between that spot and the finger-held end of the instrument will give the required depth of the curve.

The use of the gauging instrument, however, is not limited to that of showing the exact length of line to employ in depicting a representative line; as it may be applied, in succession, to the several lines composing the outline of an object to be sketched, and the

absolute results of the application be worked with, throughout the after sketching operations, in certain proportions, as in the proportion of one-half, one-third, two-fold, etc. Thus, supposing you desire to make a sketch of the object only one half as large as you would have to make it if you were to work according to the absolute results of the use of the instrument; then, you may do so correctly, by merely taking one half of each separate result arising from using the instrument with reference to each individual line to be represented; or, supposing you wish to make the sketch twice as large, etc., then, you can equally do so correctly, by working according to twice each absolute separate result throughout the whole sketching operation. Still the use of it, in any other way than in accordance with its absolute results, is not to be recommended until a considerable degree of proficiency in sketching correctly according to the simplest rules of proceeding has been acquired.

When a faint sketch of the most prominent exterior and interior lines of an object's outline has been made sufficiently like the outline to be recognisable as a fair portraiture of it, as regards its proportions as well as general appearance, proceed to re-draw each line of the sketch with a firm decisive line—duly vertical, horizontal, diagonal, or curved, according as the line to be re-drawn should be either the one or the other.

Yet, previously to re-drawing those lines, endeavour to *feel* your subject; that is, to form, in your own mind, an idea of what kind of lines or pencil touches will best express or represent the characteristic appearances of the lines forming the outline of the object you have faintly sketched. Whether, for example, a perfectly straight line, or a line formed of any particular kind of indentations, will be most suitable for the representation of those characteristic appearances,—as one description of line necessarily represents such appearances better than another does. Consequently, you should re-draw your faint sketch lines in a manner that will accord with the characteristic appearances of the lines they are intended to represent.

When the re-drawing process has been completed, the perfected sketch of the outline, if you have had practice in shading drawings with a pencil, or brush and color of any kind, may be filled in by means of either the one or the other,—so as to impart a general idea of the amount, direction and intensity of the light and shade existing upon the different parts of the object under representation,—as well as of its characteristic surface appearances—that is, of the roughness, or smoothness, or color, etc., of its surface.

Now the form that you will have produced, on having sketched an object consistently with the various foregoing directions, and correctly, will be the apparent form of the object as seen from the position in which you were placed relatively to the object whilst sketching it. Nevertheless, on going up to the object and examining its real form, you will find that the form you have produced differs greatly from that real form: which will prove to you that there is, as has already been intimated, a wide difference oftentimes existing between the real form of an object and its apparent form—a difference, however, which though a most material one, is not always obvious to the inexperienced; who are apt to imagine that everything appears to have the form they know it to have,—or that a square, for instance, is in appearance invariably a square, and a circle in appearance invariably a circle. Whereas, under certain constantly occurring circumstances, the apparent form of a square, instead of being a regular figure composed of lines each of equal length, as its real form is, may be a very irregular figure composed of lines each of a different length, or either more or less irregular in shape; whilst, as has been stated elsewhere in this work, the apparent form of a circle may be an oval of almost any conceivable shape.

The adjoining page of illustrations, copied from Photographic representations of objects, will serve, however,—better than a mere assertion can—to instil a perfect conviction into the mind of the art student, that it is a fact as follows: firstly, that between the real and apparent form of an object there is a wide difference, existing and varying as the position varies from which the object is viewed,—a difference he must attend to with scrupulous care when sketching anything, if he wishes to imitate Nature correctly; and secondly, that only the apparent form of an object can be represented in a picture. Because, as Photographic representations may be considered *as being pictures which have been made by Nature*, and pourtray the true character which her objects present to the eye; and also, as it may be perceived, through the adjoining copies of them, that in such representations of her objects, she always represents them as having apparent forms varying from

Fig. 121.

Fig. 122.

Fig. 123.

Fig. 124.

Fig. 126.

Fig. 127.

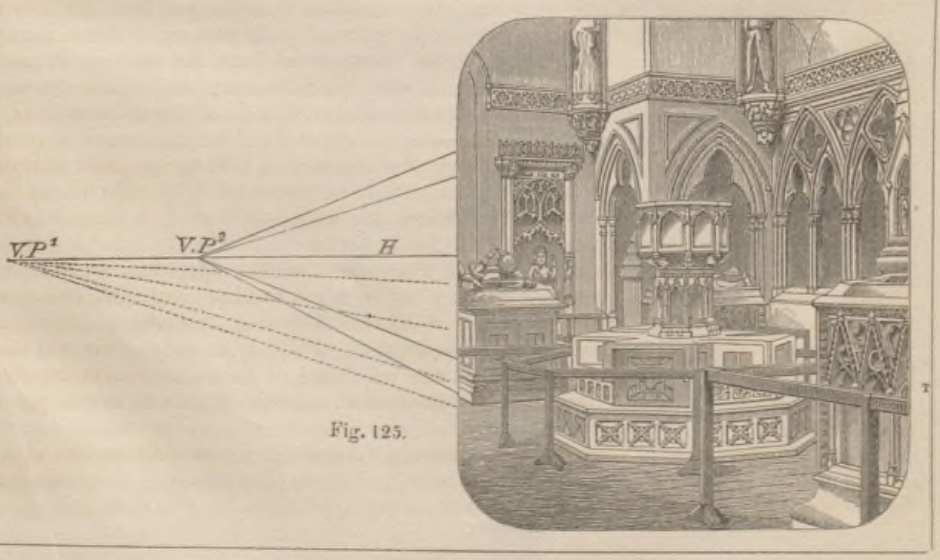


Fig. 125.

their real forms according as the position varies from which they have been pourtrayed: it may be assumed, that the true character of form every object invariably presents to the eye is *apparent* form, varying from its *real* form, according as the object's position varies relatively to the eye; and that, consequently, there can be no reason, after having had these circumstances pointed out to them, why any degree of doubt should remain in the mind of the art-student relatively to the truthfulness of that which is stated as a fact in the latter part of the opening sentence of this paragraph.

The first in order, of the illustrations above referred to, is Fig. 121,—copied from a Photograph of Leicester Alms Houses, Warwick. One of the striking proofs it affords, that there is a marked difference existing between the real and apparent form of an object, and varying as the position of the object varies relatively to the position from whence it is viewed or represented, is displayed by the depicted forms of the two lower windows it contains on its right hand side, one adjoining that side's boundary line, and the other adjoining the first doorway shown beyond it: for, the real forms of the two windows they represent, —though exactly alike in size and shape, and very different from those depicted forms,— nevertheless, when Photographed, presented forms, like those depicted ones, to the eye of the Photographer whilst standing in the position from whence they were depicted by the Photographic or Nature-process of delineation; consequently, they presented apparent forms diverse from their real forms and also from each other, and the Nature-process not having represented them otherwise than as having such apparent forms, it may be fairly concluded they could not be correctly represented otherwise. And, on looking at any portion of this, or any other Photographic picture, bear in mind, that that portion never displays other than apparent form, diverse either in size or shape, or in both, from the real form it represents—or that, as previously intimated, all form shown in a picture is merely apparent form.

Further, although depicted in Fig. 121 of different apparent sizes, all the brackets that are represented by the projections shown above the lower windows on the right hand side of the Figure, are actually of the same size one as the other—as are the compartments represented by the forms running in a row (marked *b*) above the projections; whilst the *corners* of each compartment, instead of being formed, as depicted, of apparent acute and obtuse angles, like the corners of Fig. 122, are all formed actually of right angles, like the corners of Fig. 123. Also, the lines, represented by the oblique lines which, in Fig. 121, incline, some upwards and some downwards, below and above those projections and compartments, are horizontal lines, or lines which neither incline upwards nor downwards.

The illustration, Fig. 124, is copied from a Photograph representing a portion of the Roman Court in the Crystal Palace at Sydenham. In this illustration may be perceived the marked difference existing at times between the real and apparent forms of a circular object: for, notwithstanding that there is no diversity of size, or shape, between the two archways represented by the two apparent forms of archways shown in the illustration, those apparent forms are not only in many respects diverse from the real form of the archways they represent, but from each other; as, for instance, in height and width—the one to be seen on the left hand side of the picture being wider than the other on the right hand side; and yet shorter because whilst both were being Photographed, it was the more distant of the two from the Photographic instrument,—a fact from which the conclusion may be deduced, that apparent size diminishes according as its distance increases from the position whence it is represented. This illustration also shows, that the apparent direction of horizontal lines is often oblique; for, the real lines, represented by the oblique lines running along the right hand side of the picture, are horizontal lines like those running above and below the archway on the left hand side.

In the illustration, Fig. 125, copied from a Photograph of the Mediæval Court in the Crystal Palace, may be seen a diversity existing between real and apparent form, as regards the real form represented by the apparent form of the projecting entrance to the Court behind the central object of the picture: for, in size and shape one side of the real form exactly corresponds with the other, whereas the two sides of its depicted apparent form are very far from thus corresponding. This illustration, likewise, affords numerous proofs, as follows:—

Firstly, That horizontal lines in Nature assume to the eye a boundless variety of apparent oblique directions, according to the position of those lines relatively to the position from whence they are seen or depicted,—each of the apparent oblique lines in this picture

(with the exception of the curved lines, and those running, as in Fig. 126, on the right hand corner tomb, and those running, as in Fig. 127, in small compartments on the central object of the picture) being the correct representation of a horizontal line, though no two of them are inclining in parallel directions.

Secondly, That every actual horizontal line which, when we are looking at it, is an apparent oblique line: also at the same time displays an apparent inclination downwards towards the horizon of the scene to which it belongs, if it lie above that horizon; and an inclination upwards towards that horizon, if it lie beneath it—the horizon of the scene to which it belongs being the same as our horizon line whilst looking at such horizontal line.

Thirdly, It proves that all actual horizontal lines which lie in parallel directions, or, what is the same thing, *every set* or series of parallel horizontal lines, which on looking at them are apparent oblique lines, display an apparent inclination either upwards or downwards towards one common vanishing point, situated on the horizon of the scene to which the set belongs—that is, such an inclination, that if the lines of the set were long enough to extend as far as that horizon, their extremities would, as it were, vanish from sight in one particular point of the horizon, or in a point dependant on the set's direction.

Thus, line H correctly represents the horizon of the scene Photographed Fig. 125: and the set of parallel horizontal lines represented therein by the apparent oblique lines depicted on the tomb marked *T*, and the railing before it, all displayed, when Photographed, an apparent inclination towards a point of the scene's horizon, denoted by V^1, line *H*; in the same manner as all these representative oblique lines, it will be found, by placing a ruler along them, incline towards, and would, if long enough, terminate in point V^1. Also, the set of parallel horizontal lines—having a direction diverse from that of the set previously alluded to—and represented by the oblique lines in the picture, which, by means of a ruler, may be found to incline towards the point V^2, line H, displayed, when Photographed, an apparent inclination towards the point of the scene's horizon denoted by V^2; and there are other sets of parallel horizontal lines belonging to the scene, each of which sets, when Photographed, manifested an apparent inclination towards a horizon vanishing point, according to the direction of the sets, and which inclination is represented by oblique lines in the illustration of the scene.

And, fourthly, The uniformly specific oblique inclination of the sets of lines in this illustration, Fig. 125, representing different sets of parallel horizontal lines, indirectly proves: that, if any of the lines in the scene it represents had been horizontal lines *parallel* with the Eye's Line of Direction whilst the scene was being viewed from the spot whence it was Photographed, that is, horizontal lines *parallel with the imaginary line which may be supposed to have run then from the eye to the scene's Point of Sight*, they would all have manifested an apparent inclination towards that Point of Sight; and that they would have done so, in the same manner as the apparent oblique lines on the right hand side of Fig. 124, representing horizontal lines parallel with the Eye's Line of Direction, all incline towards the point S., line H of the picture—a point and line denoting the Point of Sight and horizon of the scene to which those horizontal lines belong.

Fig. 128.

The Vase, Fig. 128, is copied from a Photograph of a very beautiful Vase designed by Flaxman. In this illustration, the diversity of apparent oval form, a circle frequently presents to the eye, is observable—the apparent oval form of the mouth of the Vase, and the underlying apparent oval form, being each a representative of an actual circle. Consequently, it shows that the apparent form of a circle varies, as the position of the circle varies relatively to the position of the eye viewing it: for, each apparent oval, to be seen in the illustration, differs more than another from the actual form of a circle (that is, is the narrower of the two) according as it lies the nearer of the two to the top of the Vase, or, what is the same thing in effect, according as it represents a circle, on the real Vase, which was nearer than another to the eye when the Vase was being Photographed.

The beads, represented by the small circular forms surrounding the mouth of the Vase in the illustration, being actually all of one size and shape, whilst those representatives all differ one from the other in size and shape; the latter, therefore, in their way show that the apparent form of any particular real form often differs as much from itself as from real form. And, to prevent the inexperienced from concluding that the two figures representing women on the illustration are carelessly copied, it is as well to point out that the cause of the imperfect forms of these figures is, that the apparent proportions of the surface on which the figures are depicted, and representing the real proportions of the surface on which their originals are sculptured, differs from the latter; and, consequently, the representative and real proportions of the figures must differ accordingly.

The handsome Vase, Fig. 129, is copied from a Photograph representing another work by Flaxman. But it is unnecessary to say more now with reference to it, than that its horizontally oval forms, such as that depicting its mouth, are all apparent ovals representing actual circles; and that if it be carefully studied, consistently with the observations which have been made with reference to the foregoing Photographic pictures, the Art-student may readily discover for himself how conclusively it proves the correctness of all that has been stated in this Appendix with regard to the peculiar relationship existing between real and apparent form, and that to sketch and represent an object correctly he must imitate Nature's own lessons or process of delineation,—that is, that he must never attempt to do more than imitate what seems to him to be the apparent form of the object as seen from his fixed proper sketching position. (See 6thly, page V.)

Fig. 129.

The art student, in fact, can promote the attainment of proficiency in his vocation to a most important extent by studying Photographs of different descriptions of objects made under varieties of circumstances of position—that is showing every class of real form as if near to the eye, and at different distances from it, both to the right and left of it and straight before it. By doing so he will soon learn, to discriminate with accuracy the differences existing between real and apparent form of all kinds, and what must be the apparent form of any particular object when seen from different positions. It will also render him less timid in depicting objects in a way so diverse from what he knows to be their real forms, as their apparent forms are at times, than he might be otherwise; for when he has seen that Nature so depicts them, he can have no reason for hesitating to follow her example. Yet it will also show him that he should take especial care, when sketching, not to exaggerate that diversity; and always to choose, if possible, positions from whence to sketch objects, where their apparent forms will not prove unpleasing or unnatural ones to the eye,—since a Photograph often shows, by being made from a position too near upon the object it represents, that sometimes the apparent form of an object is not agreeable or quite natural in aspect to the eye, though this only denotes either that want of taste, or judgment, or of attention to the laws of Perspective, has been manifested by the Photographer when making the Photograph, or else that he had no choice of position.

One of the kinds of unpleasing apparent form alluded to above, is that which presents to the eye horizontal lines having an apparent excessive inclination upwards or downwards towards the horizon;—or such as is represented in Fig. 124, where the apparent oblique lines incline very much upwards and downwards to its horizon line H and Point of Sight S,—an apparent inclination obviously exceedingly unpleasing and what may be termed unnatural in aspect, as a moment's glance at the right hand side of the illustration and consideration of the real form represented thereby will prove—that real form being

as regards shape like the form depicted on the left hand side of the illustration showing lines above and below the archway that are horizontal. This description of apparent form then should not be depicted excepting in cases of necessity, arising from having to depict the object displaying it, and not being able to retire to a sufficient distance from the object to cause it to display a more agreeable apparent form, or not being able to place oneself in a proper sketching position relatively to the object, according to 6thly, page V.

But it is impossible to point out exactly what appearances of Nature should not be imitated, or what circumstances of position should be adopted on imitating her features: to ascertain these things, the art-student must exercise his observation, taste and judgment, whenever the opportunity of doing so offers itself to him, and that by studying the various aspects of Nature, and the works of different Artists, as well as Photographic productions.

More, indeed, cannot be said respecting one of those matters than is contained in the following quotation taken from observations made by one of the most eminent of painters, Leslie, with reference to those aspects of Nature, which should be imitated—"and now we come to a great and unceasing difficulty, the difficulty of choosing from among the qualities of Nature that are most within reach of the pencil, those we should strive to the utmost to attain, and those which may be left out with advantage, or be but slightly indicated. *All the most agreeable traits of Nature, as all the least, are so variously modified by circumstances and by association*, that to attempt to give anything like general rules for selection and rejection — that difficult task in which the painter is engaged from the beginning to the end of his work, and in which all that the mind, has to do with art, depends — to attempt to give general rules for this would only lead to mannerism." — That is, it would but cause the student to confine his efforts within circumscribed limits, when he should endeavour, instead, to imitate Nature in every aspect, so far as he feels that there is a prospect of a felicitous result attending his endeavours — a result either agreeable to the eye or serviceable for some purpose or other. So that as a regulating principle of proceeding, applying to the general imitation of Nature, which the sketching student should adopt, — to employ the words of Leslie again, — there can be no doubt that until correctness of eye and obedience of hand are attained, the closest possible, the most minute imitation, is the best.

The student, then, when he is sketching should imitate Nature, both as regards her forms and surface aspects in the spirit of veneration for all the characteristic features she displays to the eye, and of mistrust of himself and his powers, to appreciate and do full justice to the various degrees of beauty existing in her traits, rather than of mistrust of their attractive quality, or value as truly appreciable charms. And though she bids defiance to perfect imitation, let it encourage him, and animate his exertions to arrive at the highest excellence to be attained in Art, to know, as eloquently remarked by the great authority quoted above, — "that while she has placed this [i. e. perfect imitation] beyond the reach of human hands, she has entrusted art with a peculiar mission — the power of doing something for the world which she herself refuses to do. For, he proceeds, "how many of her exquisite forms, graces and movements, — how many of her most beautiful combinations of colours, of lights and shadows that are,

'instant seen and instant gone,'

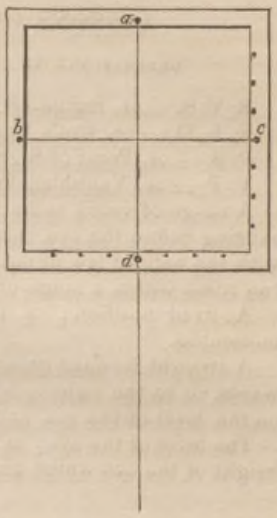
does she not permit the painter to transfix for the delight of ages! And, indeed he is entrusted with another, and a higher task, that of leading us to a perception of many of her latent beauties, and of many of her appearances which the unassisted eye might not recognise as beauties, but for the direction of the pencil."

But to revert to the subject of real and apparent form; when a clear idea has been attained of the relationship existing between them, the ensuing lessons may be studied advantageously; since, although many matters which are treated of elsewhere in this work are brought again before the notice of the student in these lessons, nevertheless they are re-introduced to his notice in a more fully-practical and readily-available form than it was possible to treat them in the body of the work — the limits of which necessitated that it should be devoted to details of the theoretic principles which should govern sketching operations, somewhat to the exclusion of amplified practical teachings with regard to those operations.

To apply the rules of some of these lessons, it is requisite, however, to possess a *scene frame*, or frame corresponding with one made thus. For instance :—

1stly, By taking a piece of stout card-board, about sixteen inches square, and drawing lines around the inside of it, two inches from its edges, as lines *a*, *b*, *c*, *d* (Fig. 128), so as to produce a two inch border or frame surrounding the interior of the sheet of card-board.

Fig. 128.



2ndly, By separating the interior of the sheet from the two inch frame, so as to produce an aperture twelve inches square.

3rdly, By boring a hole in the centre of each side of the frame, as at *a*, *b*, *c*, *d* (Fig. 128), and fastening strong thread tightly, so as to run directly across the aperture from one hole to the other of each pair of opposite holes, and produce two threads crossing at a right-angle with each other at the centre of the aperture, as in Fig. 128.

4thly By dividing the inner edges of two adjoining sides of the frame each into eight equal parts, and marking each of the division points with a clear strong mark, as indicated in Fig. 128.

5thly, By fastening a piece of strong thin string through the central hole of either side of the frame, as through *d*, and so as to hang loosely, of a length one inch greater than that of one of the threads of the frame.

Yet, provided the scene-frame incloses a *square aperture*, both the frame and aperture may be of larger or smaller dimensions than given above, those dimensions merely being given to show the principle of the construction of a scene-frame, and as being, perhaps, the best dimensions that can be adopted in its construction.

The purposes to which the frame should be applied are stated in Lesson VI.

LESSONS ON SKETCHING THE FORMS OF OBJECTS.

DEFINITIONS OF ABBREVIATIONS AND TERMS EMPLOYED IN THE LESSONS.

R. V. S. — or, Range-of-Vision Scene.
E. L. D. — or, Eye's Line of Direction.
P. S. — or, Point of Sight.
V. P. — or, Vanishing Point.

A range-of-vision scene; or exactly that portion of any mass of objects and space existing before the eye, which can be represented in one picture, or sketch, consistently with the natural law of perspective which regulates apparent form; or that portion which can come within a range of vision.

A fixed position; or position in which the person and head are held perfectly motionless.

A straight-forward glance; or glance which does not incline either upwards or downwards, or to the right or to the left, and is always terminated by some visible point lying on the level of the eye, and which point is a P. S. of some one or other R. V. S.

The level of the eye; or having an elevation which is neither higher nor lower than the height of the eye whilst glancing straight forward.

LESSON I.

ON PROCEEDINGS WHICH SHOULD BE ADOPTED BEFORE COMMENCING TO SKETCH A SUBJECT.

To be able to sketch a subject correctly (a subject being either an object belonging to a range-of-vision scene, or the whole of a R. V. S.), it is requisite to know: that, previously to sketching the subject, it should be arranged, as it were, for sketching; that is, that it should be brought into perfect connection with a mutually dependent range-of-vision scene, sketching station, eye's line of direction, point of sight and horizon; likewise, that during the time of sketching the subject, the perfect connection must be considered to remain permanent and unbroken.

1. The subject must be brought into connection with a range-of-vision scene by placing yourself in a fixed position before the subject, so as to render the parts thereof, that you wish to represent, conjointly and distinctly visible to the eye, whilst glancing straight-forward at any selected point of the subject lying on the level of the eye.

That is, by placing yourself before it, so as to render the parts thereof, which you wish to represent, just so conjointly and distinctly visible to the eye, as they would be if you were to render them visible thereto from a fixed position, by means of a straight-forward glance directed through the pointed end of a small circular tapering funnel held close to one eye, whilst the other is closed.

The R. V. S. with which you will bring it into connection, through placing yourself in this fixed position before the subject, etc., as above described, will be composed of whatever is conjointly and distinctly visible to your eye whilst you are so placed; or of the mass of objects and space that would be visible through a funnel held as just described.

2. The sketching station will be the above-named fixed position; that is, if you decide on representing the subject in exact accordance with the aspect it presents to the eye, from that position, whilst glancing straight-forwards at a selected point of the subject for the purpose of connecting it with a R. V. S.

If, on the contrary, you decide to connect the subject with some other R. V. S., and, consistently therewith, to represent the subject according to the aspect it presents to the eye, from some other fixed position, whilst glancing straight-forward at a selected point of the subject lying on the level of the eye, then the other position must be adopted as your sketching station. And then, also, the last-named straight-forward glance at a selected point becomes the *regulating glance*, and the selected point terminating the glance becomes the *regulating point*, determining your sketching station relatively to the aspect of the

subject which you have decided to represent,—or a glance and point regulating the position of the *dependent* sketching station.

3. The regulating glance's line of direction becomes the *dependent* eye's line of direction.

4. The regulating point, terminating the regulating glance, becomes the *dependent* point of sight.

5. An imaginary line running horizontally through the P. S. at a right angle with the E. L. D., and completely across the R. V. S., will become the *dependent* horizon.

6. On having proceeded, as described in Rule 1, you will have arranged the subject, or brought it into perfect connection with a mutually dependent R. V. S., sketching-station, E. L. D., P. S., and horizon, and ascertained what constitutes those particulars;—whilst the latter four of them will have become the sketching-station, E. L. D., P. S., and horizon of the arranged subject—four imaginary features which it is essential for sketching purposes that the arranged subject should be presumed to possess, and the position of which, relatively to the subject, should be determined before commencing to sketch the subject.

7. During the time of sketching the arranged subject, the perfect connection into which, to produce the arrangement, it has been brought with a mutually dependent R. V. S,, sketching-station, E. L. D., P. S., and horizon, must be considered to remain permanent and unbroken.

This is the case, because, firstly, the specific set of peculiar features of apparent form, which a subject will display to your eye, will vary in its characteristics every time a change takes place with regard to the particular mutually dependent R. V. S., etc., with which the subject is brought into perfect connection by you,—that is, will vary every time the eye directs a straight forward glance at any point of the subject situated differently from the one at which it may have previously directed such a glance, as then the above-named change ensues.

Because, secondly, a sketch, to be correct, cannot represent different specific sets of apparent features in combination, but must be confined to the representation of some one set alone—or to such a set as that which an arranged subject will display to your eye whilst its glance is fixed on the subject's P. S.;—or only by these means can represent a subject truly naturally, and without displaying a bewildering mixture of apparent form imperfectly representing real form, and deviating, in this as well as other respects, from the effects of Nature's law of Perspective.

And because, thirdly, the characteristics of the specific set of apparent features which an arranged subject displays, and your sketch is to represent, cannot be determined unless your proceedings, whilst you are making the sketch, are regulated in strict accordance with the assumption that the connection into which the subject has been brought with a R. V. S., etc., for the purpose of making it an arranged subject, remains permanent and unbroken.

8. Also, it should never be forgotten, by the art student whilst sketching an arranged subject, that there is this peculiarity existing with respect to the sketching-station, E. L. D., P. S., and horizon; namely, that whether the sketching-station be situated on the summit of the highest mountain in the world, or at any point beneath, still, in any case, the P. S. and every part of the horizon will always be on the level of the eye whilst glancing straight forward and along the E. L. D. of the arranged subject,—so that hence the three will always have a common level.

Consequently, if a glance of the eye be projected more upwards than such a straight forward glance would tend, then, whatever is visible to the eye under such circumstances will lie apparently *above* the level of the eye, and, therefore, above the P. S. and horizon of the arranged subject; and if such a glance be projected more downwards than a straight forward glance would tend, then, whatever is visible to the eye will lie apparently *below* its level, and, therefore, below the P. S. and horizon.

And although the *true* P. S. of an arranged subject is an imaginary point, and the *true* horizon an imaginary line, each existing as far from the eye as the remotest object which can be visible thereto,—or as far, for instance, as the most distant star which the naked eye, enjoying the acutest powers of vision, can discern: yet, for the purposes of sketching, we may and must assume, that the point of any arranged subject, forming its regulating point, correctly represents the true P.S. of the subject or becomes its apparent P.S.; and that the representative or apparent horizon of the subject extends through the apparent

P.S. (as well as along through every right and left part of the subject existing on a level with that apparent P.S.) as though it were a fine thread running at a right angle with the subject's E.L.D. This is shown in Fig. 129, indicating an arranged subject; where point *s* indicates the apparent P.S.; and the white line, from *h* to *h*, indicates the apparent horizon running through the apparent P.S., along through every right and left part of the subject existing on a level with that P.S., and so running as though it were a fine thread lying at a right angle with the E.L.D.: whilst the E,L,D. might be illustrated by holding the picture upright, and placing the point of a long pin on the picture's P.S., yet so that the pin shall project from the paper without leaning, in the slightest degree, either more to the right than to the left of it, or more upwards than downwards; and by then imagining that your eye is situated where the head of the pin is situated.

Fig. 129.

10. When the subject is arranged, besides having a sketching-station, etc., it will also have connected with it an *eye's perspective-station*, or the stationary position of the eye when its straightforward glance is fixed on the subject's P.S. And, whilst sketching the subject, bear in mind, that, to be correctly represented, it must be sketched *in accordance with its appearance to your eye whilst occupying its perspective-station;* and that, consequently, on moving your head upwards from your sketch (as you must move it) — when necessary to ascertain the appearance of the respective parts of the subject,— the more nearly you can manage to ascertain that appearance by placing your eye in its original perspective-station, and glancing at the subject therefrom,—then, the more nearly your sketch will be a correct one.

LESSON II.

ON THE EXTENT OF AN ARRANGED SUBJECT, ETC.; AND THE POSITION OF ITS P. S. AND HORIZON.

1. An arranged subject may, as it were, fully occupy a range of vision, and thus constitute a perfect R.V.S.; or it may only partially occupy it, and thus constitute but a portion of a complete R.V.S.

Therefore, supposing an arranged subject were viewed from the eye's perspective-station through the exact centre of a circular tapering funnel (or what may be termed a sketching-funnel) held motionless (see Fig. 138 *e* to *c*):—it would not be requisite that the subject should fill all the space visible, under such circumstances, through the funnel to the eye: consequently, it would not be requisite to sketch all the mass of objects contained within that space, but only that portion of the mass forming the arranged subject. See Rule 10, Lesson I.

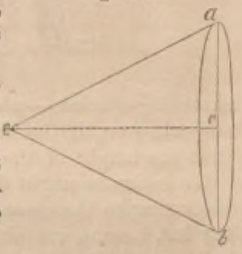
2. If the arranged subject fully occupies a range of vision, and thus constitutes a perfect R.V.S.,—or if, when viewed through a sketching-funnel, as above described, it fills all the space visible through the funnel, then no objects existing beyond the limits of the arranged subject — or which would be invisible to the eye whilst viewing the subject through the funnel—should be depicted in your sketch of the subject, if you desire to produce absolute correctness of representation throughout the whole of the sketch.

Nevertheless, if it should be desirable, as it is sometimes, to represent in a sketch

more than such a mass of space and objects as constitutes a perfect R. V. S., it may be done, by means of skilful management, so that the representation therein of extra space and objects neighbouring the mass constituting the R. V. S., shall not appear to be very strikingly incorrect, and rules for effecting it will be found in their place in this Appendix.

N.B. The ingenious sketching student desirous of employing a sketching funnel, for the purposes of his studies, may, if he cannot obtain one otherwise, make one for himself, as thus: namely, by taking a piece of stout dark-coloured paper, and rolling it together, so as to form a pointed end, having an aperture about the size of a small pea, and therefrom to swell out gradually into a perfect circle (as shown in Fig. 130), and so that if its length, from one end to the other, through its centre (as from *e* to *c*) be, for example, 3 inches, the diameter of its larger end (as from *a* to *b*) also shall be 3 inches.

Fig. 130.

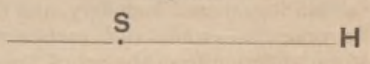


3. If the arranged subject constitutes a perfect R. V. S. then,—as its P.S. will be situated at the central point of the subject, lying on the level of the eye, and likewise so much of its horizon will extend on one side of its P.S. as on the other, and every part of its apparent boundary will be equi-distant from its P.S.,—consequently its P.S. must be represented in the exact centre of your sketch of the arranged subject to render it a correct one.

4. But as a subject may be so arranged as to constitute a portion only of a perfect R .V. S, it may be so arranged also that its P.S. shall be situated in such a position on the horizon of the subject, that more of the horizon shall lie on one side of the P.S. than on the other; and more of the subject shall apparently exist above than below the horizon.

Thus, supposing the blank space, around the line H, Fig. 131, to be a subject composed of various objects, and the line H to be its horizon: the subject could be so arranged for sketching as that, when arranged, its P.S. shall be situated at S, or on any point of that horizon; and hence, in such a position that one-third, or any other portion of the horizon, shall lie on either side of the P.S., and the remaining portion on the other side;—and so that therefore its P.S. shall not lie on the centre of the horizon, which it should not do, as a rule of agreeable composition, unless especial reasons to the contrary exist.

Fig. 131.



At the same time, it could be so arranged that about one-third, or fourth, of the subject shall apparently exist below the horizon, and the remainder above it,—as it should be arranged, unless it be advisable, on particular grounds, that such should not be the case.

When the subject is so arranged, that its P.S. does not lie on the centre of its horizon, and that less of the subject exists below than above its horizon, or *vice versa*; then, whatever are the proportions of its horizon lying on each side of its P.S., and of the subject existing below and above the horizon, strictly identical proportions must be represented in the sketch, of the subject, to render it a correct one.

5. As the P.S. and horizon of an arranged subject, and the eye's perspective station, always have a *common level* (see Rule 8 Lesson I); and since the peculiar set of apparent features, which the subject will display, will depend greatly on the height of that level; you should, before you begin to sketch the subject, determine in your mind, to the best of your ability, how high that level lies above the level of the lowest point of your subject,—for, so high as the former level lies above the latter will be the height of the former.

And bear in mind that when your sketching-station is situated on a bank, eminence, or any place so elevated that a portion of your subject lies below the ground on which your feet rest, and more than six feet below your eye's perspective-station; then, the level of the lowest point of your subject must be considered as lying below the ground-level of your sketching-station.

6. When the level of the lowest point of an arranged subject does not lie *below* the *ground*-level of its sketching-station (see *a*, Fig. 132); then the subject will not be arranged artistically, if the level of its P.S. and horizon, and of the eye's perspective-station, do

not lie at least 5 feet above the ground-level of the sketching-station: nor will it be arranged, either artistically or correctly, if that level lies higher than 6 feet above the *ground*-level of the sketching-station.

Fig. 132.

Consequently, if a subject, you are about to arrange for sketching, be such an one that, when arranged, the level of its lowest point cannot lie below the ground-level of its sketching-station, — then, whilst arranging it, you should keep your eye *either* 5 or 6 *feet* above the ground-level of the sketching-station.

7. When the level of the lowest point of an arranged subject lies more than 6 feet below the level of the *eye's perspective-station*: then, the subject will belong to a class of scenes termed "bird's eye views;" and the level of its P.S. and horizon, and the eye's perspective-station will be, in height, equal to the combined heights — firstly, of the eye's perspective-station above the ground level of the sketching-station,— and, secondly, of that ground-level above the lowest point of the subject,— or, if the first-named height be 5 feet, and the latter, for instance, 10 feet, then the height of the P.S, horizon, and eye-level will be 15 feet. See Rule 5.

To estimate aright the height of the level of the P. S and horizon of arranged subjects, belonging to the class alluded to in the above Rule 7, proceed as will be found directed in the last Lesson contained in this Appendix.

LESSON III.

ON THE PECULIAR FEATURES OF APPARENT FORM AN ARRANGED SUBJECT WILL DISPLAY.

1. An arranged subject, unless it be a mere surface, flat and even as the perfectly smooth unbroken face of the mirror, will consist of a variety of separate objects existing within its external boundary, and having separate surfaces more or less distinctly visible to your eye,—whilst each surface will not present to your eye any other than an apparent form, differing from the actual form of the surface.

2. This apparent form of each surface will so differ, because it will have a *perspective size* and a *perspective shape*,—or a size which is smaller than the size of the actual form of the surface,—and a shape which, according to circumstances, either is diverse from, or exactly like the real shape of the actual form of the surface.

3. Remember, then, that the perspective size of a surface means a contracted or smaller size than the real size of the surface; and that the perspective shape, either means a shape exactly like the real shape of the surface, or a shape diverse from that real shape; also that every surface, which belongs to an arranged subject, and is visible to your eye, only displays perspective size and perspective shape, and that its combined perspective size and shape compose its apparent form.

3. As any surface which is visible to the eye, will apparently become more and more contracted in the same proportion as its several particles respectively become more and more distant from the eye; as well as still further contracted in the same proportion as the imaginary plane on which the surface lies becomes less and less distant from a straightforward glance of the eye, or an eye's line of direction: consequently, the perspective size and shape of a surface form, belonging to an arranged subject, will be regulated by the influence of the above-named facts or Nature laws of perspective.

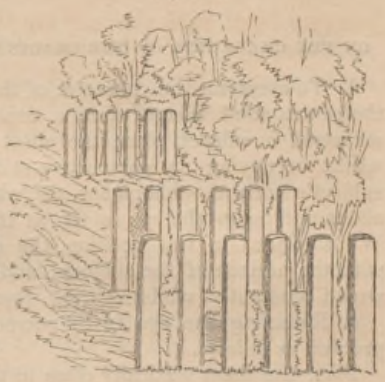
4. And as the influence of these laws must very materially affect the *outline* or form of the surface, as well as the surface, and contract the one with the other: so therefore, it must,—in every case where the direction of the *imaginary plane* on which the surface lies is not a vertical one, existing parallel with the horizon of the arranged subject.—also cause the surface not only to have a perspective size which is smaller than its real size, but likewise a perspective shape which is diverse from its real shape.

The extent of the influence on surfaces and objects, as regards perspective size, may be inferred from the consideration of the circumstance that many stars, through that influence, appear to be almost imperceptible specks in the sky, whilst the actually so much smaller but nearer moon appears to be many thousands of times greater than is either of those stars.

Also, owing to that influence, if you ascend any eminence, or high building, or move backwards on the ordinary level of the earth: then, according as you ascend higher and higher, or move, and so increase your distance from the objects visible to your eye during your progress, all that you will see, will apparently become smaller and smaller in the same proportion as each object, during your progress, becomes more and more distant from your eye; until at length a man, animal, tree, house, etc., may appear, when it has become very remote from your eye, so small as hardly to seem larger than a pin's head.

If, likewise, surfaces and objects were not to display a perspective size, in accordance with the facts stated in Rule 3, it would be impossible to represent distance in general progressing towards the horizon, and the distances existing between the several parts of surfaces and objects, or the relative bearing of those parts — but as they do so, it is possible. Thus, because they do so, it has been possible to depict the posts in Fig. 133, so as to represent, as they do, rows of equal sized posts standing at different distances from each other, progressing towards the horizon. Try to represent such posts, as so standing, by making them all of one size, and you will prove to yourself you cannot produce the required effect.

Fig. 133.



The extent of the influence, on surfaces and objects, as regards perspective shape, has already been indicated in pages 8 to 14 of this Appendix.

5. When a surface, belonging to an arranged subject, is an upright one and takes such a direction as that it lies on a vertical plane parallel with the horizon of the subject, then its perspective shape is exactly like its real shape.

Such a surface will lie on such a plane, when if a horizontal line were to extend from one side of the surface to the other, that line would be one running parallel with the subject's horizon. See Rule 1, Lesson IV.

6. When an upright surface, belonging to an arranged subject, takes such a direction that if a horizontal line were to extend across the surface it would run parallel with the subject's E. L. D, then it will be a surface lying on an E. L. D vertical plane, and having a perspective shape diverse from its real shape. See Rule 1*b*, Lesson IV.

7. When an upright surface, belonging to an arranged subject, takes such a direction that if a horizontal line were to extend across the surface, and yet were not to be a line running parallel either with the subject's horizon, or E. L. D, then it will be a surface lying on an oblique vertical plane, and have a perspective shape diverse from its real shape. See Rules 1*c*, Lesson IV, and 4 of this Lesson.

Fig. 134.

And if what has been stated in this Rule, respecting perspective shape, were not the fact, it would be impossible to represent a surface as taking different directions.

For a proof that it is a fact see Fig. 134, copied from a photograph, and in which the same surface form is represented, as it were by Nature's process of representation, as having two different perspective shapes; one from H to white H, like the real shape of the surface, and obviously representing the surface as taking the direction referred to in Rule 5; and the other, from white H to R, unlike the real shape of the surface, and equally obviously representing the surface as taking the direction referred to in Rule 6.

8. Whatever may be the plane on which a surface, belonging to an arranged subject, lies relatively to your eye's perspective-station, it will display a perspective shape in accordance with that plane and its distance on that plane from the eye,—therefore it will display a perspective shape diverse from the one it displays when lying on any other plane. See Rule 2, Lesson IV.

LESSON IV.

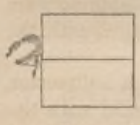
ON THE CHARACTER OF THE IMAGINARY PLANES ALLUDED TO IN THE PRECEDING LESSON.

1. To ascertain the character of these planes, take a square sheet of paper, and through the centre point thereof draw a centre line parallel with one of its sides; then, having arranged a subject, place the sheet so that its centre shall lie on the level of the eye whilst occupying its perspective-station, and its centre-line shall lie parallel with the subject's horizon,—imagining, the while, the sheet to extend to the right and left and above and below the eye so far as it would be possible to see under any circumstances. Whilst placed in this position, the sheet will represent a vertical plane existing parallel with the horizon of the subject; and supposing it were to retire backwards infinitely, it would constantly, whilst retiring, represent such a plane.

b. Retaining the eye in its perspective-station, and continuing to imagine as before, proceed as follows.

Place the sheet vertically close to the eye, and so that the sheet's centre-line shall form a right angle with the subject's horizon, or appear to run direct from the eye to the subject's P. S. and terminate there, see Fig. 135; for, then, the sheet will represent a vertical plane parallel with the subject's E. L. D., or an E. L. D. vertical plane; and if it were to move backwards or forwards infinitely, existing the while vertically, and with its centre-line forming a right angle with the horizon, it would continue so long to represent an E. L. D. vertical plane.

Fig. 135.



c. Place the sheet vertically, and suppose it to move backwards or forwards infinitely, but in such a way that its centre-line will run horizontally, and yet not be parallel either with the subject's horizon, or E.L.D.; and then the sheet will represent, continuously, a vertical plane having an oblique direction, or an oblique vertical plane having a degree of obliquity according to the angle which the sheet's centre-line forms with the horizon.

d. Place the sheet so that the whole of its surface shall lie on the level of the eye, and suppose it, parallel with that position or horizontally, to move upwards or downwards infinitely; then it will continuously represent a horizontal plane.

e. Place the sheet in any other position than above indicated, and suppose it to move upwards or downwards infinitely, and it will continuously represent an inclined plane having a degree of inclination according to the direction and slope you give to the sheet.

2. When you are sketching, then, imaginary planes like those represented by the sheet of paper, may be supposed to exist around you in every direction and at every conceivable distance from you. Consequently, every flat surface belonging to an arranged subject, may be said to lie on some one or other of those planes; and its perspective shape will be in accordance with the plane, on which it may be said to lie, and its distance on that plane from the eye's perspective-station.

3. *a.* Whilst sketching an arranged subject, you should endeavour to ascertain the plane on which each surface, belonging to the subject, lies: and bear in mind, firstly, *that all parallel surfaces lie on the same plane*; and, secondly, as follows.

b. When a surface is such an one as is described in Rule 5, Lesson III., it will lie, as therein stated, on a vertical plane parallel with the subject's horizon.

c. When a surface is an upright one, and takes such a direction, that if a horizontal line were to extend across its surface and to run parallel with the subject's E. L. D., then the surface will lie on an E. L. D. vertical plane.

d. When a surface is such an one as is described in Rule 7, Lesson III., it will lie on an oblique vertical plane, having a degree of obliquity according to the angle which the horizontal line, referred to in the rule, forms with the subject's horizon.

When a surface is such that the whole of it exists horizontally, or does not seem to incline in the slightest degree, then the surface will lie on a horizontal plane.

When a surface is an inclined surface, or is such that its direction neither admits of its lying on any kind of vertical plane nor on a horizontal plane, then it lies on an inclined plane having a degree of inclination according to the slope of the surface.

LESSON V.

ON WIDTHS OF RANGE.

The correct representation of the perspective size and shape, either of a surface or an object, may be best effected by making use of what are termed, in this work, representative widths of range, and by the aid of which, in fact, every sketch must virtually or actually be produced.

1. Widths of range are a series of imaginary lines which may be supposed with respect to any arranged subject: firstly, to lie parallel with the subject's horizon, and one adjoining another, from the horizon to the sketching-station:

Secondly, to extend to the right and left across the subject to the apparent boundary of the R. V. S. to which the subject belongs:

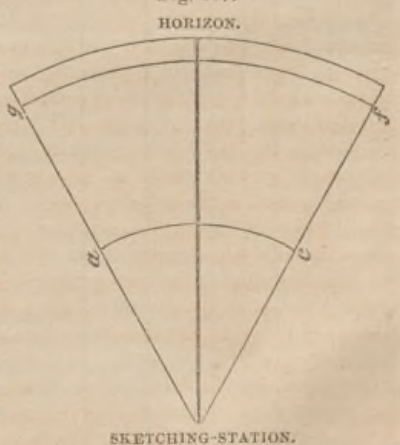
Thirdly, to have such an *actual length* individually, that each line of the series is exactly as long as it lies distant from the sketching-station, so that the one that lies one foot from the sketching-station is one foot long, that which lies two feet from the sketching-station is two feet long, and so forth:

And, fourthly, to have, nevertheless, every one the same *apparent length* that the other has, since all lines which lie parallel with the horizon of a R. V. S., and have a length equal to their distance from the sketching-station, must, according to the principles of Nature's law of Perspective, have individually one the same apparent length as the other has.

Thus, as the line, from end to end, marked '*hor.*, Fig. 136, represents the apparent length of the *true* horizon of an arranged subject and the R. V. S. to which it belongs, and which *true* horizon forms a line that is as long as it is distant from the sketching-station; therefore the parallel lines below it, marked 10, 11, 15, etc., individually represent the apparent lengths of different imaginary widths of range, the nearest of which, to the sketching-station, lies ten feet therefrom and is ten feet long, and the next one eleven feet therefrom and is eleven feet long, and so forth.

These imaginary lines are termed widths of range (W. R.'s), because, supposing all objects in a R. V. S. to be transparent, so that the exact amount of space which can, by any possibility, be at one moment distinctly visible to the eye, could be, with those objects, presented to the eye whilst occupying a perspective-station; then, that amount of space would have an apparent boundary like a cone, see Fig. 137. Whilst that apparent boundary would have a series of curved diameters running parallel with the horizon from one side to the other of the cone,—as from *a* to *c*, *g* to *f*,—and each of which would be of the width of the cone at the points between which it extends, and would consequently be a W. R.

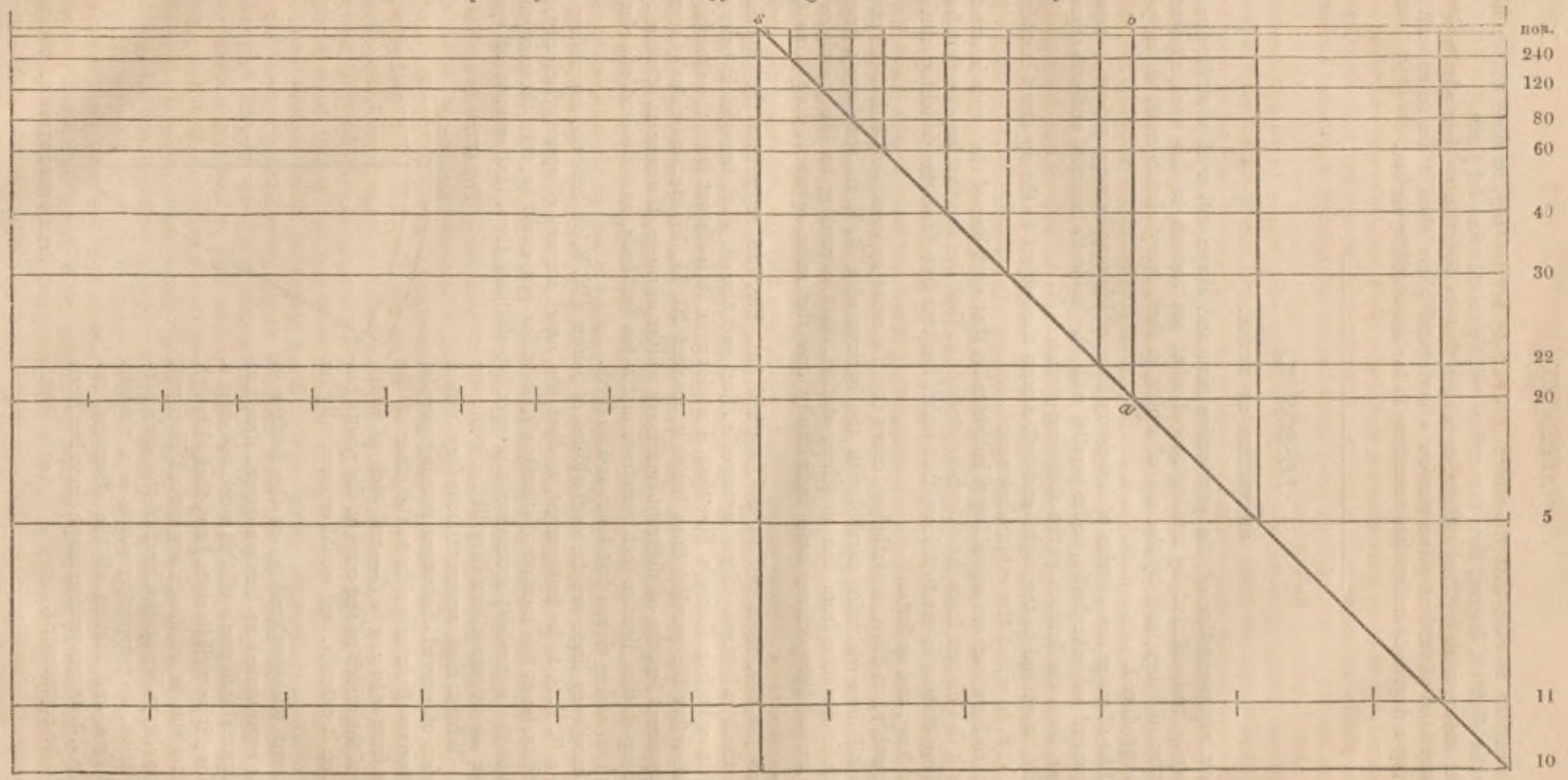
Fig. 137.



To prevent misapprehension; as the horizon in Fig. 139 is represented as being a curved line, and in other figures and parts of this work as being a straight line; it as well to state here, that although the true horizon is an imaginary curved line, yet, as that line always lies on the level of the eye's perspective-station, its perspective shape is a straight horizontal line, and that in all the diagrams, excepting Fig. 13, its perspective shape alone has been required to be represented.

Fig. 136.

This line is a complete representation of the apparent length of the true horizon of a perfect R.V.S.



Each of the above lines, to line Hor., is a correct and complete representation of the apparent length of a W.R. or imaginary line which, besides lying parallel with the horizon when its level is 5 feet high, is exactly as long as it is distant from the sketching station,— the first one being a representation of a W.R., which is 10 feet long, and 10 feet distant from the sketching-station — and so forth. But the apparent lengths of widths of range may be represented on a larger or smaller scale than thau as above, and as lying parallel with the horizon when its level is at any height.

2. The exact position or level of every width of range, may be said to be identical with the ordinary level of the earth's surface.

But, when you are sketching, if the ground surface before your eyes does not require to be represented as being more than six feet below your eyes' perspective-station level, then the widths of range level should be considered to be not less than five feet or more than six feet below the eyes' perspective-station level. See Appendix, Lesson I., Rule 10, and Lesson II, Rule 6.

If, however, the ground surface before your eyes does require to be represented as being a greater number than six feet below the eyes' perspective-station level, then the widths of range level should be considered to be just that greater number of feet below the eyes' perspective-station level.

3. Hence, whilst you are sketching an arranged subject, you should imagine that all widths of range connected with the subject lie on one level; and that each W. R. exists just as much below the subject's horizon line level, as it exists below the eyes' perspective-station level, since the horizon line and the eyes' perspective-station always have a common level. See Appendix, Lesson II, Rule 5.

Or, supposing the arranged subject's horizon line level to be five feet, then *vertically downwards from the level* to the W. R., existing immediately beneath the horizon line itself, would be a depth of five feet; also vertically downwards to the adjoining one, and to every succeeding one, in each case there would be neither more nor less than a presumable depth of five feet. Supposing the horizon level to be a greater number than five feet, then vertically downwards from the level to any W. R. will be a depth equal to that greater number of feet—or, in effect, there will be a height upwards from the W. R. to the horizon line's level, exactly equal to that greater number of feet.

The sketch of the subject, then, should be made accordingly. Thus, supposing Fig. 136 to denote the sketch, and to represent a horizon line level of five feet, and the space between its horizon line, and the line 10, to represent the level of the widths of range connected with the subject. Suppose, also, the first line following the horizon line, and the others marked 240 to 10 to represent respectively a 1000 feet W. R., a 240, a 120, an 80, a 60, a 40, a 30, a 22, a 20, a 15, an 11, and a 10 feet W. R., and that you require to represent a height of five feet upwards from either one of the W. R. lines, then a vertical line should be carried up from the one to the horizon line, as it would correctly represent the five feet of height. Hence, the vertical line, *a* W. R. 20, represents a height of five feet; while the parallel longer and shorter vertical lines, extending upwards from the different widths of range given in this figure, likewise respectively represent a height of five feet when seen at certain distances—that is, vertical line *a* accurately represents five feet of height as seen standing at the distance of twenty feet from the eye, or on a twenty feet W. R., and so forth.

4. Now the space in Fig. 136, lying between its horizon line and the line next beneath it, represents as many millions of widths of range as exist beyond the distance of a thousand feet from the eye, or as exists beyond a thousand feet W. R., which this line denotes. But, lest it should bewilder the student to conceive how this can be, it is advisable to point out, that if he were to enlarge Fig. 136, as he enlarged it, the spaces lying between its various representative widths of range, would become proportionally enlarged, and increase in naturalness of appearance, according to the ordinary idea of naturalness. Also, on reflecting upon this matter, he should bear in mind, that since apparent size diminishes in the same proportion that distance increases, therefore, necessarily, apparent size must diminish to an extraordinary extent beyond a certain near proximity to the eye. In fact, it can easily be proved, that when the widths of range level is five feet, if the space existing on that level between its ten and twenty feet W. R. were perceptible; then that space would have an apparent size as great as the apparent size of the whole of the space existing on the same level, between its twenty feet W. R., and its boundary or horizon line W. R. See Fig. 136.

5. Thus, the circumstances stated in the foregoing rule, indicate, that unless the eye and the horizon line have a greater level than five feet, we can never see more than an extremely inconsiderable portion of the earth's surface, existing between the eye and the horizon line; but, by increasing that level through ascending an eminence, we may become able to perceive an increasing quantity of the more distant parts of the earth's surface.

They also indicate that it is as well, when convenient and possible, either to select for a sketching subject, only that which forms a small portion of a range of vision, or to arrange every sketching subject, so that it shall have a considerably distant W. R. for its base line; for the smaller the portion of a range of vision which an arranged subject forms, the less contracted will it be necessary for the spaces to be on your sketch sheet, between its horizon line, and the widths of range it may be requisite to represent beneath the horizon line—that is, presuming you employ the whole of your sketch sheet for the arranged subject. See Appendix, Les. II, Rules 1 and 4.

6. On requiring, between your sketch sheet's horizon line and any widths of range you may have to depict beneath it, to produce as much space as correctly possible, without making your sketch a perfect bird's-eye view; you may attain your purpose by arranging or sketching your subject, so as to have a horizon level of six feet, whilst it may often be desirable to sketch in accordance with this rule.

Thus, if the horizon line, Fig. 136, were to be made to represent a six feet level, then each of the W. R. lines (240, etc.) below it, would have to be placed *further away* from it, to become correctly representative of the W. R., after which it is now denominated in this figure. Therefore, on effecting the transformation, more space would occur between each W.R. and the horizon line, than now exists between them. Whilst, if the change was made from its present five feet level to the six feet level, and the accompanying W. R. lines were allowed to remain in their present position; then, to become correctly denominated, the W. R. line 10, would require to be marked as 12; W. R. 15 as 18, 20 as 24, 30 as 36, 40 as 48, 60 as 72, 80 as 96, 120 as 142, 240 as 284: and then also, each vertical line, extending parallel with the line *a*, between any W. R. and the horizon line, would have to be considered as being representative of six feet of height instead of five.

7. To ascertain what each W. R. line, Fig. 136, should be denominated, in considering its horizon line to represent a new or higher level than six feet; divide the vertical line standing upon it (as, for example, line *a* W. R. 20) into as many equal spaces as there are feet in the horizon new level, then ascertain how many of such spaces there are in the W. R. line upon which the vertical stands, since the number contained therein will furnish the required denomination.

Thus, supposing the new level to be ten feet, and the vertical line *a* be divided into ten equal spaces, and the compasses, opened to the extent of one of those spaces, be passed along the line 20 upon which the vertical *a* stands; then there will be found to be exactly forty such spaces in the line—consequently it will represent a forty feet W. R., and its denomination should be forty instead of twenty.

8. Hence, on employing a representative W. R., remember, that whatever may be the level of the horizon line beneath which it is placed, if a vertical line be drawn from the W. R. to the horizon line, and be divided into as many equal size spaces as there are feet in the horizon line's level, then one of those spaces will correctly denote the size of space which will represent one foot of the W. R., or will *become a representative foot of the W. R.*, and of *any* vertical line placed on that W. R.

a. Also, on having depicted any W. R. line, and found a representative foot thereof, then a correct representative foot of any W. R. line, placed above or below the former line, may be obtained; by placing a flat rule on the P. S., and on the boundary point of the former line's first foot space extending from the E. L. D.; and by drawing an oblique line, from the P. S. through the foot boundary, and further downwards—as oblique line 1—P. S., Fig. 138—for from where the oblique line crosses any W. R., thence to the E. L. D. will be one representative foot of the W. R., as well as of any vertical line which may be placed upon it.

9. On having depicted a horizon line—with a W. R. and an E. L. D. which divides the W. R. into two portions; and having ascertained how much space of the W. R. line denotes one foot, the line may be made to represent any W. R. you please, beyond a certain limit. To cause it to do so, ascertain how many feet are represented on that portion of the line extending the longest from the E. L. D. intersection; and denominate the line either double, or more than double the ascertained number of feet—thus, if on one side of the E. L. D., a portion of the W. R. extends, for instance, fifty representative feet, and on the other side less than fifty feet, denominate it either a hundred feet W. R., or a more than a hundred feet one to any extent that may seem desirable.

But, after the W. R. line has been denominated, all other W. R. lines, depicted above or below it, will only truly represent certain distances from the eye, according to how far they are placed from this one, and relatively to its selected denomination.

10. To obtain the correct denomination of any W. R. line, placed above or below a primary or first depicted one, proceed as follows :—

a. Find the true determinative point of the horizon line connected with the primary W. R., and to do this, *measure off, along the horizon line, as many representative feet of the W. R. as accord with its denomination*, beginning at the point of sight, and proceeding to the right or left thereof, as most convenient, for the terminating point of the measurement will be the determinative point. Refer to Rule 8.

b. Thus, suppose line *h*, Fig. 138, to represent a horizon line having a five feet level; point P. S. to be its point of sight; the line extending downwards from P. S. to be the E. L. D., and line W. R. 20, to denote the primary (20 feet) W. R.; then ascertain a representative foot of W. R. 20, and, in this case, measure off, along the horizon line, twenty of those representative feet, beginning at the P. S., and proceeding to the left of it, for the terminating point D, of the measurement, will be the determinative point of the figure.

Fig. 138.

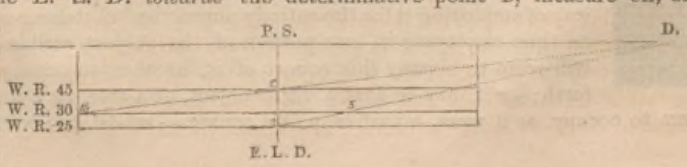
c. Having found the true determinative point; then, to obtain the correct denomination of an upper W. R. line, or of one placed *above* the primary one, and supposing W. R. 30 to be the upper one, proceed further as thus:—place a rule across the upper W. R. line, so as exactly to touch the determinative point D, and the point of the E. L. D. where it is intersected by the primary W. R. line, as at *i*, and accurately mark the point where the rule crosses the upper W. R. as at *c*. Next ascertain a representative foot's space of the upper W. R line, and how many of such spaces there are in this W. R. line's portion which lies between the E. L. D. and the point *c* where the rule crosses this W. R., and add the number to the denomination of the primary W. R. line 20 — or, as accurate measurements will show that there are ten representative feet in the portion, add 10 to 20 and the process will give you 30 as the correct denomination of the upper W. R. line.

d. To obtain the true denomination of a lower W. R. line, or of the one (15) placed *beneath* the primary one, Fig. 138: place the rule across the *primary one*, so as to touch the determinative point D, and the point of the E. L. D. intersected by the lower W. R. line as at *r*; ascertain how many feet are represented by the primary W. R. line's portion, lying between the E. L. D. and the point where the rule was placed across this W. R. line, and substract the number of them, 5, from the denomination of this W. R., line—or from 20, for the product, 15, will give the denomination of the lower W. R. line.

Or the denomination of any W. R. line, lying above or below a primary one, may be ascertained as follows:—Find, on the primary W. R. line, a space containing a number of its representative feet, equal to one quarter of the number of feet contained in its denomination; mark off such a space on the to-be-denominated W. R. line, proceeding from the E. L. D., then find a representative foot of this W. R., and ascertain how many of such feet there are in the marked off space, and quadruple the number, for the sum of the quadruple number will give the denomination of this W. R. line.

11. To produce any required W. R. line of a particular denomination, after having depicted and denominated any primary one, and supposing line 30, Fig. 139, to be the primary W. R., and that you require to represent a nearer one, or a twenty-five feet W. R., work as follows :—

Proceeding from the E. L. D. *towards* the determinative point D, measure off, on the primary W. R. 30, as many representative feet of it as are equal to the difference between its, and the to-be-produced one's



denomination — or measure off five feet, and place a rule on their terminating point, as at 5, and so as to touch it, the determinative point D, and the E. L. D.; then draw a horizontal line through the point of the E. L. D., touched by the rule, as through *t*, for this line will give the required W. R. 25.

a. Suppose W. R. 30 to remain the primary one, but that you require to produce a more distant one, or a forty-five feet W. R.—Proceeding from the E. L. D., and *away* from the determinative point, measure off on the primary W. R. as many representative feet of it as are equal to the difference between its, and the to-be-produced one's denomination; or measure off 15 feet, and place a rule so as touch their terminating point (as at 15) and the determinative point D. Then, with the greatest exactitude, mark the point where the rule crosses the E. L. D., and draw a horizontal line through it, as line W. R. 45, for that line will furnish the required W. R. 45.

A knowledge of how to denominate representative widths of range, and how to produce any required widths of range, will greatly assist the artist to avoid representing objects in a sketch, so as either to recede too far back, or so as not to recede sufficiently far in the sketch; and, also, will aid him to ascertain, at any time, whether it be probable he has represented them as receding correctly.

Likewise, the ground plans, and elevations of buildings, may be put into perspective with the greatest facility and correctness, by means of these widths of range, as may be readily inferred from the references made to them further on, and in the Lessons on Perspective contained in Section VII.

LESSON VI.

ON THE USE OF THE SKETCHING FRAME.

To the unpractised sketcher, nothing is more difficult than to discriminate the relative apparent sizes of objects, and to ascertain how large one object should be represented as compared with another. The difficulty, however, may be considerably lessened by the use of the sketching frame described in p. XV. of the Appendix, or by employing it as follows: —

Having arranged a subject for sketching, take the loose string of the frame between your teeth; imagine the thread, lying horizontally above it, to be a horizon line thread; then hold the frame vertically as far back, from the eye's perspective station, as equals the length of that horizon line thread, and so that the central point of that thread shall exactly cover the apparent P. S. of the arranged subject. Next, without moving the head, person, or frame, carefully note how much of the arranged subject exists above the frame's horizon line thread, and how much below it — how much of it to the right, and how much to the left of the P. S.

But bear these things in mind the while: that if you find the whole of the subject will not be visible to you through the frame's aperture, it will be because you have arranged too much subject for a sketch, or because you are standing too near to your subject; and, therefore, that, to make a correct sketch from it, it will be necessary either not to represent more of it than you can perceive through the aperture of the unmoved frame; or else to remove yourself backwards until all you desire to represent becomes perceptible to you through the aperture whilst the frame is being held as above described.

Having your frame rightly placed, and all the subject perceptible through it which you desire to represent, and holding the head, person, and frame immoveable, compare the apparent relative positions and dimensions of the different parts of the subject one with another, estimate them as correctly as you can, and then proceed to sketch the subject according to your conclusions as regards those relative positions and dimensions.

To divide the edges of the frame into eight equal parts, and fasten threads across it, one between each pair of directly opposite division points, so as to produce a series of squares (see Fig. 140), and to use it in this state, will be the most desirable way of employing it for the entirely unpractised sketching student to adopt. For on thus employing it, one portion of the subject, visible through its aperture, will seem to occupy this square of it, another to occupy that square, and so forth; or it may be that a whole object, as a tree, or a house, for instance, will seem to occupy, as it were, a part only of a square — whilst the whole of another appears

Fig. 140.

to occupy an entire square, or a still larger space of the aperture. Consequently the frame will indicate, to a nicety, the apparent relative positions and dimensions of the various objects and their parts composing the subject — things which, if carefully studied, will supply the means of determining how comparatively large and positioned every feature of the subject should be represented.

Yet, after having studied sketching for a short period with the aid of a sketching frame, occasionally endeavour to estimate the apparent relative positions and dimensions of objects without its aid; and directly you can estimate them aright, by your own unassisted skill, dispense with the use of the frame, for it is only recommended as a means of prevention against the acquirement of a retarding habit of false imitation.

By the use of the frame, amongst other matters, the tendency of lines apparently to converge out of their true direction towards vanishing points, may be clearly perceived. Hence, on holding the head, person, and a frame, perfectly still, and looking through the frame so as to be able to see at once both sides of a street as standing in an oblique direction, or as receding from the eye, you would find that each of its receding horizontal lines would display an apparent convergence to a V. P. in accordance with one or more of the following rules:—

a. Every receding horizontal line inclining away from you, so as to be parellel with your E. L. D. would apparently converge to the point of the frame covering the scene's P. S.

b. Every receding horizontal line inclining away from your right hand to your left, so as not to be parallel with your E. L. D., would apparently converge to a *horizon-line* V. P. situate to the *left* of the P. S., at a distance from it dependent upon the line's actual obliquity of direction.

c. Every receding horizontal line inclining away from your left to your right-hand, so as not to lie parallel with your E. L. D., would apparently converge to a horizon line V.P. situated to the *right* of the P. S. at a distance from it dependent on the line's actual obliquity of direction.

d. Every receding horizontal line existing *above* the level of the eye would apparently converge downwards towards its V. P.; whilst every other such line, lying parallel with it, would also converge downwards towards the same V. P.

e. Every receding horizontal line existing *below* the level of the eye, would apparently converge upwards towards its V. P., whilst every other such line, lying parallel with it, would also converge upwards towards the same V. P.

f. A receding horizontal line's V. P., would approach towards the P. S. according to the degree that its actual obliquity of direction might approach the greatest possible degree of obliquity—namely, that of a direction parallel with the E. L. D.

LESSON VII.

ON VANISHING POINTS, ETC.

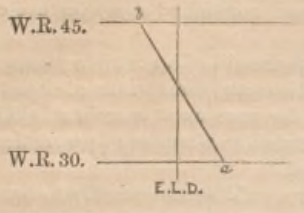
Vanishing points are very liable to be misplaced on a sketch, if the sketcher, before placing them, does not consider well whether the receding lines they are to aid in representing are *actually*, or only *apparently*, inclining away in a certain direction; or, in fact, if he does not correctly discriminate the difference existing between the actual and apparent direction of the lines — a matter very difficult at times to ascertain.

If he can accurately estimate the apparent direction of a line, of course that will be sufficient for his purposes. But in the case of a horizontal line receding in a direction parallel with the E. L. D., it is very possible he may mistake the apparent direction for the actual one, and, in consequence, represent the line as apparently converging to some other V. P. than the P. S., when he ought only to represent it as converging towards the P. S. Therefore, when he is sketching objects, previously to representing their lines, he should first maturely consider what may be their actual directions, and then what are their apparent directions towards vanishing points.

1. The true V. P. of a plan or other receding horizontal line may be ascertained, if the true width of range on, or vertically over, which its two ends lie, are known, with the true horizontal distance of those ends from the E. L. D. vertical plane which extends above and below the E. L. D. (See paragraph *b.* Lesson IV., Appendix; and Lesson VIII., Section VII.

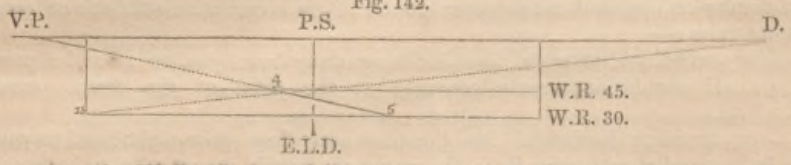
Thus imagine line E. L. D. (Fig. 141), to denote a plan E. L. D., and line *a b*, to be a plan receding horizontal line, lying with its nearer end *a*, on a 30 feet W. R., and 5 feet to the *right* of the E. L. D., proceeding therefrom; and with its further end *b* on a 45 feet W. R., and 4 feet to the *left* of the E. L. D., proceeding therefrom.

Fig. 141.



Then, secondly, represent a horizon line with a P. S. (as in Fig. 142), having presumptively a 5 feet level; also represent an E. L. D. and, where you please, draw a line through it to represent the plan's 30 feet W. R. Next find the W. R.'s representative foot and its determinative point D. (See App., Les. V., Rules 8 and 9, *a*). Also represent the plan's 45 feet W. R. as lying above its W. R. 30 (see App. Les. V. Rule 11 *a*). Then mark off on the W. R. 30, *five* of its representative feet, proceeding from the right of the

Fig. 142.



E. L. D., and on the W. R. 45, *four* of its representative feet, proceeding from the left of the E. L. D. At the terminating point of the 5 feet, as at 5, place a flat rule, so as at once to touch it, the terminating point (4) of the four feet, and the horizon line. Concluding by drawing a converging line from the five feet point to the 4 feet point, and with marking the place on the horizon line where the rule touches it, whilst you are drawing the converging line, or with marking point V.P.—for on having proceeded thus, the last drawn line will accurately represent the plan receding horizontal line *a b* (Fig. 141), whilst the place marked on the horizon line will indicate that receding line's V. P.

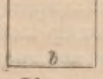
During the time of sketching, if the exact dimensions and position of a receding horizontal line cannot be ascertained, the sketcher must find a representative V.P. for it, by representing the line, to the best of his ability, according to rules *a* to *f* (App. Les. VI), and extending it on his sketch, either actually or in imagination, until it touches the sketch's horizon line.

LESSON VIII.

ON RECEDING SURFACES.

Every surface that stands vertically, like the face of a house which is perfectly flat and upright, exists on a vertical plane. (See Ap., Les. IV.)

Fig. 143.



If a vertical surface does not recede, or incline away from the eye when fixed in a perspective station, then the surface exists on a vertical plane parallel with the horizon: and, consequently, if its top and base lines be horizontal lines, they should be represented by two parallel lines—as by lines *a* and *b*, Fig. 143.

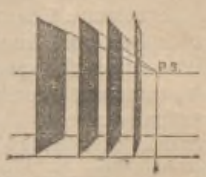
If a vertical surface exist on an E. L. D. vertical plane, and its top and base lines be horizontal lines—they will be receding ones, lying parallel with the E. L. D., and should be represented as converging towards a picture's P. S.

If a vertical surface exist on an oblique vertical plane not parallel with an E. L. D. ver. plane, and its top and base lines be horizontal lines: then they will be receding ones lying parallel with the direction of the ver. plane on which the surface, to which they belong, exists—and should be represented as converging towards a picture's horizon line V. P the position of which accords with the plane's degree of obliquity of direction.

Thus, if the degree of obliquity should be 45 degrees (or 45 degrees less than an E. L. D.'s degree of obliquity of direction, and which is 90 degrees), then these receding horizontal lines, when they incline from your left hand towards your right, should be represented as converging towards a picture's right hand side determinative point; and should be represented as converging towards its left hand side determinative point when the lines actually incline from your right towards your left hand.

If a vertical surface, like that shown in Fig. 143, exist on an E. L. D. ver. plane extending, as it were, from the eye's perspective station to the P. S., then only the nearer edge of the surface can be seen, and a mere vertical line alone will represent the surface. But if, while continuing to exist on an E. L. D. ver. plane, it were to move away from the E. L. D. without retiring off the width of range upon which the two ends of its base line at first rested, then, as it moved away, the face of the surface would become more fully visible, or increase in apparent size—as indicated by forms 1 to 4, Fig. 144.

Fig. 144.

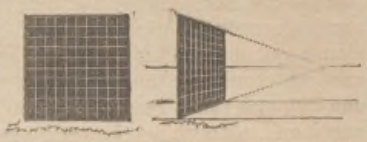


If the surface were to exist on an oblique vertical plane, having a slightly lesser degree of obliquity than an E. L. D. ver. plane possesses, and it were to move away from the E. L. D. as described in the preceding paragraph; then, as it moved, its face would display a larger apparent size than it would whilst moving when existing on an E. L. D. vert. plane, for in this case its V. P. would lie somewhat away from the P. S.

Continual decrease of obliquity would cause more and more increase of apparent size by forcing the V. P. the further and further from the P. S.

On a receding vertical surface, as a rule, the apparent size of its parts diminishes in the same proportion as the distance of its parts from the eye's perspective station increases. Thus, supposing the surface to be one, divided, as indicated in Fig. 145) into 10 rows of square feet, and that it were to recede as indicated in Fig. 146: then the apparent size of the second row would be less than that of the first row of squares; the apparent size of the third would be less than that of the second row—and so forth, as denoted in the Fig. And this would be the case because the distance from the eye's perspective station of these rows or parts of the receding surface would be an increasing one.

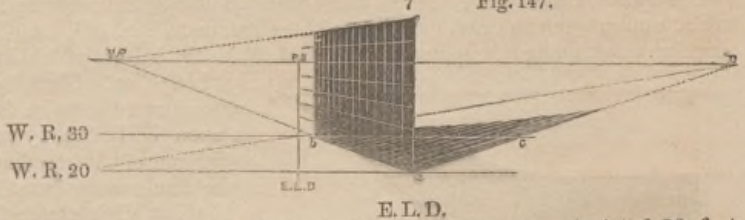
Fig. 145. Fig. 146.



Hence, also, each of the foot spaces contained in the base line of this receding surface would be apparently smaller than any other one of them lying nearer than it to the eye's perspective station—because, again, as distance increases, size diminishes.

To find how much space on the correctly depicted base line of a receding surface will represent each foot space contained therein; and supposing the horizon level to be, for instance, 5 feet, and the line a—b, Fig. 147, to be the depicted base line; point a to be its nearer end lying on a depicted 20 feet W. R.—five feet and one third of a foot from the E. L. D.; and point b to be its further end lying on a depicted 30 feet W. R.—one foot from the E. L. D.: then proceed as follows:—

Fig. 147.



Find a determinative point lying, as D, in the direction *opposite* to that which the depicted receding line takes, place a rule so as to touch at once that determinative point D and the nearer end a of the receding line. Then, where the rule crosses the W. R. on which the further end b lies, make a mark—as at c: next, find how many representative feet there are existing on this W. R. between the last made mark and the further end b of the receding line; indicate the boundary point of each foot; place the rule so as to touch at once the det. point D, the receding line, and each one of the indicated foot boundaries in succession—marking, when you so place it, the point on the *receding line* that the rule then touches—for, by proceeding thus, you will produce on the line a set of successive points, with spaces between them, each of which will accurately represent one foot of the line, according to its position.

To find a half or quarter foot representative space of the receding line—proceed as before; but instead of dividing W. R. 20 into representative feet spaces, divide it, as required, into half or quarter ones. And on endeavouring to represent any receding line and find how much of it will denote a foot, or more, or less—proceed as above indicated, but previously according to Ap., Les. V., Rules 8, 8*, and 9.

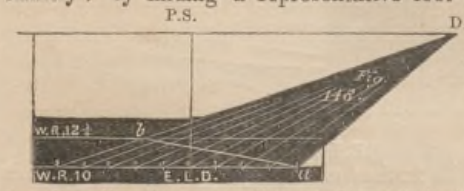
On having depicted the receding horizontal line, as line a—b, Fig.147, with its V. P., and divided the line into 14 spaces, each denoting one foot—proceed as follows:—

Represent a 7 feet vertical line as standing on the point denoted by point a, W. R. 20, or depict a vert. line as extending upwards from a to 7, seven of the W. R.'s representative feet—since the space which accurately represents one foot of a W. R., necessarily must also represent one foot of any vertical line to be depicted, either as standing upon it, or vertically over it. Then depict another vertical line as extending upwards from b W.R. 30, seven of this W. R.'s representative feet, and draw a converging line from 7 to this vertical: or else draw a converging line from t towards the V. P., and a vertical line upwards from b until it touches the converging line: for by either process, you will produce the accurate representation of the two side lines, and parallel top and base receding horizontal lines, of a receding surface existing on an oblique vertical plane, and the nearer vertical side line of which surface lies 5 feet and one-third of a foot from the E. L. D., and on a 20 feet W. R.—or, what is the same thing, 20 feet from the eye's perspective station.

Next divide the vertical line a—7, representing 7 feet, into seven equal parts, to denote seven separate feet spaces. Then depict converging lines from the boundary point of each foot's space, towards the V. P. of the receding line a—b, but stopping at the vertical line b c. And afterwards draw a series of vertical lines upwards from the boundary points of the feet spaces marked on the receding line a b, until they touch the line 7—c. For, on having done this, the converging lines will represent a series of parallel receding horizontal lines, lying on the above indicated receding surface. Whilst from any one point of a vertical line, touching a converging line, to the next point, of a vertical, touching the same converging line, will accurately represent 1 foot. Also from any one point of a converging line, touching a vertical line, to the next point of a converging line, touching the same vertical, will accurately represent 1 foot: and each compartment, lying surrounded by four small lines, will denote 1 square foot, existing at the distance from the eye's perspective station represented in the figure.

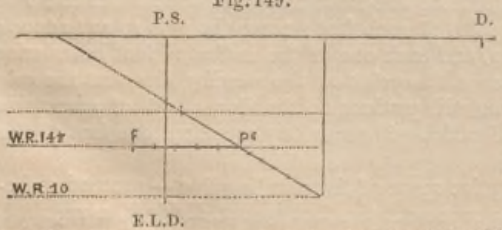
Supposing, now, the compartments to be filled, alternately, with a window and a space—each 1 foot square; then the figure and accompanying explanation will demonstrate very plainly, that just so much as windows and spaces of any kind, recede from the eye's perspective station, so they become smaller and smaller through the influence of a fixed ascertainable law of Nature—the results of which can be readily represented.

The spaces, which will represent feet spaces on a depicted receding line, may be ascertained not only in the way described with reference to Fig. 147, but likewise as follows, namely: by finding a representative foot of the W. R., on which its nearer end (as a, Fig. 148) lies. Next by measuring off a series of representative feet upon the W.R. (as upon W. R. 10), by proceeding from the nearer end of the receding line to the right, if the line recede from left to right—and to the left, if it recede from right to left: and by then placing a flat rule across the receding line (as across line a—b) so as to touch at once the determinative point (D), and in succession each foot-space (1, 2, 3, etc.) previously measured off on the receding line's nearer end W. R.; and, by lastly marking, with the greatest accuracy, where the rule, when thus placed, crosses the receding line.



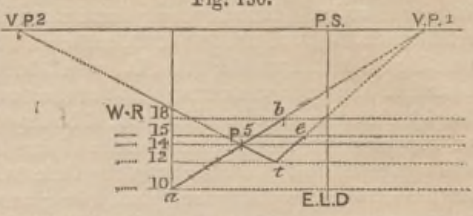
Having a receding line properly divided into feet spaces; suppose from one or other of their boundary points (as from P^6, Fig. 149) a line should project away horizontally, from the receding line to any particular length, and so as to lie throughout its length on the W. R of its projecting point—as on W. R. 14½. Then determine the length of projection in feet—or, supposing it to be 5 feet, find the representative foot of the W. R., and, proceeding from the point of projection (as from P^6) mark off, on the W. R., 5 feet in the direction of the projecting line—and draw a line over the portion of the W. R. marked off, for a line so drawn (as line P^6—F) will represent the projecting line.

Fig. 149.



Having a receding line properly divided into feet spaces, suppose from one or other of their boundary points (as from P^5, W. R. 14, Fig. 150) a line should project so as to cross several widths of range, and terminate at a certain distance from the E.L.D. on a point of a W.R., lying above or below its projecting point's W. R.; or, for instance, should terminate 2 feet from the E. L. D., on a 12 feet W. R. Then represent its terminating point's W. R. (as W. R. 12); next find the representative foot of the W. R., and, proceeding from the E.L.D. towards the position the point should occupy, measure off 2 feet, or as to t; then from the end of the measurement draw a line to the projecting point (as line t—P^5) for this line will accurately represent the projecting line. Now place a rule along the produced projecting line, and so as to touch the horizon line, and mark the horizon line where the rule touches it, and this mark (as V. P^2) will represent the V. P. of the line, as well as of all lines which lie parallel with the line that it represents.

Fig. 150.



Suppose from the projecting line's terminating point t, Fig. 150, a new line should extend (as to e), representing a line actually parallel with the *receding line*, represented by the line a—b, and therefore having the same V. P. Suppose, also, that the further end of the new line should extend to a 15 feet W. R.

To represent this new line, depict the W. R. to which its further end should extend (as W. R. 15): then place a flat rule on the *receding line* a—b's V. P. (as on V. $P.^1$) and likewise on the point where the new line should extend from (as on point t); and next draw a line from the nearer end of the new line (t) to its further end's W. R.—for a line so drawn will give the required representation. Or else, after having depicted the W. R. of the new line's further end (e) find a representative foot of the W. R., and proceed to measure off from the E. L. D., towards the proper position (e) of that end, so many feet as you know or infer that end should be placed from the E. L. D. Then draw a line from their termination to the nearer end of the new line—or as from e to t.

On endeavouring to pursue the foregoing instructions refer to rules 4 to 4*h*, Ap. Les. X.*

When a receding surface lies on a horizontal plane—as the horizontal floor of a room does—and also lies on the level of the horizon line, then a mere single horizontal line, lying properly placed on the horizon line of a picture, will represent the surface. But if the surface were to move gradually upwards or downwards, as it moved the apparent size of the surface would as gradually increase.

LESSON IX.

ON THE DELINEATION OF SETS OF RECEDING LINES.

1. On having to depict a set of receding lines, that are to represent lines which actually lie parallel with each other, but which, therefore, converge apparently towards the same V. P., and amongst which there are some which are ground lines, that is, which exist as much below the level of your eye's perspective station as you suppose your width-of-range-level to exist; represent one of the ground lines with its V. P., according to the rules contained in Ap. Les. VII., if the size of your drawing paper admits of your so doing.

a. Then, with regard to any other receding line of the set which should represent a ground line, depict the W. R. of its nearer end and that of its further end: ascertain where its nearer end should lie on its W. R., and, from this position draw the line towards the V. P., taking care to terminate it when you arrive at its further end's W. R.

* When the size of your drawing paper does not admit of the use of the proper determinative point, and you require its aid, you can employ a substitute for it placed one-half, two-thirds, or three quarters, etc., nearer to the P. S. than the proper point's true position is. But on employing a substitute, the *proportions of the spaces on which it is brought to bear must be reduced in accordance with its reduced distance from the E.L.D.* Thus, on employing a substitute one-half nearer to the P. S. than the true position of the determinative point, with reference to Fig. 148; then, to produce the foot spaces on the receding line a—b, instead of marking off whole feet, mark off only half feet on the receding line's nearer end's W. R. 10. See also Sec. vii. les. vi. rule 4.

b. With respect to any receding line of the set which should not represent a ground line, as its ends should be placed above two different widths of range, depict the two widths of range, and find thereon the two points directly over which its two ends should be placed or lie. Or, supposing that its nearer end should lie over a point existing 10 feet from the E. L. D. to the left of it, and on a 60 feet W. R., and its further end over one existing 15 feet from the E. L. D., on a 70 feet W. R.; then find these points, and erect a vertical line upon the nearer point of the two, and of the height which will represent the height that the receding line should be depicted as lying above the *widths-of-range level*; or, supposing it should be depicted as lying 20 feet above it, erect a vertical line which will represent 20 feet of height. (See Rule 8*a*, Ap. Les. V.) Next erect a vertical upon the further of the two points, sufficiently long as to enable it to meet any converging line you may be required to draw from the first produced vertical towards the V. P.; and finally draw a converging line from the summit of the first produced vertical, towards the V. P., taking care to terminate it at the last produced vertical.

c. If either one of the receding lines should be depicted, so as to lie beneath one depicted in accordance with the last given directions, and also with its ends lying directly under that one's ends—as 5 feet under them: find a point on the first produced vertical 5 feet beneath its summit, and draw a line thence towards the V. P., taking care to terminate it at the last produced vertical.

d. If either one of the receding lines should be depicted so as to start from and terminate at other verticals rising from the last indicated, or from other, widths of range: delineate those verticals as duly rising from their proper widths of range, and from a proper height of the nearer vertical draw a line towards the V. P.—letting it terminate at the further vertical.

2. On having to depict a set of receding lines that are to represent lines which actually lie parallel with each other, and which, therefore, converge apparently towards the same V. P., but neither of which are to represent ground lines—proceed as follows:—

As the two ends of any one of the lines to be represented by these receding lines will lie above two points existing at a certain distance from the E. L. D., and on two different widths of range: represent these two widths of range and the two points; then place a flat ruler against both points, and so as to touch the horizon line, then mark where it touches the horizon line—as the point of contact will give the V. P. of the set of receding lines. Next depict the set, according to the principles of proceeding given in Rule 1, paragraphs *a* to *d*, of this lesson.

3. Recollect that the P. S. forms the V. P. for the set of receding lines which are required to represent those lines, either of an arranged subject or of a plan, which actually lie parallel with each other and with the E. L. D.—or which lie at right angles with the horizon line.

4. Should your drawing-paper be too small to admit of its having a horizon line long enough to allow of your producing a required V. P. upon it, then you can represent any receding line as follows, viz.:—

If it be a ground-receding line, represent the two widths of range upon which its two ends lie and find those ends' proper distances, on those widths of range, from the E.L.D. in the correct direction, and then join the two points.

If it be an elevated receding line, as the line will lie above two points existing, at a certain distance from the E. L. D., on two different widths of range, represent the two widths of range and the two points. Then erect a vertical upon each point of a height corresponding with the elevation of the line above the widths-of-range-level, and draw a line from the summit of one to the summit of the other. See Rule 8*a*, Ap. Les. V.

LESSON X.

ON GENERAL PRINCIPLES OF REPRESENTATION, ETC.

If we could perceive the true P. S., on fixing the eye upon the representative P. S. of an arranged subject, there would be a vertical plane or upright surface having no thickness, and running—as an enormous sheet of glass might run—from the eye to the true P. S., whilst as the E. L. D. would lie, as it were, upon it, extending from the eye to the P. S., it may be termed *the* E. L. D. vertical plane.

It is obvious, therefore, that if an imaginary horizontal line, parallel with the horizon line of the arranged subject, were to be drawn from *the end* or *any other point* of any line of the subject to this E. L. D. vertical plane, that such point would be found to exist on this imaginary line a certain number of feet from the E. L. D. vertical plane: and that if the point where one lying on the ground—that is on the widths-of-range-level—that the line drawn from the point to the E. L. D. vertical plane would represent a W. R. Hence the point might be said to lie so many feet from the plane and on a certain W. R. line.

Again, it is equally obvious, that if the point were to lie above the ground-level, that then the imaginary line drawn from the point to the plane would lie vertically above a certain W. R. line. Consequently, then, the point might be said to lie so many feet from the E. L. D. vertical plane and above a certain W. R.

Now, as an E. L. D. vertical plane can only be represented by means of a line similar to that employed in the foregoing diagrams to indicate the eye's line of direction, and marked E. L. D.: it may also be said that every point of every line of an arranged subject exists a certain number of feet from the E. L. D., and either upon, or vertically above, a certain W. R., according as it is a non-elevated, or an elevated, point.

This being understood, it will be readily perceived how extremely simple is the principle of perfectly correct or perspective representation, if you know, or choose to infer, the distance of either end of a line from the E. L. D., and the W. R. upon, or above which, it may be said to lie.

To arrive at a knowledge of these things, it is necessary either to take actual measurements, or work from a plan (see Sec. vii. Lessons 8 and 9). To infer them, conjectures must be formed through the medium of surrounding local circumstances—for by means of them, with reflection and judgment, a very close approximation to correctness of inference may generally be obtained.

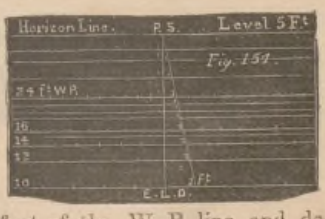
1. These things being known, or inferred with respect to a point to be represented as existing on the widths-of-range-level, and a horizon line having been depicted of a fixed level; represent the W. R. connected with the point; find a representative foot of the W. R., and then measure off on the W. R. in the proper direction, so many feet as the point may be said to exist from the E. L. D., commencing to do so from the E. L. D., for the end of the measurement will be the position the point should occupy.

2. If the point should represent an elevated one, ascertain, or infer, its elevation above the width-of-range-level; represent a horizon line, and then the W. R. above which the point should lie; find a representative foot of the W. R.; measure off on the W. R., in the proper direction, so many feet as the point exists from the E. L. D., commencing to do so from the E. L. D., and on the end of the measurement erect a vertical line so many representative feet of the W. R. in length as will be equal to the elevation of the point, for the summit of this vertical will be the position the point should occupy.

3. On having represented one point of a line, in accordance with the above instructions, any number of points can be represented in a similar manner, with the greatest facility. Having depicted two points representing the two ends of a line, to represent the line draw a line from one point to the other.

It is evident, therefore, that *no difficulty* attends the mastery of these, the true principles of perspective, relatively to sketching, or designing, etc., or in making any kind of perspective drawing. Whilst no other system of perspective procedure is so accurate in its operations, so definite as regards its rules, and so easy to comprehend.

4. On purposing to sketch, or make a drawing, on perspective principles, let your first proceedings be as follows:—



Decide upon the vertical height that you will assume to exist between your width-of-range-level and your horizon line level—or, what is the same thing, decide upon the height of your horizon line level. Then depict a horizon line and P. S., and also *the* E. L. D. vertical plane by means of a line running from the P. S. at a right angle with the horizon line. Next depict a horizontal line, as far beneath the horizon line as you can place it, to represent a W. R.; find the representative foot of the W. R. line, and denominate the line. Then mark off thereon the distance of one foot from the E. L. D., and from the distance point run a line to the P. S. — for the space from this line to the

E. L. D. along any after-produced W. R., *will instantly give* a representative foot of the W. R. as well as of any horizontal line depicted on the W. R., and likewise of any vertical line placed either upon them, or, as it were, directly above them. See Fig. 151.

a. For the explanation of the width-of-range-level, see Ap. Les. V. Rules 2 and 3.

b. To represent a horizon line and P. S. see Ap. Les. II. Rules 3 to 7.

c. To represent a W.R., see Ap. Les. V. Rules 8 to 11.

d. To find the representative foot of a W. R., etc., see Ap. Les. V. Rules 8 and 10.

e. To represent a determinative point, see Ap. Les. V. Rule 10*a*, and the note, page xxxiii.

f. To represent a V. P., see Ap. Les. VII. and IX.

g. To represent a receding surface, or line, or feet spaces thereon, see Ap. Les. VIII.

h. Ordinarily let the nearest W. R. which you represent, be one existing considerably further away from your eye's perspective station, than equals double the height of your horizon line's level.

However, on merely requiring to sketch a box, a jug, or such like small object, the nearest W. R. line may then be a 5 feet W. R.

5. Practice depicting various widths of range and finding points on them at different distances from the E. L. D. Also erect verticals on them truly denoting different heights.

But, as a rule, never represent a point as standing on a W. R. at a greater distance from the E. L. D. than equals half the denomination of the W. R. For, whilst it is an essential of correct representation, that every part of a picture, beneath its horizon line, and parallel therewith, shall represent either the whole, or part, of some one W. R. or another ; it is equally essential that from neither side of the picture, along the representative W. R. to the E. L. D., shall denote more feet than equals half the proper denomination of the W. R.

Practice at one time with a horizon line of one level, at another time with a horizon line of a different level.

6. To produce bird's-eye views proceed according to the foregoing Rule 4.

7. On erecting two verticals, on two different widths of range, the summits of which are to be joined together with a converging line, representing a horizontal line seen in an oblique direction, or as receding: then, if your drawing's horizon line is long enough to admit of it, to test correctness of procedure, run a converging line to the horizon line from the lower end of the nearer vertical, through the lower end of the further vertical, and from the upper end of the nearer vertical, through the upper end of the further one, and, in both cases, to the horizon line, to see if the two lines will meet together there exactly at one V. P.—for, if they will not, you may be sure, if both verticals have been produced by means of measurements, that they have been measured incorrectly.

Hence it may be perceived, that though the study of perfect or perspective representation is entirely deprived of all difficulty through the preceding instructions, yet it cannot be pursued successfully without the most delicate correctness of measurement and delineation of right angle lines. But, through attention to this rule, and assiduous application, such a practical knowledge of the peculiarities of apparent form which objects will assume under various circumstances, and so perfect a power of making correct inferences, with respect to form in general and the distances of objects, may be speedily acquired, as will enable any one to sketch with the greatest possible accuracy.

Sketch frequently then, increase the difficulty of your subjects gradually, and aim at invariable correctness in every effort, and both unqualified pleasure and unexpected profit will attend your pursuit of the invaluable art of drawing.